



**Traffic Impact Study for the
Proposed Residential Subdivision
Development in Amherstburg
Ontario**

Draft Report

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Waterstone Anderdon Development

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**TRAFFIC IMPACT STUDY FOR THE PROPOSED RESIDENTIAL SUBDIVISION DEVELOPMENT IN
AMHERSTBURG ONTARIO**

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TRAFFIC IMPACT STUDY FOR THE PROPOSED RESIDENTIAL SUBDIVISION DEVELOPMENT IN AMHERSTBURG ONTARIO

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1.0 INTRODUCTION AND PROPOSED DEVELOPMENT INFORMATION

1.1 BACKGROUND

Stantec Consulting Ltd. was retained by Waterstone Anderdon Development (“the Client”) to complete a Traffic Impact Study (“TIS”) in support of a proposed residential subdivision development application for the approval from Essex County (“the County”) and Town of Amherstburg (“the Town”). This proposed development is located east of Front Road North and north of Texas Road in Amherstburg, Essex County, Ontario.

1.2 STUDY GOAL AND SCOPE

The goal of this TIS is to assess the potential impacts of traffic generated by this development to the surrounding roadway network and identify any required improvements to ensure that the roadway facilities can safely and efficiently accommodate this proposed project.

The scope of the work of this TIS includes:

- Collecting traffic data within the study area including Turning Movement Count (“TMC”) data at the selected study intersections
- Establishing existing traffic and projected future background traffic volumes at the study intersections in different selected horizon years
- Determining the total number of new trips generated by the proposed development
- Establishing trip distribution and assignment for trips generated by the proposed developments
- Carrying out intersection capacity analysis at the study intersections in different horizon years to identify any potential traffic issues and determine roadway, intersections, and access requirements
- Recommending potential improvements in terms of intersection geometry and control to provide actable conditions, if required
- Carrying out site access analyses, including an access spacing review, an access sightline review and a site swept path analysis
- Carrying out a parking review
- Preparing a final TIS report to document the analysis undertaken and the findings and recommendations of the study



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Analysis Horizons

Three horizon years were selected and analyzed in this TIS.

- Existing Traffic Conditions (2022)
- Site Full Buildout Year (2024)
- 5-Year Horizon after Site Buildout (2029)

The analysis periods selected for this study are the weekday morning and afternoon peak hours as they are expected to represent the highest traffic volumes.

Study Intersections

This TIS includes the following three study intersections:

- Front Road North and Texas Road (signalized)
- Front Road North and Kingsbridge Drive (signalized)
- Front Road North and Proposed Future Development Access Road (unsignalized)



2.0 SITE CONTEXT

2.1 SITE/DEVELOPMENT DESCRIPTION

This proposed residential subdivision development site is located east of Front Road N, north of Texas Road and south of Kingsbridge Dr. in Amherstburg, Essex County, Ontario. The site location and study intersections, as well as the existing roadway network in the study area, are shown in **Figure 2.1**.

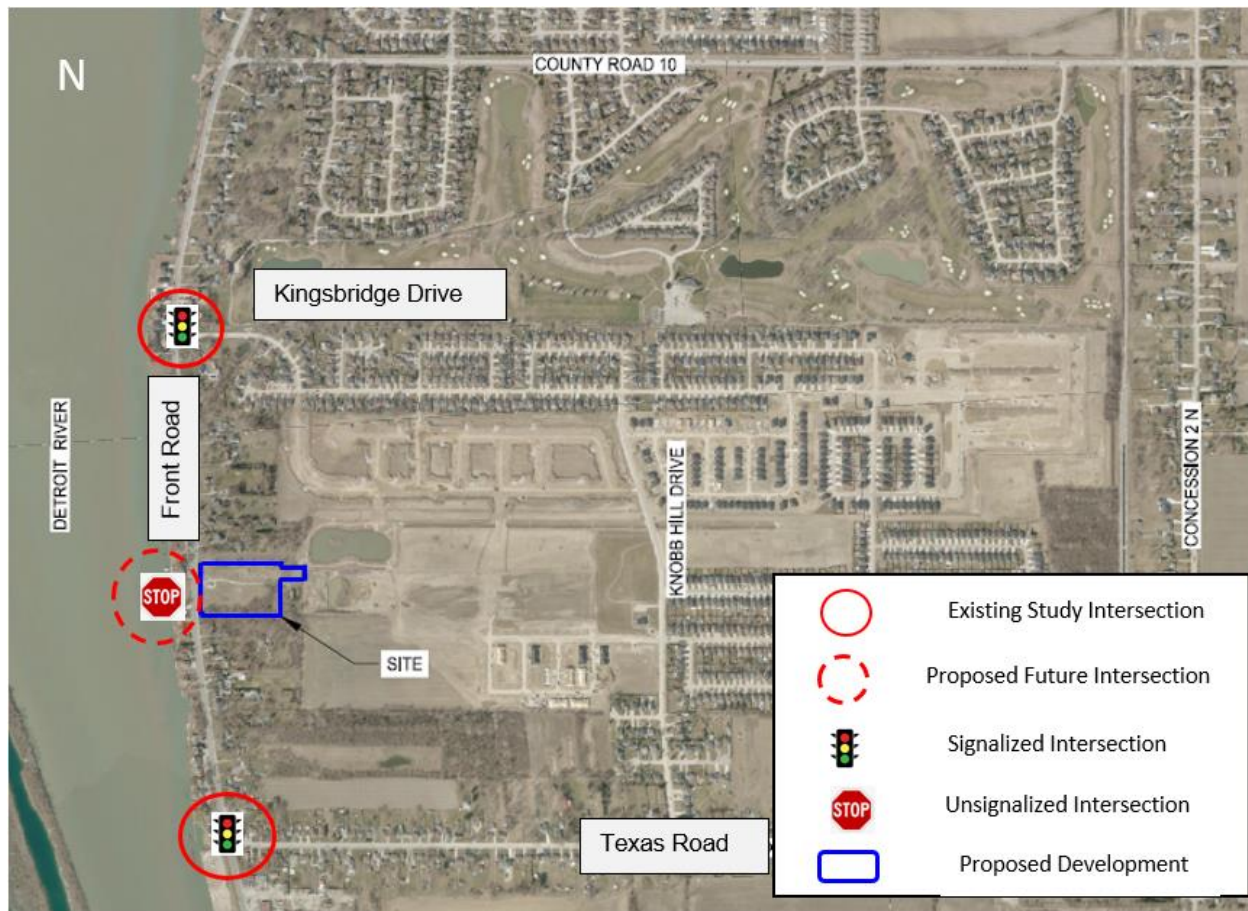


Figure 2.1 – Site Location and Study Intersections

2.2 EXISTING ROADWAY NETWORK

The existing roadway network adjacent to the site includes:

Front Road North is a north-south two-way road and is a segment of County Road 20. The road is under jurisdiction of the County of Essex and the posted speed limit is 70km/h.

Texas Road is an east-west two-way local road under jurisdiction of the Town of Amherstburg. The posted speed limit is 50km/h.

Kingsbridge Drive is an east-west two-way local road under jurisdiction of the Town of Amherstburg. Due to the absence of a posted speed limit, the statutory speed limit of 50km/h is assumed for analysis.

The existing study intersection lane configurations and traffic control are illustrated in **Figure 2.2**.

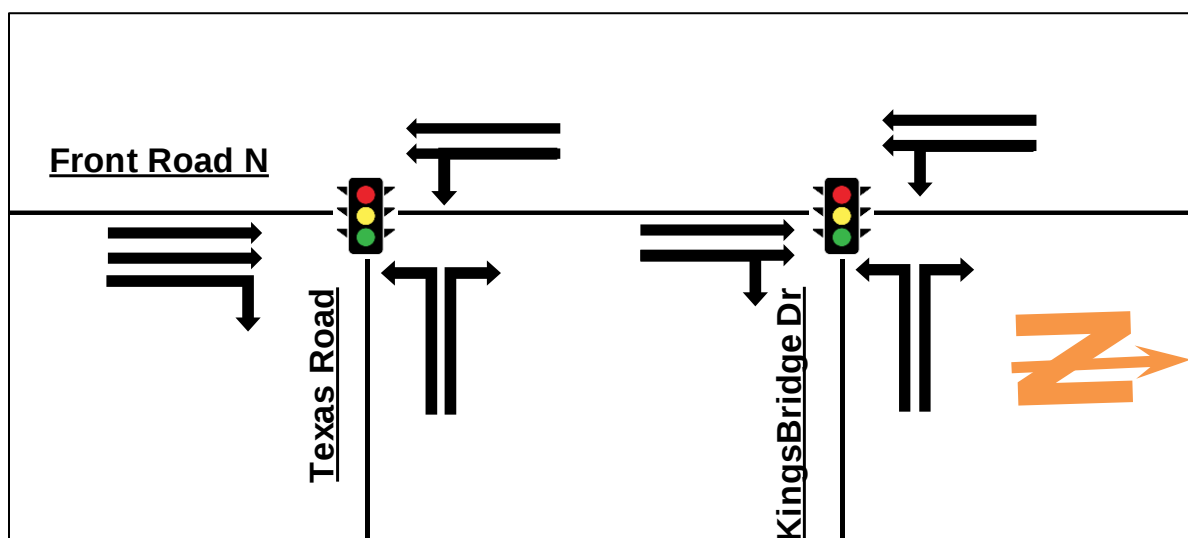


Figure 2.2 – Existing Lane Configurations and Traffic Control

2.3 EXISTING TRAFFIC DATA

Data Collection

Through coordination with the County staff, the available data including the latest available traffic turning movement counts data (“TMCs”) and the traffic signal timing plans (“STPs”) for signalized intersections within the study area were provided by the County. The details of available TMCs and STPs were attached for reference in **Appendix A** and **Appendix B**, respectively.

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Existing Traffic Volumes

The available traffic counts were dated to the year of 2021 for the study intersections. Due to the absence of 2022 TMCs at the intersections, an annual traffic growth rate was applied to the available traffic counts to establish the existing 2022 traffic volumes. As per the County's recommendation, an annual traffic growth rate of 2% was applied to all roadways of the study area in this study. It is noted that in this study, the traffic volumes along Front Road North between Texas Road and Kingsbridge Dr were balanced based on the higher volumes.

The existing base year 2022 traffic volumes for the AM and PM peak hours are illustrated in **Figure 2.3** and **Figure 2.4**.



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← 214	↗ 139	↖ 353	562		Kingsbridge Drive
			↑ 128	↗ 217	
↖ 304	↗ 441	↖ 435	145		Front Road North
			↑ 6	↗ 145	
← 286	↗ 18	↖ 304	441		Texas Road
			↑ 139	↗ 245	
↖ 392	↗ 427	↖ 106	144		
			↑ 302	↗ 125	

Figure 2.3 – Existing 2022 Traffic Volume AM Peak Hour

← 482	↗ 103	↖ 585	558		Kingsbridge Drive
			↑ 133	↗ 146	
↖ 495	↗ 549	↖ 425	226		Front Road North
			↑ 123	↗ 226	
← 439	↗ 56	↖ 495	549		Texas Road
			↑ 13	↗ 77	
↖ 502	↗ 705	↖ 63	225		
			↑ 536	↗ 169	

Figure 2.4 – Existing 2022 Traffic Volume PM Peak Hour



3.0 STUDY CONTEXT AND PROPOSED DEVELOPMENT

3.1 PROPOSED DEVELOPMENT AND ACCESSSES

Based on the Overall Site Draft Plan shown in **Figure 3.1**, the proposed residential subdivision development will include 41 residential dwelling units with 28 apartment units, 12 semi-detached units (i.e., 6 one-storey duplexes) and 1 single-family home. The detailed Site Plan is attached in **Appendix C** for reference

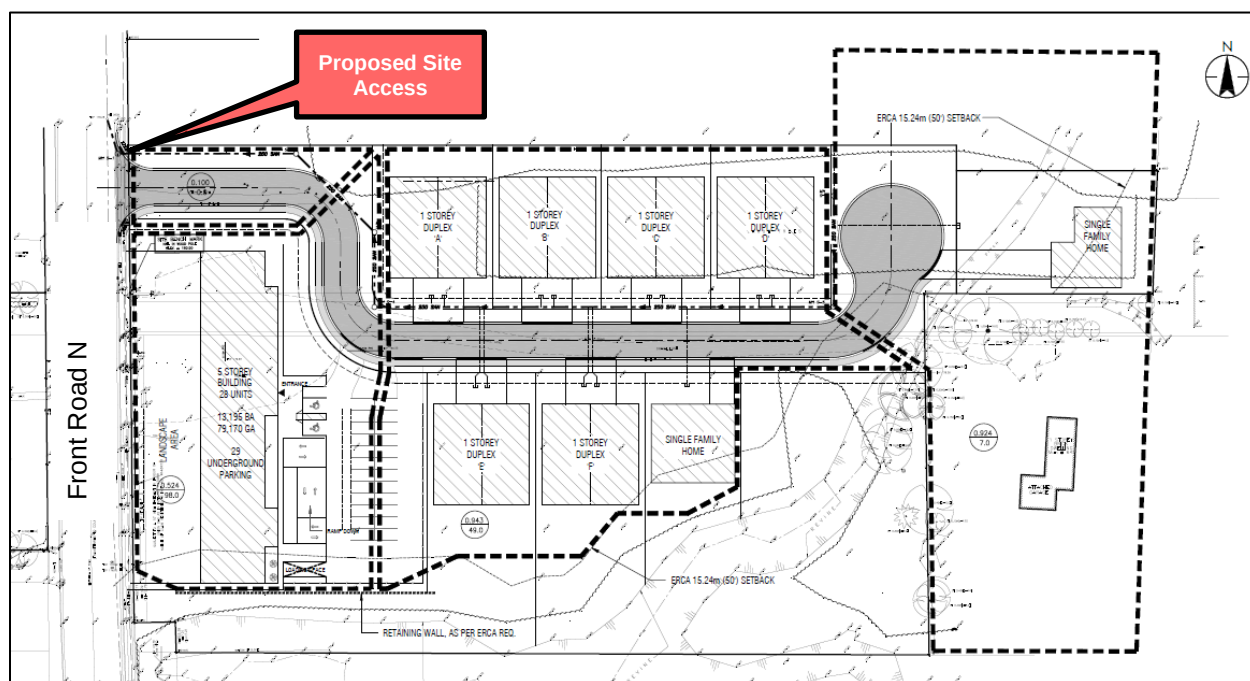


Figure 3.1 – Proposed Site Plan and Site Access

4.0 SITE GENERATED TRAFFIC

4.1 SITE TRIP GENERATION

Trip generation for the proposed uses on the site was calculated based on the Institute of Transportation Engineers (“ITE”) Trip Generation Manual, 11th Edition. **Table 4.1** summarizes the trip generation rates used for each land use. **Table 4.2** outlines the number of trips expected to be generated by the full buildout of the site for the AM and PM peak hours. It is to be noted that no trip reductions were applied for this development.

Table 4.1 – Site Trip Generation Rates¹

Land Use	Peak Hour		Direction (%)		Source
	AM Peak Hour	PM Peak Hour	AM (In/Out)	PM (In/Out)	
Residential – Single Family Home	0.70 Trips/Dwelling Unit	0.94 Trips/Dwelling Unit	26%/74%	63%/37%	ITE LUC 210 – Single-Family Detached Housing
Residential – Apartment Units	0.37 Trips/Dwelling Unit	0.39 Trips/Dwelling Unit	23%, 77%	61%, 39%	ITE LUC 221- Multifamily Housing (Mid-Rise)
Residential – Semi-Detached Housing	0.48 Trips/Dwelling Unit	0.57 Trips/Dwelling Unit	31%/69%	57%/43%	ITE LUC 215 – Single-Family Attached Housing

Table 4.2 – Site Trip Generation Table (Peak Hour Traffic)

Land Use	ITE Land Use Code	Independent Variable (x)	AM Peak Hour			PM Peak Hour		
			Trips	in	out	Trips	in	out
Single Family Home	210-Single-Family Detached Housing	1 Dwelling Unit	1	0	1	1	1	0
Apartment Units	221-Multifamily Housing (Mid-Rise)	28 Dwelling Units	10	2	8	11	7	4
Semi Detached Units	215- Single Family Attached Housing	12 Dwelling Units	6	2	4	7	4	3
Total			17	4	13	19	12	7

¹ The rates in this table are ITE Trip Generation Manual 11th edition's average rates.



4.2 TRIP DISTRIBUTION AND TRIP ASSIGNMENT

Trip distribution and assignment in this study for the site development were established based on the traffic patterns observed in the existing traffic counts during the AM and PM peak hours at the Front Road North & Kingsbridge Drive intersection based on its similar residential access function to the development access road, as well as the engineering judgement. It was assumed that the majority of the generated trips will be distributed to the Windsor area toward the north of the site. Trip distribution percentages are presented in **Table 4.3**. As shown in **Figure 3.1**, once the site is fully built out, all residential trips will connect to the off-site roadway network via the proposed access on Front Road North. Site Trip Distribution Percentages and Site Generated Traffic Volumes are illustrated in **Figure 4.1** and **Figure 4.2**.

Table 4.3 –Trip Distribution Percentages

		AM	PM
in	North	96%	90%
	South	4%	10%
out	North	90%	91%
	South	10%	9%



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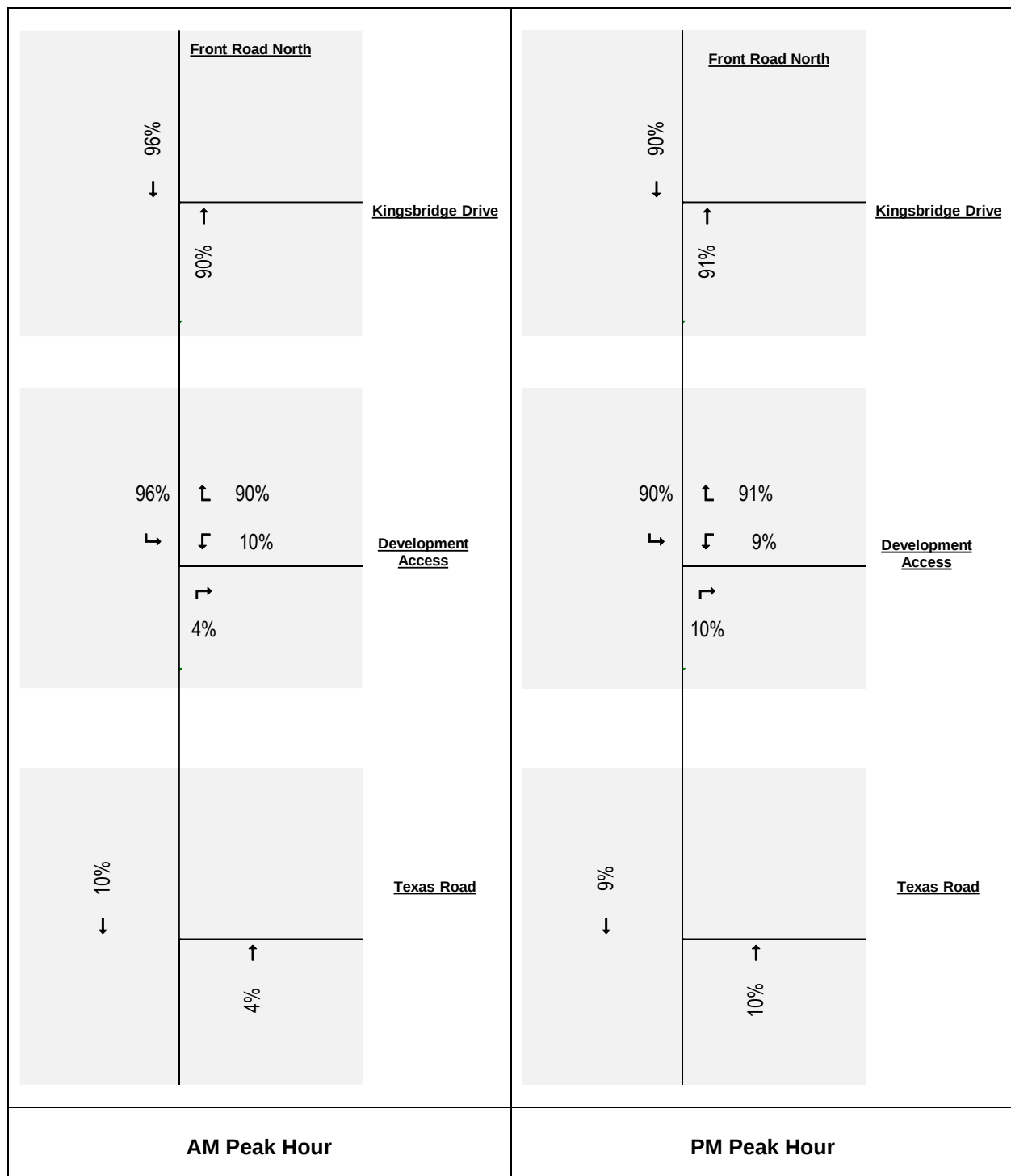


Figure 4.1 –Site Trip Distribution Percentages



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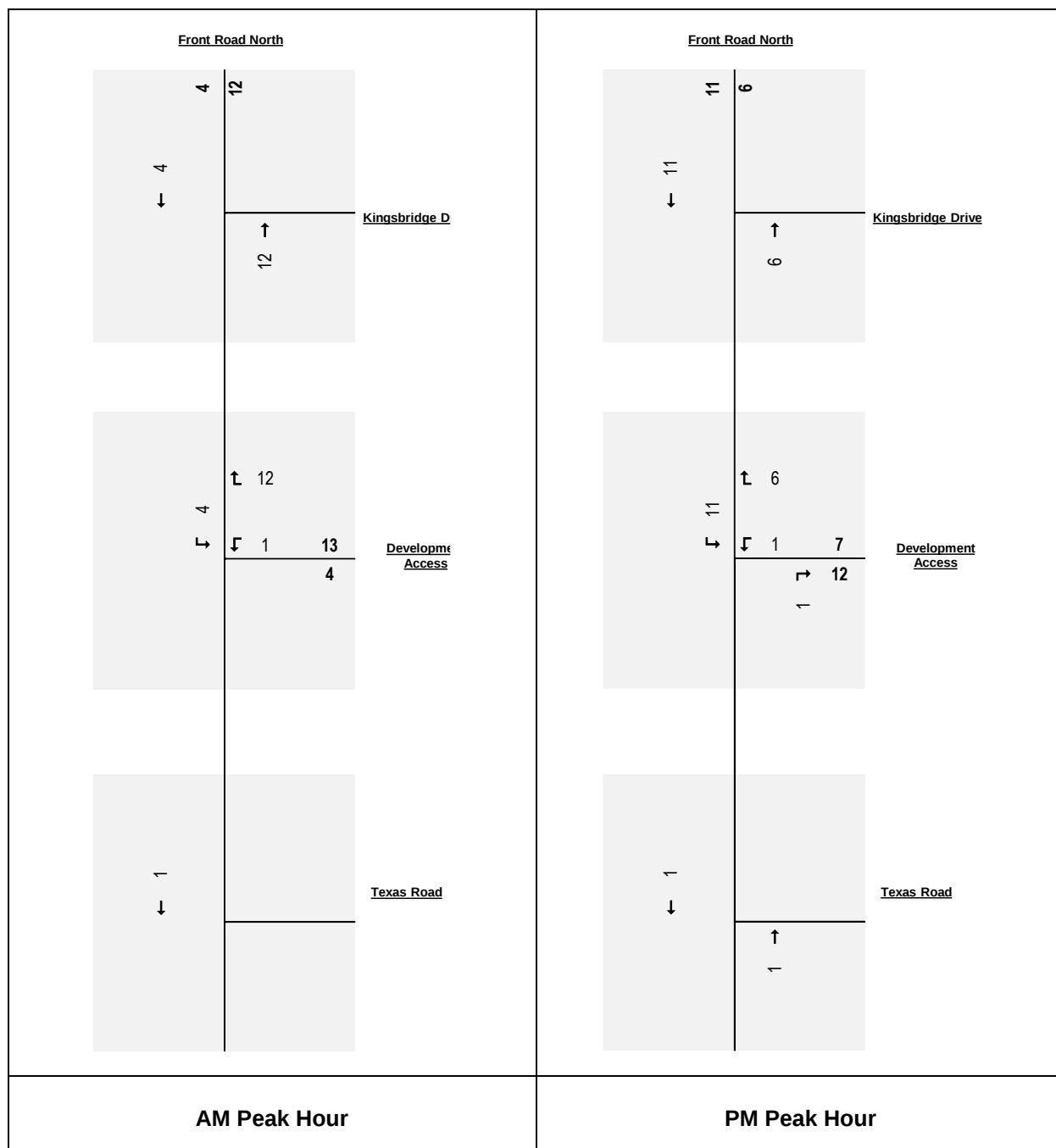


Figure 4.2 – Site Generated Traffic Volume



5.0 FUTURE TRAFFIC VOLUMES

5.1 FUTURE BACKGROUND TRAFFIC VOLUMES

As per the County recommendation, a 2% of annual vehicular traffic growth rate was assumed to project future background traffic volumes in 2024 and 2029 in this study.

The future background traffic volumes for the 2024 and 2029 horizon years during the weekday AM and PM peak hours are shown through **Figure 5.1** to **Figure 5.4**.

5.2 FUTURE TOTAL TRAFFIC VOLUMES

The total traffic volumes are the summation of the future background traffic volumes and trips generated by the site. The total traffic volumes used for the analysis in the 2024 and 2029 horizon years are illustrated in **Figure 5.5** to **Figure 5.8**.



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↓ 223 ↱ 144 367	↑ 133 ↱ 93 226
--	--

Figure 5.1 – 2024 Future Background Traffic Volume AM Peak Hour

↓ 501 ↱ 107 608

Figure 5.2 – 2024 Future Background Traffic Volume PM Peak Hour



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← 246	↗ 159	405	646		Kingsbridge Drive
			↖ 146		
			↖ 103	250	
			↗ 166		
			499	↖ 7	
		349	506		
Front Road North					
← 329	↗ 21	350	506		Texas Road
			↖ 159		
			↖ 122	281	
			↗ 165		
			347	↖ 144	
450		491			

Figure 5.3 – 2029 Future Background Traffic Volume AM Peak Hour

553 ↓	118 ↑	671	641		Kingsbridge Drive
			↑ 152		
			↓ 15	168	
			↑ 260		
568	630	568	489	142	Front Road North
504 ↓	64 ↑	568	631		Texas Road
			↑ 15		
			↓ 73	88	
			↑ 259		
576	810	616	194		

Figure 5.4 – 2029 Future Background Traffic Volume PM Peak Hour



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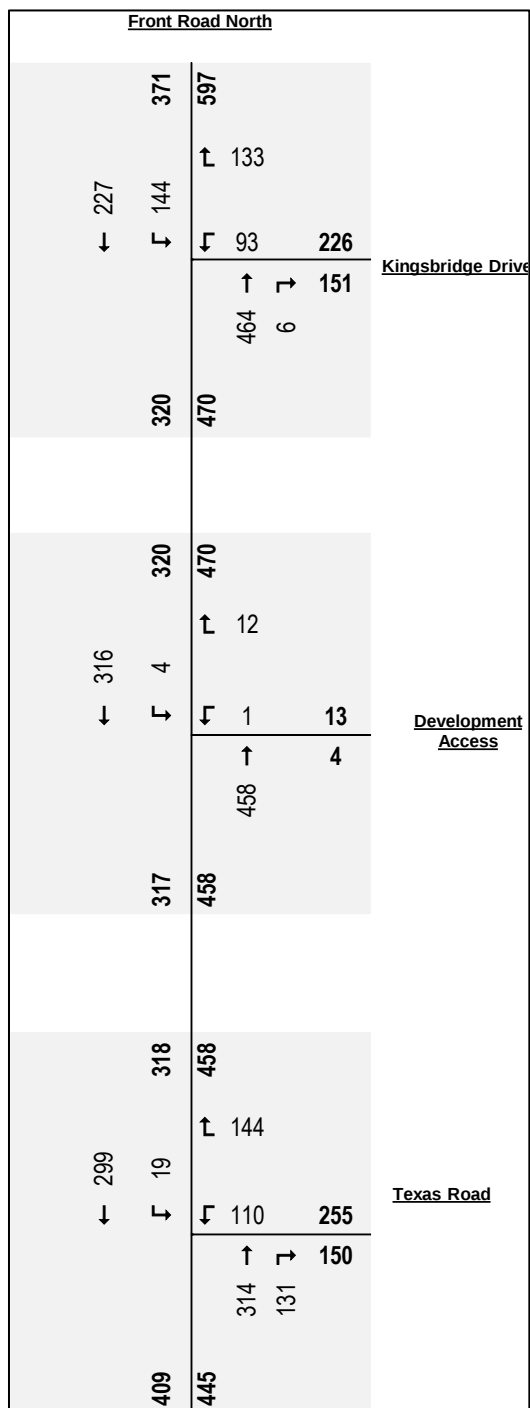


Figure 5.5 – Total Traffic Volume AM Peak Hour - 2024



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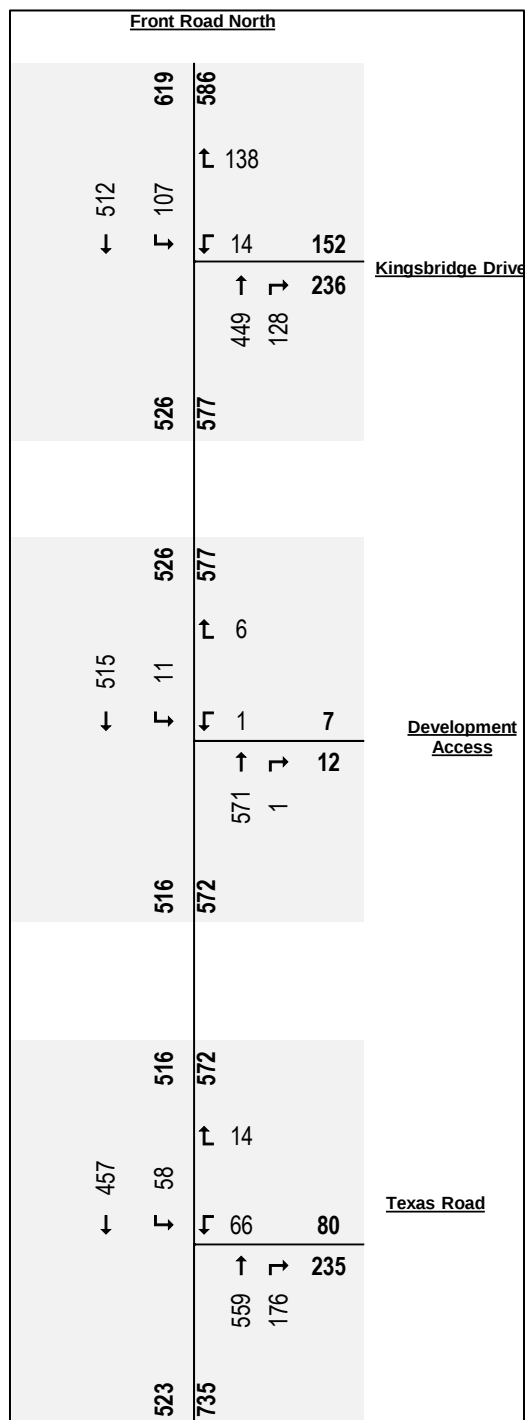


Figure 5.6 – Total Traffic Volume PM Peak Hour - 2024



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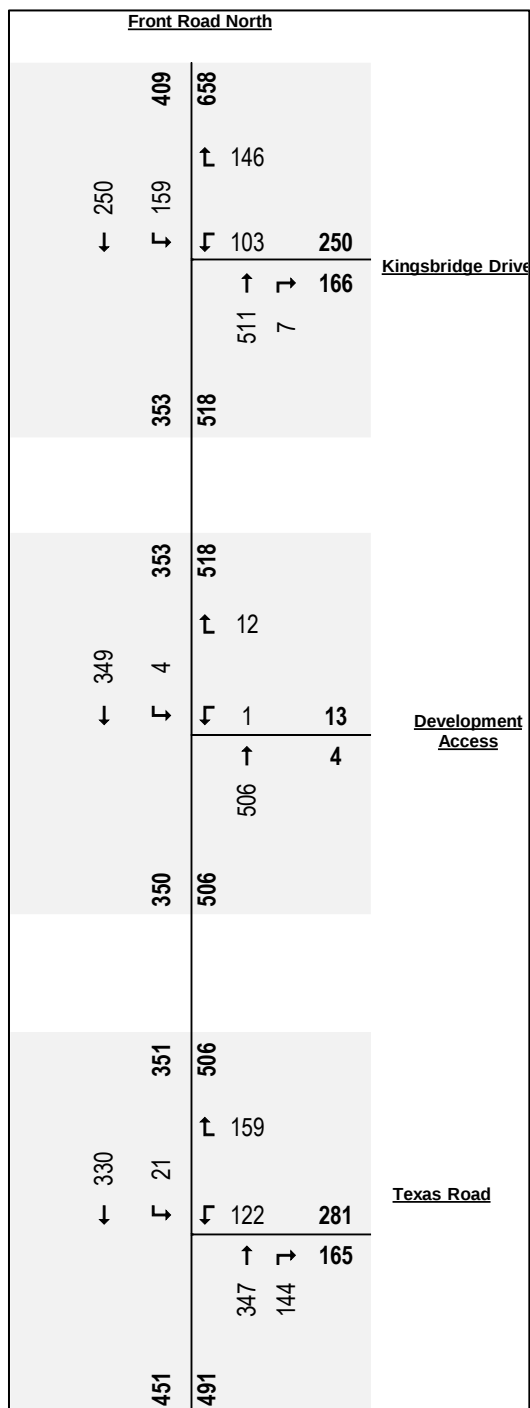


Figure 5.7 – Total Traffic Volume AM Peak Hour - 2029



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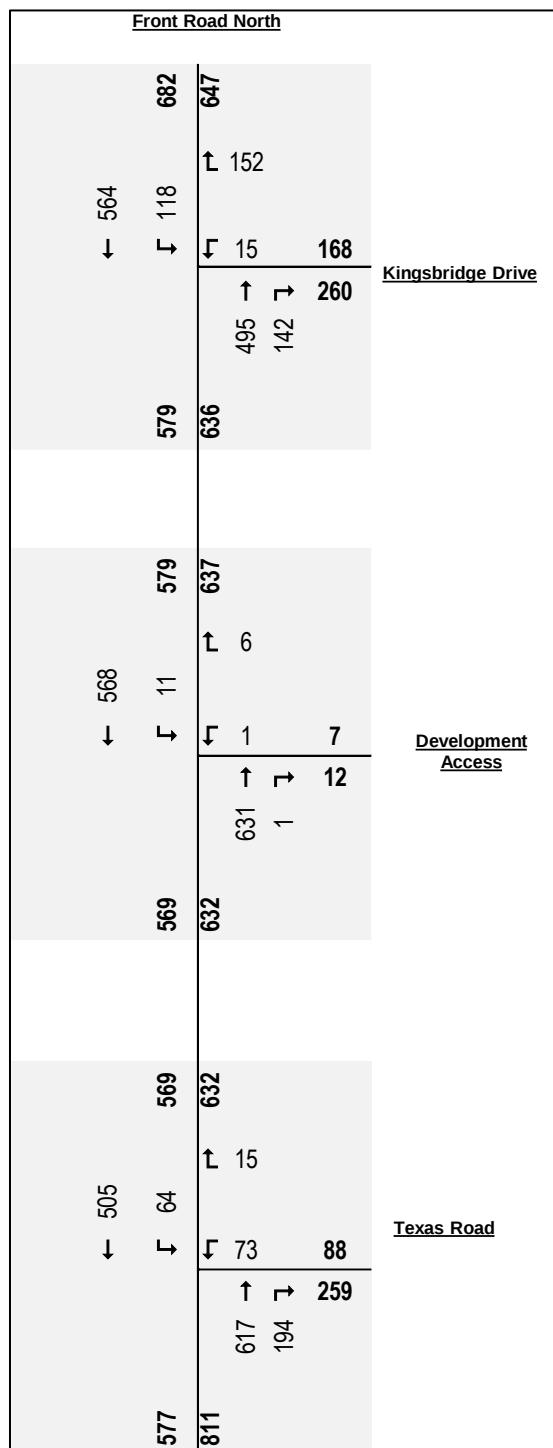


Figure 5.8 – Total Traffic Volume PM Peak Hour - 2029



6.0 TRANSPORTATION ANALYSES

6.1 INTERSECTION CAPACITY ANALYSIS

6.1.1 Intersection Capacity Analysis Assumptions

The quality of intersection operations at signalized and unsignalized intersections in this study is evaluated in terms of level of service (“LOS”) and volume to capacity (“V/C”) as defined by the Highway Capacity Manual (“HCM”). LOS for the intersection is based on the computed delays on each of the traffic movements. LOS ‘A’ represents minimal delays and LOS ‘F’ represents a scenario with significant vehicular delays. Capacity is evaluated in terms of the ratio of demand flow to capacity with an at-capacity condition represented by a V/C ratio of 1.00 (i.e., volume demand equals capacity).

The Intersection Capacity Analysis (“ICA”) was conducted by using the HCM 2000 methodology and specifically the traffic modeling software package of Synchro Studio 11 for different scenarios. The key parameters used in the analysis include:

- Existing lane configurations and traffic control
- Linked speeds as per posted speed limit
- Lane storage lengths as per lane storage lengths measured in Google
- Heavy vehicle percentages as derived from collected traffic count data
- Calculated peak hour factors (“PHFs”) for the study area intersections. It is noted that this factor adjusts the hourly volumes to better represent conditions during the peak 15 minutes of intersection operations
- Synchro default values for all other inputs

The following sections present the traffic performance for the study intersections relative to the above assumptions. If traffic operations exceed the thresholds, the corresponding Synchro results will be highlighted for further discussion. The following intersection performance criteria were used as thresholds for critical movements to assess traffic operations under existing and future conditions:

- The V/C is 0.85 or higher
- A level of service equal to “E” or “F”

6.1.2 Analysis Results – 2022 Horizon (Existing Conditions)

The Synchro analysis for the study intersections was conducted for the 2022 existing conditions, and the results of the analysis are summarized in **Table 6.1** below. Synchro outputs are included in **Appendix D**.



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Based on the results shown in **Table 6.1**, all the movements are currently operating at acceptable LOS C or better during both AM and PM peak hours with max V/C ratios of 0.42 during AM peak hour and 0.49 during PM peak hour.

Table 6.1 – Intersection Capacity Analysis Results – Existing 2022 Horizon

Intersection	Movement	AM Peak Hour				PM Peak Hour			
		Delay (s)	LOS	V/C	Queue (m)	Delay (s)	LOS	V/C	Queue (m)
					95th				95th
Front Road North & Texas Road (Signalized)	WBL	27.9	C	0.62	22	27.9	C	0.37	17
	WBR	23.2	C	0.28	0	25.6	C	0.01	4
	NBT	7.1	A	0.27	17	4.6	A	0.28	22
	NBR	6.5	A	0.15	1	4.1	A	0.14	7
	SBT	6.9	A	0.24	18	5	A	0.36	21
	Overall	12.4	B	0.36		6	A	0.36	
Front Road North & Kingsbridge Dr	WBL	25.1	C	0.4	22	23.1	C	0.06	6
	WBR	23.1	C	0.11	11	23.4	C	0.11	11
	NBT	6	A	0.32	19	6.1	A	0.4	19
	SBT	6.1	A	0.34	18	6.8	A	0.49	28
	Overall	9.6	A	0.35		8.2	A	0.42	

6.1.3 Analysis Results – Background Traffic Horizons

The Synchro analysis for the study intersections was conducted for the 2024 and 2029 background traffic horizons, and the results of the analysis are summarized in **Table 6.2** and **Table 6.3** below. Synchro outputs are included in **Appendix E**.

Based on the analysis results presented in these tables, all the movements are expected to operate at acceptable LOS C or better during both AM and PM peak hours in the horizon years of 2024 and 2029. In 2029, the max V/C ratios during AM peak hour and during PM peak hour are 0.51 and 0.62, respectively.



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Table 6.2 – Intersection Capacity Analysis Results – 2024 Background Traffic

Intersection	Movement	AM Peak Hour				PM Peak Hour			
		Delay (s)	LOS	V/C	Queue (m)	Delay (s)	LOS	V/C	Queue (m)
					95th				95th
Texas Road & Front Road North (Signalized)	WBL	28.3	C	0.63	23	27.5	C	0.38	18
	WBR	23.6	C	0.35	1	25.1	C	0.01	4
	NBT	7.2	A	0.28	18	4.8	A	0.29	24
	NBR	6.7	A	0.16	2	4.3	A	0.15	8
	SBT	7.1	A	0.25	19	5.2	A	0.38	23
	Overall	12.6	B	0.37		6.2	A	0.38	
Front Road North & Kingsbridge Dr	WBL	25.2	C	0.41	23	23.1	C	0.07	6
	WBR	23.3	C	0.14	12	23.5	C	0.14	12
	NBT	6.1	A	0.34	20	6.3	A	0.42	21
	SBT	6.2	A	0.35	19	7.1	A	0.52	31
	Overall	9.7	A	0.37		8.4	A	0.44	

Table 6.3 – Intersection Capacity Analysis Results – 2029 Background Traffic

Intersection	Movement	AM Peak Hour				PM Peak Hour			
		Delay (s)	LOS	V/C	Queue (m)	Delay (s)	LOS	V/C	Queue (m)
					95th				95th
Texas Road & Front Road North (Signalized)	WBL	29.3	C	0.67	24	27.7	C	0.42	19
	WBR	25.1	C	0.51	7	25	C	0.01	4
	NBT	7.8	A	0.31	21	4.9	A	0.33	27
	NBR	7.2	A	0.19	3	4.4	A	0.17	9
	SBT	7.6	A	0.29	22	5.5	A	0.43	26
	Overall	13.4	B	0.41		6.4	A	0.43	
Front Road North & Kingsbridge Dr	WBL	25.5	C	0.45	25	22.9	C	0.07	6
	WBR	24.3	C	0.3	18	24.6	C	0.31	18
	NBT	6.3	A	0.37	23	6.8	A	0.47	27
	SBT	6.6	A	0.4	23	8.5	A	0.62	42
	Overall	10.1	B	0.41		9.3	A	0.55	



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6.1.4 Analysis Results –Total Traffic Horizons

The Synchro analysis for three study intersections was conducted for the 2024 and 2029 total traffic horizons. The results of the analysis are summarized in **Table 6.4** and **Table 6.5** below. Synchro outputs are included in **Appendix F**.

Based on the analysis results presented in these tables, all movements are expected to operate at acceptable LOS C or better during AM peak hour and PM peak hour in the horizon years of 2024 and 2029. In 2029, the max V/C ratios during AM peak hour and during PM peak hour are 0.51 and 0.63, respectively.

Table 6.4 – Intersection Capacity Analysis Results – 2024 Total Traffic

Intersection	Movement	AM Peak Hour				PM Peak Hour			
		Delay (s)	LOS	V/C	Queue (m)	Delay (s)	LOS	V/C	Queue (m)
					95th				95th
Texas Road & Front Road North (Signalized)	WBL	28.3	C	0.63	23	27.5	C	0.38	18
	WBR	23.6	C	0.35	1	25.1	C	0.01	4
	NBT	7.2	A	0.28	18	4.8	A	0.3	24
	NBR	6.7	A	0.16	2	4.3	A	0.15	8
	SBT	7.1	A	0.25	19	5.2	A	0.38	23
	Overall	12.6	B	0.37		6.2	A	0.38	
Weston Road & Highway 407 Off-Ramp	WBL	25.2	C	0.41	23	23.1	C	0.07	6
	WBR	23.4	C	0.16	13	23.6	C	0.15	13
	NBT	6.1	A	0.34	20	6.3	A	0.42	21
	SBT	6.3	A	0.36	20	7.2	A	0.53	32
	Overall	9.7	A	0.37		8.5	A	0.45	
Front Road North & Development Access (Unsignalized)	WB 1	10.5	B	0.02	1	11.2	B	0.01	0
	SB 1	0.3	A	0	0	0.7	A	0.01	0



TRAFFIC IMPACT STUDY FOR THE PROPOSED RESIDENTIAL SUBDIVISION DEVELOPMENT IN AMHERSTBURG ONTARIO

Table 6.5 – Intersection Capacity Analysis Results – 2029 Total Traffic

Intersection	Movement	AM Peak Hour				PM Peak Hour			
		Delay (s)	LOS	V/C	Queue (m)	Delay (s)	LOS	V/C	Queue (m)
					95th				95th
Texas Road & Front Road North (Signalized)	WBL	29.3	C	0.67	24	27.7	C	0.42	19
	WBR	25.1	C	0.51	7	25	C	0.01	4
	NBT	7.8	A	0.31	21	4.9	A	0.33	27
	NBR	7.2	A	0.19	3	4.4	A	0.17	9
	SBT	7.6	A	0.29	22	5.5	A	0.43	26
	Overall	13.4	B	0.41		6.4	A	0.43	
Weston Road & Highway 407 Off-Ramp	WBL	25.5	C	0.45	25	22.9	C	0.07	6
	WBR	24.5	C	0.32	18	24.6	C	0.33	19
	NBT	6.4	A	0.38	23	6.8	A	0.47	27
	SBT	6.6	A	0.41	23	8.8	A	0.63	44
	Overall	10.1	B	0.42		9.5	A	0.57	
Front Road North & Development Access (Unsignalized)	WB 1	10.7	B	0.02	1	11.1	B	0.01	0
	SB 1	0.3	A	0	0	0.6	A	0.01	0

6.2 SITE ACCESS MANAGEMENT ANALYSIS

6.2.1 Site Access Spacing Review

Based on TAC Geometric Design Guideline (2017), a typical minimum intersection spacing along arterial roadways is 200 m. The proposed spacing between the site access (unsignalized intersection) and any of the two existing signalized intersections along the Front Road is over 550m which meets the spacing requirements.

6.2.2 SITE ACCESS SIGHTLINE REVIEW

An intersection sight distance evaluation at the intersection of proposed sit access and Front Road North was conducted to confirm if there is sufficient sight distance for drivers at this new intersection. Based on TAC's Geometric Design Guide for Canadian Roads, section 9.9.2.3, departure sight triangles for intersections with stop control on the minor road should be considered for three situations:

- Case B1- Left turns from the minor roads
- Case B2- Right turns from the minor roads
- Case F- Left turns from the major roads

Intersection departure sight distance is calculated using equation 9.9.1 from the TAC's Geometric Design Guide for Canadian Roads as outlined below:



TRAFFIC IMPACT STUDY FOR THE PROPOSED RESIDENTIAL SUBDIVISION DEVELOPMENT IN AMHERSTBURG ONTARIO

$$ISD = 0.278 * V_{major} * t_g$$

Where;

ISD = Intersection Sight Distance

V major = design speed of roadway (km/h)

t_g = assumed time gap for vehicles to turn from stop onto roadway (s)

The calculated and design sight distances are further summarized in Table 9.9.4, Table 9.9.6, and Table 9.9.12 of the TAC's Guide for different cases. **Table 6-6** below contains a summary of the intersection sight distance requirements for each of the applicable cases.

Table 6-6- Intersection Sight Distance Summary

Case	Design Speed	Stopping Sight Distance (m)	Required Intersection Departure Sight Distance (m)	TAC Reference
B1	80	130	170	Table 9.9.4
B2	80	130	145	Table 9.9.6
F	80	130	125	Table 9.9.12

For the proposed site access, although there are some utility poles in the sight triangles (see **Figure 6.1**), they do not block the vision, and there is a clear sight line along both south and north approaches of Front Road North that meets the required sight distances and stopping sight distances.



TRAFFIC IMPACT STUDY FOR THE PROPOSED RESIDENTIAL SUBDIVISION DEVELOPMENT IN AMHERSTBURG ONTARIO



North of Proposed Intersection

South of Proposed Intersection

Figure 6.1 –Proposed Intersection Sight Distance



6.2.3 Site Swept Path Analysis

A swept path analysis by using AutoTURN software was conducted to ensure adequate turning radii are provided at the access on Front Road North based on the proposed site plan. A typical fire truck and garbage truck were tested as the design vehicles.

Based on the analysis results, the design vehicles can maneuver on-site with the access provided from Front Road North and no turning-related issues were identified. Swept path reports were included for reference in **Appendix G**.

6.3 PARKING REVIEW

In this section, the proposed on-site parking supply was compared with the parking requirements specified in the Town's Zoning By-Law No. 1999-52, Section 3, to ensure that sufficient parking is provided. The required parking spaces based on the Town's Zoning By-Law are presented in **Table 6-7**. Based on the proposed site plan, the development will provide 29 underground parking stalls, as well as 25 surface parking stalls, for the 28 apartment units, which meets the parking requirements.

Table 6-7 – Parking Standard and Requirements

Land Use	Parking Rate	Unit	Required Parking Spaces
Apartment Building	1 per unit	28	28
Semi-Detached Dwelling	2 per unit	12	24
Single Detached	2 per unit	1	2



7.0 CONCLUSIONS AND RECOMMENDATIONS

Waterstone Anderdon Development Inc. is proposing to develop a residential subdivision development in the area, which is located east of Front Road N, north of Texas Road, and south of Kingsbridge Dr. in Amherstburg, Essex County, Ontario. This development will include 1 single-family home, 28 apartment units, and 12 semi-detached units (i.e., 6 one-story duplexes). It is expected that this development will be fully built out in 2024 and will generate 17 and 19 trips during AM and PM peak hours, respectively.

According to the analysis results, the followings can be concluded:

- All study intersections are operating at LOS C or better during both AM and PM peak hours of the existing (2022) traffic conditions.
- With full buildout of the proposed development in 2024 and post-development horizon year 2029, all study intersections are anticipated to operate at LOS C or better during both AM and PM peak hours without any operational issues.
- The proposed access spacings relative to nearby intersections are sufficient.
- Adequate sight distance will be provided along both approaches of Front Road North at the proposed site access intersection.
- The proposed access will accommodate design vehicles' turning movements.
- The provided parking stalls will meet the parking demand based on the Town's Zoning By-Law.



8.0 APPENDICES



APPENDIX A

Turning Movement Counts (TMC)

APPENDIX B

Signal Timing Plan (STP)

APPENDIX C

Synchro Results- Existing 2022

APPENDIX D

Synchro Results- Future Background 2024 & 2029

APPENDIX E

Synchro Results- Future Total 2024 & 2029

APPENDIX G

Swept Path Reports

593847_CR_20_and_Texas_tmc_peak_hour_table

Weekday, Peak AM

	CR 20 N Leg (Southbound)			Texas Rd E Leg (Westbound)			CR 20 S Leg (Northbound)	
	Left	Thru	Left	Right	Thru	Right	Total	Total %
7:15am	2	43	16	20	107	71	259	0.2779
7:30am	4	45	22	97	71	28	267	0.2865
7:45am	7	86	27	18	40	13	191	0.2049
8:00am	5	81	39	1	78	11	215	0.2307
Hourly Tot:	18	255	104	136	296	123	932	1
Hourly Tot:	0.0659	0.9341	0.4333	0.5667	0.7064	0.2936		
PHF	0.64	0.74	0.67	0.35	0.69	0.43		

Weekday, Peak PM

	CR 20 N Leg (Southbound)			Texas Rd E Leg (Westbound)			CR 20 S Leg (Northbound)	
	Left	Thru	Left	Right	Thru	Right	Total	Total %
4:30pm	10	91	18	4	117	43	283	0.2527
4:45pm	30	126	16	3	85	39	299	0.267
5:00pm	11	113	12	3	95	52	286	0.2554
5:15pm	4	100	16	3	97	32	252	0.225
Hourly Tot:	55	430	62	13	394	166	1120	1
Hourly Tot:	0.1134	0.8866	0.8267	0.1733	0.7036	0.2964		
PHF	0.46	0.85	0.86	0.81	0.84	0.8		

All Days, Peak AM

	CR 20 N Leg (Southbound)			Texas Rd E Leg (Westbound)			CR 20 S Leg (Northbound)	
	Left	Thru	Left	Right	Thru	Right	Total	Total %
11:00am	4	64	16	10	62	20	176	0.2277
11:15am	4	68	15	7	73	20	187	0.2419
11:30am	2	75	22	5	78	23	205	0.2652
11:45am	2	86	21	3	73	20	205	0.2652
Hourly Tot:	12	293	74	25	286	83	773	1
Hourly Tot:	0.0393	0.9607	0.7475	0.2525	0.7751	0.2249		
PHF	0.75	0.85	0.84	0.62	0.92	0.9		

All Days, Peak PM

	CR 20 N Leg (Southbound)			Texas Rd E Leg (Westbound)			CR 20 S Leg (Northbound)	
	Left	Thru	Left	Right	Thru	Right	Total	Total %
2:15pm	3	99	21	3	130	21	277	0.2574
2:30pm	3	104	36	3	98	25	269	0.25
2:45pm	4	101	23	3	95	24	250	0.2323
3:00pm	5	91	21	5	121	37	280	0.2602
Hourly Tot:	15	395	101	14	444	107	1076	1
Hourly Tot:	0.0366	0.9634	0.8783	0.1217	0.8058	0.1942		
PHF	0.75	0.95	0.7	0.7	0.85	0.72		

593892_CR_20_and_Kingsbridge_Dr_tmc_peak_hour_table

Weekday, Peak AM

	CR 20 N Leg (Southbound)			Kingsbridge Dr E Leg (Westbound)			CR 20 S Leg (Northbound)	
	Left	Thru	Left	Right	Thru	Right	Total	Total %
7:15am	46	45	1	55	113	0	260	0.2766
7:30am	31	42	14	25	139	2	253	0.2691
7:45am	28	52	51	13	40	2	186	0.1979
8:00am	31	71	22	32	83	2	241	0.2564
Hourly Tot:	136	210	88	125	375	6	940	1
Hourly Tot:	0.3931	0.6069	0.4131	0.5869	0.9843	0.0157		
PHF	0.74	0.74	0.43	0.57	0.67	0.75		

Weekday, Peak PM

	CR 20 N Leg (Southbound)			Kingsbridge Dr E Leg (Westbound)			CR 20 S Leg (Northbound)	
	Left	Thru	Left	Right	Thru	Right	Total	Total %
2:15pm	27	110	3	34	106	29	309	0.256
2:30pm	17	118	3	27	87	68	320	0.2651
2:45pm	22	105	3	31	96	20	277	0.2295
3:00pm	35	92	4	38	128	4	301	0.2494
Hourly Tot:	101	425	13	130	417	121	1207	1
Hourly Tot:	0.192	0.808	0.0909	0.9091	0.7751	0.2249		
PHF	0.72	0.9	0.81	0.86	0.81	0.44		

All Days, Peak AM

	CR 20 N Leg (Southbound)			Kingsbridge Dr E Leg (Westbound)			CR 20 S Leg (Northbound)	
	Left	Thru	Left	Right	Thru	Right	Total	Total %
11:00am	14	64	4	26	76	6	190	0.2366
11:15am	15	77	6	19	75	7	199	0.2478
11:30am	14	71	7	20	80	8	200	0.2491
11:45am	16	86	7	21	76	8	214	0.2665
Hourly Tot:	59	298	24	86	307	29	803	1
Hourly Tot:	0.1653	0.8347	0.2182	0.7818	0.9137	0.0863		
PHF	0.92	0.87	0.86	0.83	0.96	0.91		

All Days, Peak PM

	CR 20 N Leg (Southbound)			Kingsbridge Dr E Leg (Westbound)			CR 20 S Leg (Northbound)	
	Left	Thru	Left	Right	Thru	Right	Total	Total %
2:15pm	30	104	3	34	118	22	311	0.2596
2:30pm	19	120	2	25	84	53	303	0.2529
2:45pm	23	110	3	26	95	19	276	0.2304
3:00pm	33	96	4	38	131	6	308	0.2571
Hourly Tot:	105	430	12	123	428	100	1198	1
Hourly Tot:	0.1963	0.8037	0.0889	0.9111	0.8106	0.1894		
PHF	0.8	0.9	0.75	0.81	0.82	0.47		

APPENDIX B

Signal Timing Plan (STP)

B.3 System Information

System Id	137
Name	COUNTY OF ESSEX
Location	CR 20 & KINGSBRIDGE

1.2 Unit Setup

Auto Ped Clear	Disabled
Red Revert	5
Min Yellow Time	3
Texas Dmd Mode	Disabled
Texas Dmd Type	4-Phase

1.3 Startup

Flash	5
All Red	10
Start Veh Call	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16
Start Ped Call	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16

2.5 Phase Concurrency

	1	2	3	4	5	6	7	8
Phase 1								
Phase 2						X		
Phase 3								
Phase 4								
Phase 5								
Phase 6		X						
Phase 7								
Phase 8								
Phase 9								
Phase 10								
Phase 11								
Phase 12								
Phase 13								
Phase 14								
Phase 15								
Phase 16								

1.4 Channel Setup (1-16)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Type	V	V	P	V	V	P	V	V	P	V	V	P	O	O	O	O
Source		2						6	6	7	8	8				
Alt 1/2 Hz																
Flash Red		X						X		X	X					
Flash Yel																

1.4 Channel Setup (17-32)

	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Type	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
Source																
Alt 1/2 Hz																
Flsh Red																
Flsh Yel																
Start Next Phases	8															

2.4 Phase Enable and Rings

	1	2	3	4	5	6	7	8
Startup	2	6	2	2	2	6	2	2
Enabled		X				X	X	X
Ring1		X						
Ring2						X	X	X
Ring3								
Ring4								

Program Type	McCain Omni eX
Firmware	1.10
Street 1	CR 20
Street 2	KINGSBRIDGE
Last Modified	2020-12-07 11:01 AM

5.1 Coordination Constants

Correction Mode	Shortway
Max Cycles Trans	3
Coord Max Mode	Max Inhibit
Coord Force Mode	Fixed
Perm Strategy	Maximum
Omit Strategy	Minimum
Sync Point	Begin Green
No Early Return	Disable
Sync Ref Time	0
Operational Mode	0

2.3 Phase Sequence 1

Ring 1	2
Ring 2	6,7,8
Ring 3	
Ring 4	

2.3 Phase Sequence 9

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 2

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 10

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 3

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 11

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 4

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 12

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 5

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 13

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 6

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 14

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 7

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 15

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 8

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 16

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.1 Phase Parameters Set 1

	1	2	3	4	5	6	7	8
Min Green	0	40	0	0	0	40	5	10
Passage	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0
Max 1	0	40	0	0	0	40	10	22
Max 2	0	40	0	0	0	40	10	22
Yellow Change	0.0	5.0	0.0	0.0	0.0	5.0	3.0	5.0
Red Clear	0.0	2.0	0.0	0.0	0.0	2.0	1.0	2.0
Walk	0	0	0	0	0	20	0	10
Ped Clear	0	0	0	0	0	16	0	14
Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0
Cars Before Reduction	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0
Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	0	0	0	0	0	0	0	0
Dynamic Max Step	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cond. Service Min	0	0	0	0	0	0	0	0
Alternate Min Green	0	0	0	0	0	0	0	0
Alternate Passage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternate Walk	0	0	0	0	0	0	0	0
Alternate Ped Clear	0	0	0	0	0	0	0	0
Advanced Walk	0	0	0	0	0	0	0	0
Delay Walk	0	0	0	0	0	0	0	0
Start Delay Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Clear	0	0	0	0	0	0	0	0

2.2 Phase Options Set 1

	1	2	3	4	5	6	7	8
Phase Omit								
Ped Omit								
Min Veh Recall		X				X		
Max Veh Recall								
Soft Veh Recall								
Ped Recall						X		
Ped Recycle								
Cond. Service								
Lock Detector Memory								
Dual Entry		X				X		X
Simultaneous Gap		X				X		X
Guaranteed Passage								
Added Initial Calculation								
Rest In Walk						X		
Red Rest								
Auto Flash Entry								
Auto Flash Exit								
Non-Actuated 1								
Non-Actuated 2								
No Backup								
Max Walk								
Max Extension								
Sequential Timing								
No Min Yellow								
FDW Ped Recycle								

Organization
137-CR20 & KINGSBRIDGE > Detectors > Vehicle & Pedestrian
Detectors



4.1 Vehicle Detector Set 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Call	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
Queue																																
Add Init	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X		X	X	X	X	X		X	X				
Passage	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X		X	X	X	X	X		X	X				
Red Lock																																
Yellow Lock																																
Volume																																
Occupancy																																
Call Phase	1	2	2	2	2	2	3	4	4	4	4	4	1	3	5	6	6	6	6	6	7	8	8	8	8	8	5	7	0	0	0	0
Switch Phase	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0
Extend	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Limit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VOS Length	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alt Passage																																
Alt Min Green																																
Adaptive																																
TS2 Diagnostics																																
Extra Call Phases																																
Call Overlaps																																

4.3 Vehicle Detector Diag Set 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
No Activity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max Presence	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Erratic Counts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fail Time	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

4.2 Ped Detector Set 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Phase	2	4	6	8	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Walk																
Extra Call Phases																
Call Overlaps																

4.4 Ped Detector Diag Set 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
No Activity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max Presence	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Erratic Counts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

9.3.3.2 Speed Trap

Speed Trap	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Detector 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Detector 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

9.3.3.3 Speed Trap Bin Ranges

Bin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Range	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.2 Patterns	1	2	3	4	5	6	7	8
Cycle Time	0	0	0	0	0	0	0	0
Offset Time	0	0	0	0	0	0	0	0
Split	1	2	3	4	5	6	7	8
Sequence	1	1	1	1	1	1	1	1
Correction Mode								
Maximum Mode								
Force Mode								
Perm Strategy								
Omit Strategy								
Early Return	Default	Default	Default	Default	Default	Default	Default	Default
Texas Diamond								
Max2 Phases		2,6	2,4,6,8	4,8				
Phase Timing Set	1	1	1	1	1	1	1	1
Phase Option Set	1	1	1	1	1	1	1	1
Overlap Set	1	1	1	1	1	1	1	1
Veh. Det. Set	1	1	1	1	1	1	1	1
Ped. Det. Set	1	1	1	1	1	1	1	1
Veh. Det. Diag Set	1	1	1	1	1	1	1	1
Ped. Det. Diag Set	1	1	1	1	1	1	1	1
Priority Set	1	1	1	1	1	1	1	1
Ped Ovlp Set	1	1	1	1	1	1	1	1
Det. Reset								

5.2 Patterns	9	10	11	12	13	14	15	16
Cycle Time	0	0	0	0	0	0	0	0
Offset Time	0	0	0	0	0	0	0	0
Split	9	10	11	12	13	14	15	16
Sequence	1	1	1	1	1	1	1	1
Correction Mode								
Maximum Mode								
Force Mode								
Perm Strategy								
Omit Strategy								
Early Return	Default	Default	Default	Default	Default	Default	Default	Default
Texas Diamond								
Max2 Phases								
Phase Timing Set	1	1	1	1	1	1	1	1
Phase Option Set	1	1	1	1	1	1	1	1
Overlap Set	1	1	1	1	1	1	1	1
Veh. Det. Set	1	1	1	1	1	1	1	1
Ped. Det. Set	1	1	1	1	1	1	1	1
Veh. Det. Diag Set	1	1	1	1	1	1	1	1
Ped. Det. Diag Set	1	1	1	1	1	1	1	1
Priority Set	1	1	1	1	1	1	1	1
Ped Ovlp Set	1	1	1	1	1	1	1	1
Det. Reset								

5.3 Split Table 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.3 Split Table 2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.3 Split Table 3

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.3 Split Table 4

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.3 Split Table 5

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.3 Split Table 6

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.3 Split Table 7

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.3 Split Table 8

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.4 Schedules

	Month												Days Of Week							Date																															Day
	J	F	M	A	M	J	J	A	S	O	N	D	S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Plan
1	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1
2	X	X	X	X	X	X	X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2
3																																																		0	
4																																																		0	
5																																																		0	
6																																																		0	
7																																																		0	
8																																																		0	

	Month												Days Of Week							Date																															Day		
	J	F	M	A	M	J	J	A	S	O	N	D	S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Plan		
9																																																					0
10																																																					0
11																																																					0
12																																																					0
13																																																					0
14																																																					0
15																																																					0
16																																																					0

6.5 Day Plan 1

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	6	7	9	16	17	18	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0

6.5 Day Plan 1

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 2

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 2

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 3

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 3

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 4

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 4

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 5

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 5

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 6

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 6

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 7

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 7

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 8

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 8

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 9

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 9

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 10

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 10

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 11

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 11

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 12

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 12

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 13

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 13

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 14

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 14

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 15

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 15

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 16

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 16

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.6 Action Parameters	1	2	3	4	5	6	7	8
Pattern	1	2	3	4	5	6	7	8
Auxiliary Function								
Special Functions 1-8								
Special Functions 9-16								
Detector Reset								
Detector VOS Log	No Action	No Action	No Action	No Action	No Action	No Action	No Action	No Action
Speed Trap Log	No Action	No Action	No Action	No Action	No Action	No Action	No Action	No Action
Cycle MOE Log	No Action	No Action	No Action	No Action	No Action	No Action	No Action	No Action
High Res Log	No Action	No Action	No Action	No Action	No Action	No Action	No Action	No Action

Organization
137-CR20 & KINGSBRIDGE > Preemption > Preempts

7 Preempts	Preempt 1	Preempt 2	Preempt 3	Preempt 4	Preempt 5	Preempt 6	Preempt 7	Preempt 8
Track Phases								
Track Overlaps								
Track Ped								
Track Ped Overlap								
Dwell Phases								
Dwell Overlaps								
Dwell Peds								
Dwell Ped Overlap								
Cycling Phases								
Cycling Overlaps								
Cycling Ped								
Cycling Ped Overlap								
Exit Phase								
Locking	X	X	X	X	X	X	X	X
Override Flash	X	X	X	X	X	X	X	X
Override +1	X	X	X	X	X	X	X	X
Flash Dwell								
Enter All Red								
Ignore No Backup								
Max Presence Flash								
Track Green	0	0	0	0	0	0	0	0
Delay	0	0	0	0	0	0	0	0
Maximum Presence	0	0	0	0	0	0	0	0
Minimum Duration	0	0	0	0	0	0	0	0
Minimum Dwell	0	0	0	0	0	0	0	0
Linked Preempt	0	0	0	0	0	0	0	0
Enter Min Green	255	255	255	255	255	255	255	255
Enter Min Walk	255	255	255	255	255	255	255	255
Enter Min Ped Clear	255	255	255	255	255	255	255	255
Enter Min Yellow	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Enter Min Red Clear	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Track Min Yellow	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Track Min Red Clear	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Exit Ped Clear	0	0	0	0	0	0	0	0
Exit Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exit Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1.6 Logic Gate						1
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						2
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						3
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						4
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						5
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						6
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						7
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						8
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						9
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						10
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						11
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						12
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						13
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						14
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						15
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						16
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						17
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						18
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						19
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						20
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						21
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						22
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						23
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						24
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						25
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						26
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						27
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						28
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						31
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						29
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						32
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						30
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.5.3.1 2070 FIO Input Mapping

Pins	Function	IDX	Pins	Function	IDX
C1-39	Vehicle Detector	2	C1-67	Pedestrian Detector	1
C1-40	Vehicle Detector	16	C1-68	Pedestrian Detector	3
C1-41	Vehicle Detector	8	C1-69	Pedestrian Detector	2
C1-42	Vehicle Detector	22	C1-70	Pedestrian Detector	4
C1-43	Vehicle Detector	3	C1-71	Preempt Detector	3
C1-44	Vehicle Detector	17	C1-72	Preempt Detector	4
C1-45	Vehicle Detector	9	C1-73	Preempt Detector	5
C1-46	Vehicle Detector	23	C1-74	Preempt Detector	6
C1-47	Vehicle Detector	6	C1-75	Unused Input	1
C1-48	Vehicle Detector	20	C1-76	Vehicle Detector	5
C1-49	Vehicle Detector	12	C1-77	Vehicle Detector	19
C1-50	Vehicle Detector	26	C1-78	Vehicle Detector	11
C1-51	Preempt Detector	1	C1-79	Vehicle Detector	25
C1-52	Preempt Detector	2	C1-80	Interval Advance	1
C1-53	Man Control Enable	1	C1-81	MMU Flash	1
C1-54	Unused Input	1	C1-82	Stop Time All Rings	1
C1-55	Vehicle Detector	15	C11-15	Unused Input	1
C1-56	Vehicle Detector	1	C11-16	Unused Input	1
C1-57	Vehicle Detector	21	C11-17	Unused Input	1
C1-58	Vehicle Detector	7	C11-18	Unused Input	1
C1-59	Vehicle Detector	27	C11-19	Unused Input	1
C1-60	Vehicle Detector	13	C11-20	Unused Input	1
C1-61	Vehicle Detector	28	C11-21	Unused Input	1
C1-62	Vehicle Detector	14	C11-22	Unused Input	1
C11-10	Unused Input	1	C11-23	Unused Input	1
C11-11	Unused Input	1	C11-24	Unused Input	1
C11-12	Unused Input	1	C11-25	Unused Input	1
C11-13	Unused Input	1	C11-26	Unused Input	1
C1-63	Vehicle Detector	4	C11-27	Unused Input	1
C1-64	Vehicle Detector	18	C11-28	Unused Input	1
C1-65	Vehicle Detector	10	C11-29	Unused Input	1
C1-66	Vehicle Detector	24	C11-30	Unused Input	1

1.5.3.2 2070 FIO Output Mapping

Pins	Function	IDX	Pins	Function	IDX
C1-02	Channel Red	6	C1-35	Unused Output	1
C1-03	Channel Green	6	C1-36	Unused Output	1
C1-04	Channel Red	5	C1-37	Unused Output	1
C1-05	Channel Yellow	5	C1-38	Unused Output	1
C1-06	Channel Green	5	C1-100	Unused Output	1
C1-07	Channel Red	4	C1-101	Auto Flash Status	1
C1-08	Channel Yellow	4	C1-102	Detector Reset	1
C1-09	Channel Green	4	C1-103	Wdt Reset	1
C1-10	Channel Red	3	C1-83	Unused Output	1
C1-11	Channel Green	3	C1-84	Unused Output	1
C1-12	Channel Red	2	C1-85	Channel Red	16
C1-13	Channel Yellow	2	C1-86	Channel Yellow	16
C1-15	Channel Green	2	C1-87	Channel Green	16
C1-16	Channel Red	1	C1-88	Channel Red	15
C1-17	Channel Yellow	1	C1-89	Channel Yellow	15
C1-18	Channel Green	1	C1-90	Channel Green	15
C1-19	Channel Red	12	C1-91	Unused Output	1
C1-20	Channel Green	12	C1-93	Unused Output	1
C1-21	Channel Red	11	C1-94	Channel Red	14
C1-22	Channel Yellow	11	C1-95	Channel Yellow	14
C1-23	Channel Green	11	C1-96	Channel Green	14
C1-24	Channel Red	10	C1-97	Channel Red	13
C1-25	Channel Yellow	10	C1-98	Channel Yellow	13
C1-26	Channel Green	10	C1-99	Channel Green	13
C1-27	Channel Red	9	C11-1	Unused Output	1
C1-28	Channel Green	9	C11-2	Unused Output	1
C1-29	Channel Red	8	C11-3	Unused Output	1
C1-30	Channel Yellow	8	C11-4	Unused Output	1
C1-31	Channel Green	8	C11-5	Unused Output	1
C1-32	Channel Red	7	C11-6	Unused Output	1
C1-33	Channel Yellow	7	C11-7	Unused Output	1
C1-34	Channel Green	7	C11-8	Unused Output	1

9.3-4 Log Configuration

Volume Occupancy Period	60
VOS Log Combined Periods	0
Speed Trap Log Period	0
Display Metric	
Speed Trap Log Mode	Disabled
VOS Log Mode	Disabled
Cycle MOE Log Mode	Disabled
High Res Log Mode	Disabled
Power On/Off	X
Low Battery	X
Cycle Fault	X
Coord Fault	X
Coord Fail	X
Cycle Fail	X
MMU Flash	X
Local Flash	X
Local Free	X
Preempt Status Change	X
Response Fault	X
Alarm Status Change	X
Door Status Change	X
Pattern Change	X
Detector Status Change	X
Comm Status Change	X
Command Change	X
Data Change Keyboard	X
Controller Download	X
Access Code	X
Priority	X
Manual Control Enable	X
Stop Time	X

6.2 Time Zone

Global DST	Enable DST
Standard Time Zone (+/- hr)	0

A.3 Unit Comms

Unit Backup Time	0
------------------	---

1.5.5 Aux Switch

Function	Stop Time All Rings
Index	1

A.5-6 Time Sync

NTP Server Address	0.0.0.0
NTP Start Hour	0
NTP Start Minute	0
NTP Interval Hour	0
NTP Interval Minute	0
GPS Start Hour	0
GPS Start Minute	0
GPS Interval Hour	0
GPS Interval Minute	0
Enable NTP Svr	

1.7 Port 1

BIU 1 (T&F BIU 1)	Disabled
BIU 2 (T&F BIU 2)	Disabled
BIU 3 (T&F BIU 3)	Disabled
BIU 4 (T&F BIU 4)	Disabled
BIU 9 (Detector BIU 1)	Disabled
BIU 10 (Detector BIU 2)	Disabled
BIU 11 (Detector BIU 3)	Disabled
BIU 12 (Detector BIU 4)	Disabled
MMU	Disabled
Comm Port	SP3

9.3-4 Hi Res Log Setup

Phase Events	
Ped Events	
Barrier/Ring Events	
Phase Control Events	
Overlap Events	
Detector Events	
Preemption Events	
Coordination Events	
Cabinet/System Events	

B.1.1 Menu Security Options

Enable:	☐	Allow Read-Only:	☐	Timeout (min):	60
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B.1.2 Menu Security Users

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
User Id	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operation																
Unit																
I/O Map																
Phase																
Overlap																
Detector																
Coord																
Time Base																
Preempt																
Transit																
Logs																
Comm																
Security																
Database																
SW Update																

	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
User Id	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operation																
Unit																
I/O Map																
Phase																
Overlap																
Detector																
Coord																
Time Base																
Preempt																
Transit																
Logs																
Comm																
Security																
Database																
SW Update																

	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
User Id	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operation																
Unit																
I/O Map																
Phase																
Overlap																
Detector																
Coord																
Time Base																
Preempt																
Transit																
Logs																
Comm																
Security																
Database																
SW Update																

	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
User Id	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operation																
Unit																
I/O Map																
Phase																
Overlap																
Detector																
Coord																
Time Base																
Preempt																
Transit																
Logs																
Comm																
Security																
Database																
SW Update																

A.1 Serial Comms

Port	1	2	3	4	5	8
Protocol	None	None	None	None	None	None
Speed	9600	9600	9600	115200	9600	9600
Parity	None	None	None	None	None	None
Flow Control	None	None	None	None	None	None
Address	0	0	0	0	0	0
Group Address	0	0	0	0	0	0
Data Bits	8 data bits	8 data bits	8 data bits	8 data bits	8 data bits	8 data bits
Stop Bits	1 stop bit	1 stop bit	1 stop bit	1 stop bit	1 stop bit	1 stop bit
CTS Delay	0	0	0	0	0	0
RTS Extend	0	0	0	0	0	0

A.2 Ethernet Comms

Port	1	2
IP Address	0.0.0.0	192.168.2.8
Net Mask	0.0.0.0	255.255.255.0
Gateway	0.0.0.0	0.0.0.0
NTCIP Port	161	161
NTCIP Mode	UDP	UDP
AB3418 Port	8001	8001
AB3418 Mode	UDP	UDP
AB3418 Address	1	1
AB3418 Group Address	0	0
Peer to Peer Port	49255	49255

A.8 SPaT

Unicast Enable	
Dest IP Address	0.0.0.0
Dest Port	0

B.3 System Information

System Id	138
Name	COUNTY OF ESSEX
Location	CR 20 & TEXAS

1.2 Unit Setup

Auto Ped Clear	Disabled
Red Revert	5
Min Yellow Time	3
Texas Dmd Mode	Disabled
Texas Dmd Type	4-Phase

1.3 Startup

Flash	5
All Red	10
Start Veh Call	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16
Start Ped Call	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16

2.5 Phase Concurrency

	1	2	3	4	5	6	7	8
Phase 1								
Phase 2						X		
Phase 3								
Phase 4								
Phase 5								
Phase 6		X						
Phase 7								
Phase 8								
Phase 9								
Phase 10								
Phase 11								
Phase 12								
Phase 13								
Phase 14								
Phase 15								
Phase 16								

1.4 Channel Setup (1-16)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Type	V	V	P	V	V	P	V	V	P	V	V	P	O	O	O	O
Source		2	2	3	4	4		6								
Alt 1/2 Hz																
Flash Red		X		X	X			X								
Flash Yel																

1.4 Channel Setup (17-32)

	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Type	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
Source																
Alt 1/2 Hz																
Flsh Red																
Flsh Yel																

Start Next Phases	4
-------------------	---

2.4 Phase Enable and Rings

	1	2	3	4	5	6	7	8
Startup	2	6	2	2	2	6	2	2
Enabled		X	X	X		X		
Ring1		X	X	X				
Ring2						X		
Ring3								
Ring4								

Program Type	McCain Omni eX
Firmware	1.10
Street 1	CR 20
Street 2	TEXAS
Last Modified	2020-12-07 11:08 AM

5.1 Coordination Constants

Correction Mode	Shortway
Max Cycles Trans	3
Coord Max Mode	Max Inhibit
Coord Force Mode	Fixed
Perm Strategy	Maximum
Omit Strategy	Minimum
Sync Point	Begin Green
No Early Return	Disable
Sync Ref Time	0
Operational Mode	0

2.3 Phase Sequence 1

Ring 1	2,3,4
Ring 2	6
Ring 3	
Ring 4	

2.3 Phase Sequence 9

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 2

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 10

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 3

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 11

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 4

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 12

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 5

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 13

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 6

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 14

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 7

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 15

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 8

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.3 Phase Sequence 16

Ring 1	
Ring 2	
Ring 3	
Ring 4	

2.1 Phase Parameters Set 1	1	2	3	4	5	6	7	8
Min Green	0	40	5	10	0	40	0	0
Passage	0.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0
Max 1	0	40	10	22	0	40	0	0
Max 2	0	40	10	22	0	40	0	0
Yellow Change	0.0	5.0	3.0	5.0	0.0	5.0	0.0	0.0
Red Clear	0.0	2.0	1.0	2.0	0.0	2.0	0.0	0.0
Walk	0	20	0	10	0	0	0	0
Ped Clear	0	16	0	14	0	0	0	0
Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0
Cars Before Reduction	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0
Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	0	0	0	0	0	0	0	0
Dynamic Max Step	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cond. Service Min	0	0	0	0	0	0	0	0
Alternate Min Green	0	0	0	0	0	0	0	0
Alternate Passage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternate Walk	0	0	0	0	0	0	0	0
Alternate Ped Clear	0	0	0	0	0	0	0	0
Advanced Walk	0	0	0	0	0	0	0	0
Delay Walk	0	0	0	0	0	0	0	0
Start Delay Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Clear	0	0	0	0	0	0	0	0

2.2 Phase Options Set 1	1	2	3	4	5	6	7	8
Phase Omit								
Ped Omit								
Min Veh Recall		X				X		
Max Veh Recall								
Soft Veh Recall								
Ped Recall		X						
Ped Recycle								
Cond. Service								
Lock Detector Memory								
Dual Entry		X				X		
Simultaneous Gap		X				X		
Guaranteed Passage								
Added Initial Calculation								
Rest In Walk		X						
Red Rest								
Auto Flash Entry								
Auto Flash Exit								
Non-Actuated 1								
Non-Actuated 2								
No Backup	X		X		X		X	
Max Walk								
Max Extension								
Sequential Timing								
No Min Yellow								
FDW Ped Recycle								

4.1 Vehicle Detector Set 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Call	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
Queue																																
Add Init	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X		X	X	X	X	X		X	X				
Passage	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X		X	X	X	X	X		X	X				
Red Lock																																
Yellow Lock																																
Volume																																
Occupancy																																
Call Phase	1	2	2	2	2	2	3	4	4	4	4	4	1	3	5	6	6	6	6	6	7	8	8	8	8	8	5	7	0	0	0	0
Switch Phase	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0
Extend	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Limit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VOS Length	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alt Passage																																
Alt Min Green																																
Adaptive																																
TS2 Diagnostics																																
Extra Call Phases																																
Call Overlaps																																

4.3 Vehicle Detector Diag Set 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
No Activity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max Presence	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Erratic Counts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fail Time	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

4.2 Ped Detector Set 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Phase	2	4	6	8	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Walk																
Extra Call Phases																
Call Overlaps																

4.4 Ped Detector Diag Set 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
No Activity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max Presence	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Erratic Counts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

9.3.3.2 Speed Trap

Speed Trap	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Detector 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Detector 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

9.3.3.3 Speed Trap Bin Ranges

Bin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Range	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.2 Patterns	1	2	3	4	5	6	7	8
Cycle Time	0	0	0	0	0	0	0	0
Offset Time	0	0	0	0	0	0	0	0
Split	1	2	3	4	5	6	7	8
Sequence	1	1	1	1	1	1	1	1
Correction Mode								
Maximum Mode								
Force Mode								
Perm Strategy								
Omit Strategy								
Early Return	Default	Default	Default	Default	Default	Default	Default	Default
Texas Diamond								
Max2 Phases		2,6	2,4,6,8	4,8				
Phase Timing Set	1	1	1	1	1	1	1	1
Phase Option Set	1	1	1	1	1	1	1	1
Overlap Set	1	1	1	1	1	1	1	1
Veh. Det. Set	1	1	1	1	1	1	1	1
Ped. Det. Set	1	1	1	1	1	1	1	1
Veh. Det. Diag Set	1	1	1	1	1	1	1	1
Ped. Det. Diag Set	1	1	1	1	1	1	1	1
Priority Set	1	1	1	1	1	1	1	1
Ped Ovlp Set	1	1	1	1	1	1	1	1
Det. Reset								

5.2 Patterns	9	10	11	12	13	14	15	16
Cycle Time	0	0	0	0	0	0	0	0
Offset Time	0	0	0	0	0	0	0	0
Split	9	10	11	12	13	14	15	16
Sequence	1	1	1	1	1	1	1	1
Correction Mode								
Maximum Mode								
Force Mode								
Perm Strategy								
Omit Strategy								
Early Return	Default	Default	Default	Default	Default	Default	Default	Default
Texas Diamond								
Max2 Phases								
Phase Timing Set	1	1	1	1	1	1	1	1
Phase Option Set	1	1	1	1	1	1	1	1
Overlap Set	1	1	1	1	1	1	1	1
Veh. Det. Set	1	1	1	1	1	1	1	1
Ped. Det. Set	1	1	1	1	1	1	1	1
Veh. Det. Diag Set	1	1	1	1	1	1	1	1
Ped. Det. Diag Set	1	1	1	1	1	1	1	1
Priority Set	1	1	1	1	1	1	1	1
Ped Ovlp Set	1	1	1	1	1	1	1	1
Det. Reset								

5.3 Split Table 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.3 Split Table 2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.3 Split Table 3

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.3 Split Table 4

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.3 Split Table 5

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.3 Split Table 6

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.3 Split Table 7

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5.3 Split Table 8

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time (sec)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Coord. Phase																
Manual Permit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manual Omit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Split	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.4 Schedules

	Month												Days Of Week							Date																															Day
	J	F	M	A	M	J	J	A	S	O	N	D	S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Plan
1	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1
2	X	X	X	X	X	X	X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2
3																																																		0	
4																																																		0	
5																																																		0	
6																																																		0	
7																																																		0	
8																																																		0	

	Month												Days Of Week							Date																															Day				
	J	F	M	A	M	J	J	A	S	O	N	D	S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Plan				
9																																																							0
10																																																							0
11																																																							0
12																																																							0
13																																																							0
14																																																							0
15																																																							0
16																																																							0

6.5 Day Plan 1

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	6	7	9	16	17	18	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0

6.5 Day Plan 1

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 2

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 2

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 3

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 3

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 4

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 4

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 5

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 5

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 6

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 6

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 7

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 7

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 8

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 8

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 9

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 9

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 10

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 10

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 11

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 11

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 12

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 12

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 13

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 13

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 14

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 14

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 15

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 15

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 16

Event#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.5 Day Plan 16

Event#	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.6 Action Parameters	1	2	3	4	5	6	7	8
Pattern	1	2	3	4	5	6	7	8
Auxiliary Function								
Special Functions 1-8								
Special Functions 9-16								
Detector Reset								
Detector VOS Log	No Action	No Action	No Action	No Action	No Action	No Action	No Action	No Action
Speed Trap Log	No Action	No Action	No Action	No Action	No Action	No Action	No Action	No Action
Cycle MOE Log	No Action	No Action	No Action	No Action	No Action	No Action	No Action	No Action
High Res Log	No Action	No Action	No Action	No Action	No Action	No Action	No Action	No Action

Organization
138-CR20 & TEXAS > Preemption > Preempts



7 Preempts	Preempt 1	Preempt 2	Preempt 3	Preempt 4	Preempt 5	Preempt 6	Preempt 7	Preempt 8
Track Phases								
Track Overlaps								
Track Ped								
Track Ped Overlap								
Dwell Phases								
Dwell Overlaps								
Dwell Peds								
Dwell Ped Overlap								
Cycling Phases								
Cycling Overlaps								
Cycling Ped								
Cycling Ped Overlap								
Exit Phase								
Locking	X	X	X	X	X	X	X	X
Override Flash	X	X	X	X	X	X	X	X
Override +1	X	X	X	X	X	X	X	X
Flash Dwell								
Enter All Red								
Ignore No Backup								
Max Presence Flash								
Track Green	0	0	0	0	0	0	0	0
Delay	0	0	0	0	0	0	0	0
Maximum Presence	0	0	0	0	0	0	0	0
Minimum Duration	0	0	0	0	0	0	0	0
Minimum Dwell	0	0	0	0	0	0	0	0
Linked Preempt	0	0	0	0	0	0	0	0
Enter Min Green	255	255	255	255	255	255	255	255
Enter Min Walk	255	255	255	255	255	255	255	255
Enter Min Ped Clear	255	255	255	255	255	255	255	255
Enter Min Yellow	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Enter Min Red Clear	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Track Min Yellow	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Track Min Red Clear	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Exit Ped Clear	0	0	0	0	0	0	0	0
Exit Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exit Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1.6 Logic Gate						1
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						2
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						3
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						4
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						5
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						6
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						7
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						8
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						9
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						10
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						11
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						12
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						13
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						14
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						15
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						16
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						17
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						18
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						19
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						20
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						21
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						22
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						23
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						24
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						25
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						26
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						27
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						28
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						31
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						29
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						32
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.6 Logic Gate						30
	Functions	IDX	!	DLY	EXT	
Type	Unused					
Out Mode	Normal					
IN1	Unused	1		0	0	
IN2	Unused	1		0	0	
IN3	Unused	1		0	0	
IN4	Unused	1		0	0	
OUT	Unused	1		0	0	
Delay/Extend Units		Tenths				

1.5.3.1 2070 FIO Input Mapping

Pins	Function	IDX	Pins	Function	IDX
C1-39	Vehicle Detector	2	C1-67	Pedestrian Detector	1
C1-40	Vehicle Detector	16	C1-68	Pedestrian Detector	3
C1-41	Vehicle Detector	8	C1-69	Pedestrian Detector	2
C1-42	Vehicle Detector	22	C1-70	Pedestrian Detector	4
C1-43	Vehicle Detector	3	C1-71	Preempt Detector	3
C1-44	Vehicle Detector	17	C1-72	Preempt Detector	4
C1-45	Vehicle Detector	9	C1-73	Preempt Detector	5
C1-46	Vehicle Detector	23	C1-74	Preempt Detector	6
C1-47	Vehicle Detector	6	C1-75	Unused Input	1
C1-48	Vehicle Detector	20	C1-76	Vehicle Detector	5
C1-49	Vehicle Detector	12	C1-77	Vehicle Detector	19
C1-50	Vehicle Detector	26	C1-78	Vehicle Detector	11
C1-51	Preempt Detector	1	C1-79	Vehicle Detector	25
C1-52	Preempt Detector	2	C1-80	Interval Advance	1
C1-53	Man Control Enable	1	C1-81	MMU Flash	1
C1-54	Unused Input	1	C1-82	Stop Time All Rings	1
C1-55	Vehicle Detector	15	C11-15	Unused Input	1
C1-56	Vehicle Detector	1	C11-16	Unused Input	1
C1-57	Vehicle Detector	21	C11-17	Unused Input	1
C1-58	Vehicle Detector	7	C11-18	Unused Input	1
C1-59	Vehicle Detector	27	C11-19	Unused Input	1
C1-60	Vehicle Detector	13	C11-20	Unused Input	1
C1-61	Vehicle Detector	28	C11-21	Unused Input	1
C1-62	Vehicle Detector	14	C11-22	Unused Input	1
C11-10	Unused Input	1	C11-23	Unused Input	1
C11-11	Unused Input	1	C11-24	Unused Input	1
C11-12	Unused Input	1	C11-25	Unused Input	1
C11-13	Unused Input	1	C11-26	Unused Input	1
C1-63	Vehicle Detector	4	C11-27	Unused Input	1
C1-64	Vehicle Detector	18	C11-28	Unused Input	1
C1-65	Vehicle Detector	10	C11-29	Unused Input	1
C1-66	Vehicle Detector	24	C11-30	Unused Input	1

1.5.3.2 2070 FIO Output Mapping

Pins	Function	IDX	Pins	Function	IDX
C1-02	Channel Red	6	C1-35	Unused Output	1
C1-03	Channel Green	6	C1-36	Unused Output	1
C1-04	Channel Red	5	C1-37	Unused Output	1
C1-05	Channel Yellow	5	C1-38	Unused Output	1
C1-06	Channel Green	5	C1-100	Unused Output	1
C1-07	Channel Red	4	C1-101	Auto Flash Status	1
C1-08	Channel Yellow	4	C1-102	Detector Reset	1
C1-09	Channel Green	4	C1-103	Wdt Reset	1
C1-10	Channel Red	3	C1-83	Unused Output	1
C1-11	Channel Green	3	C1-84	Unused Output	1
C1-12	Channel Red	2	C1-85	Channel Red	16
C1-13	Channel Yellow	2	C1-86	Channel Yellow	16
C1-15	Channel Green	2	C1-87	Channel Green	16
C1-16	Channel Red	1	C1-88	Channel Red	15
C1-17	Channel Yellow	1	C1-89	Channel Yellow	15
C1-18	Channel Green	1	C1-90	Channel Green	15
C1-19	Channel Red	12	C1-91	Unused Output	1
C1-20	Channel Green	12	C1-93	Unused Output	1
C1-21	Channel Red	11	C1-94	Channel Red	14
C1-22	Channel Yellow	11	C1-95	Channel Yellow	14
C1-23	Channel Green	11	C1-96	Channel Green	14
C1-24	Channel Red	10	C1-97	Channel Red	13
C1-25	Channel Yellow	10	C1-98	Channel Yellow	13
C1-26	Channel Green	10	C1-99	Channel Green	13
C1-27	Channel Red	9	C11-1	Unused Output	1
C1-28	Channel Green	9	C11-2	Unused Output	1
C1-29	Channel Red	8	C11-3	Unused Output	1
C1-30	Channel Yellow	8	C11-4	Unused Output	1
C1-31	Channel Green	8	C11-5	Unused Output	1
C1-32	Channel Red	7	C11-6	Unused Output	1
C1-33	Channel Yellow	7	C11-7	Unused Output	1
C1-34	Channel Green	7	C11-8	Unused Output	1

9.3-4 Log Configuration

Volume Occupancy Period	60
VOS Log Combined Periods	0
Speed Trap Log Period	0
Display Metric	
Speed Trap Log Mode	Disabled
VOS Log Mode	Disabled
Cycle MOE Log Mode	Disabled
High Res Log Mode	Disabled
Power On/Off	X
Low Battery	X
Cycle Fault	X
Coord Fault	X
Coord Fail	X
Cycle Fail	X
MMU Flash	X
Local Flash	X
Local Free	X
Preempt Status Change	X
Response Fault	X
Alarm Status Change	X
Door Status Change	X
Pattern Change	X
Detector Status Change	X
Comm Status Change	X
Command Change	X
Data Change Keyboard	X
Controller Download	X
Access Code	X
Priority	X
Manual Control Enable	X
Stop Time	X

6.2 Time Zone

Global DST	Enable DST
Standard Time Zone (+/- hr)	0

A.3 Unit Comms

Unit Backup Time	0
------------------	---

1.5.5 Aux Switch

Function	Stop Time All Rings
Index	1

A.5-6 Time Sync

NTP Server Address	0.0.0.0
NTP Start Hour	0
NTP Start Minute	0
NTP Interval Hour	0
NTP Interval Minute	0
GPS Start Hour	0
GPS Start Minute	0
GPS Interval Hour	0
GPS Interval Minute	0
Enable NTP Svr	

1.7 Port 1

BIU 1 (T&F BIU 1)	Disabled
BIU 2 (T&F BIU 2)	Disabled
BIU 3 (T&F BIU 3)	Disabled
BIU 4 (T&F BIU 4)	Disabled
BIU 9 (Detector BIU 1)	Disabled
BIU 10 (Detector BIU 2)	Disabled
BIU 11 (Detector BIU 3)	Disabled
BIU 12 (Detector BIU 4)	Disabled
MMU	Disabled
Comm Port	SP3

9.3-4 Hi Res Log Setup

Phase Events	
Ped Events	
Barrier/Ring Events	
Phase Control Events	
Overlap Events	
Detector Events	
Preemption Events	
Coordination Events	
Cabinet/System Events	

B.1.1 Menu Security Options

Enable:	☐	Allow Read-Only:	☐	Timeout (min):	60
---------	--------------------------	------------------	--------------------------	----------------	----

B.1.2 Menu Security Users

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
User Id	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operation																
Unit																
I/O Map																
Phase																
Overlap																
Detector																
Coord																
Time Base																
Preempt																
Transit																
Logs																
Comm																
Security																
Database																
SW Update																

	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
User Id	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operation																
Unit																
I/O Map																
Phase																
Overlap																
Detector																
Coord																
Time Base																
Preempt																
Transit																
Logs																
Comm																
Security																
Database																
SW Update																

Organization
138-CR20 & TEXAS > Miscellaneous > Menu Security



	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
User Id	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operation																
Unit																
I/O Map																
Phase																
Overlap																
Detector																
Coord																
Time Base																
Preempt																
Transit																
Logs																
Comm																
Security																
Database																
SW Update																

	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
User Id	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operation																
Unit																
I/O Map																
Phase																
Overlap																
Detector																
Coord																
Time Base																
Preempt																
Transit																
Logs																
Comm																
Security																
Database																
SW Update																

A.1 Serial Comms

Port	1	2	3	4	5	8
Protocol	None	None	None	None	None	None
Speed	9600	9600	9600	115200	9600	9600
Parity	None	None	None	None	None	None
Flow Control	None	None	None	None	None	None
Address	0	0	0	0	0	0
Group Address	0	0	0	0	0	0
Data Bits	8 data bits	8 data bits	8 data bits	8 data bits	8 data bits	8 data bits
Stop Bits	1 stop bit	1 stop bit	1 stop bit	1 stop bit	1 stop bit	1 stop bit
CTS Delay	0	0	0	0	0	0
RTS Extend	0	0	0	0	0	0

A.2 Ethernet Comms

Port	1	2
IP Address	0.0.0.0	192.168.2.9
Net Mask	0.0.0.0	255.255.255.0
Gateway	0.0.0.0	0.0.0.0
NTCIP Port	161	161
NTCIP Mode	UDP	UDP
AB3418 Port	8001	8001
AB3418 Mode	UDP	UDP
AB3418 Address	1	1
AB3418 Group Address	0	0
Peer to Peer Port	49255	49255

A.8 SPaT

Unicast Enable	
Dest IP Address	0.0.0.0
Dest Port	0

APPENDIX C

detailed Site Plan



WATERSTONE ANDERDON DEVELOPMENTS

FRONT ROAD SUBDIVISION
IN THE TOWN OF AMHERSTBURG

FEBRUARY 2022

Project Number: 165620244

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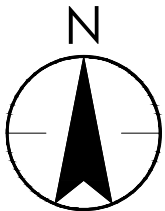


SITE PLAN

SCALE = 1:7,500

LEGEND

--- SAN ---	Sanitary Sewer	■ C.M.	Concrete Monument	○ HMH	Hydro Manhole
--- ST ---	Storm Sewer	■ S.I.B.	Standard Iron Bar	■ CB	Catch Basin
--- COMB ---	Combined Sewer	■ I.B.	Iron Bar	● HYD	Hydrant
--- W ---	Watermain	● R.I.B.	Round Iron Bar	⊗ WV	Water Valve
--- G ---	Gasmain	● C.C.	Cut Cross	⊗ WSV	Water Service Valve
--- B ---	Buried Bell Cable	● H&TRANS	Hydro Pole & Transformer	● WM	Water Meter
--- H ---	Buried Hydro Cable	● H&LS	Hydro Pole & Light Standard	● GV	Gas Valve
--- TV ---	Buried Television Cable	● H → GW	Hydro Pole & Guy Wire	● GM	Gas Meter
--- T ---	Buried Traffic Light Cable	● H	Hydro Pole	⊗ BTB	Bell Telephone Box
--- P/L ---	Property Line	● GP	Bell Telephone Pole	△ CTV	Cable Television Box
--- X WF ---	Wire Fence or Chain Link Fence	● TL	Guy Pole	□ MB	Mail Box
--- Wd F ---	Wood Fence	● T	Telegraph Pole	○ S	Sign
--- V ---	Vinyl Fence	○ TL	Traffic Light Pole	○ S	Deciduous Tree (Size & Type)
--- St R ---	Guide Rail	○ LS	Light Standard	○ S	Coniferous Tree (Size & Type)
--- Hedge ---	Hedge	○ MH	Sewer Manhole	○ S	Bushes & Shrubs
--- Ditch ---	Ditch	○ BTMH	Bell Telephone Manhole		
--- CONC WALK ---	Concrete Sidewalk	○ WMH	Water Manhole		
--- GR DR ---	Gravel Drive				
--- ASPH DR ---	Asphalt Drive				
--- CONC DR ---	Concrete Drive				



KEY PLAN

INDEX TO DRAWINGS

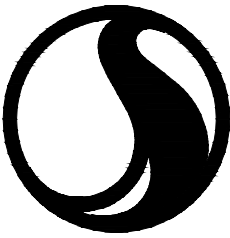
G-001	COVER SHEET
G-002	SITE PLAN, KEY PLAN, LEGEND, NOTES AND INDEX TO DRAWINGS
C-001	OVERALL SANITARY SEWER LAYOUT
C-002	OVERALL STORM SEWER LAYOUT
C-003	OVERALL WATERMAIN LAYOUT
C-004	LOT GRADING PLAN
C-005	REMOVALS
CU-001	STREET 'A' - STA. 0+000 TO STA. 0+130
CU-002	STREET 'A' - STA. 0+130 TO STA. 0+260
C-107	HIGH VOLTAGE DISTRIBUTION AND TRANSFORMER LAYOUT
C-108	SECONDARY DISTRIBUTION AND STREETLIGHTING
C-109	DUCT LINE
C-110	ELECTRICAL DETAILS
C-111	ELECTRICAL TRANSFORMER DETAILS
C-112	ELECTRICAL MVI DETAILS
C-113	ELECTRICAL DETAILS
C-301	TYPICAL CROSS SECTION
C-501	STANDARD DETAILS
C-502	STANDARD DETAILS
C-503	STANDARD DETAILS
C-504	STANDARD DETAILS
C-701	REFERENCE DRAWING - LEGAL SURVEY PLAN

BENCHMARK :

BENCH MARK 0011959U510 ELEVATION 181.21
RED BRICK HOUSE NO. 687 ON EAST SIDE OF HIGHWAY NO. 18, 3.9 KM
NORTH OF POST OFFICE, 670 M NORTH OF LIMEKILN CROSSING REAR RANGE
LIGHT, NEARLY OPPOSITE LIVINGSTON CHANNEL UPPER ENTRANCE LIGHT,
TABLET IN WEST FACE OF HOUSE, 12 CM FROM SOUTHWEST CORNER, 57 CM
ABOVE WATER TABLE. ESTABLISHED BY UNITED STATES LAKE SURVEY.

SITE BENCH MARK

NAIL IN WOOD UTILITY POLE ELEVATION 180.50
NAIL IN EAST FACE OF WOOD UTILITY POLE, 0.5 M ABOVE GRADE, LOCATED ON
EAST SIDE OF COUNTY ROAD 20, 25 M SOUTH OF NORTHWEST CORNER OF
SUBJECT PROPERTY



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Client/Project

WATERSTONE ANDERDON DEVELOPMENT

FRONT ROAD SUBDIVISION

Town of Amherstburg, Ontario

Title

SITE PLAN, KEY PLAN, LEGEND, NOTES
AND INDEX TO DRAWINGS

Project No.

165620244

Scale

SCALE

Revision Sheet

Drawing No.

G-002

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Legend

- 250 — — DENOTES SIZE OF EXISTING SANITARY SEWER
— 300 — — DENOTES SIZE OF PROPOSED SANITARY SEWER
— 200 — — DENOTES SIZE OF FUTURE SANITARY SEWER
— MH S-2 — — DENOTES MANHOLE AND MANHOLE NUMBER
0.988 DENOTES AREA IN HECTARES
56.0 DENOTES NUMBER OF PEOPLE

Notes

Revision By Appd. YY.MM.DD

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FRONT ROAD SUBDIVISION

Town of Amherstburg, Ontario

Title
OVERALL SANITARY SEWER PLAN

Project No.

165620244

Revision Sheet

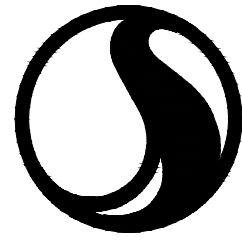
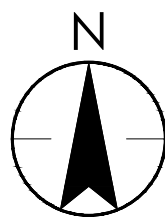
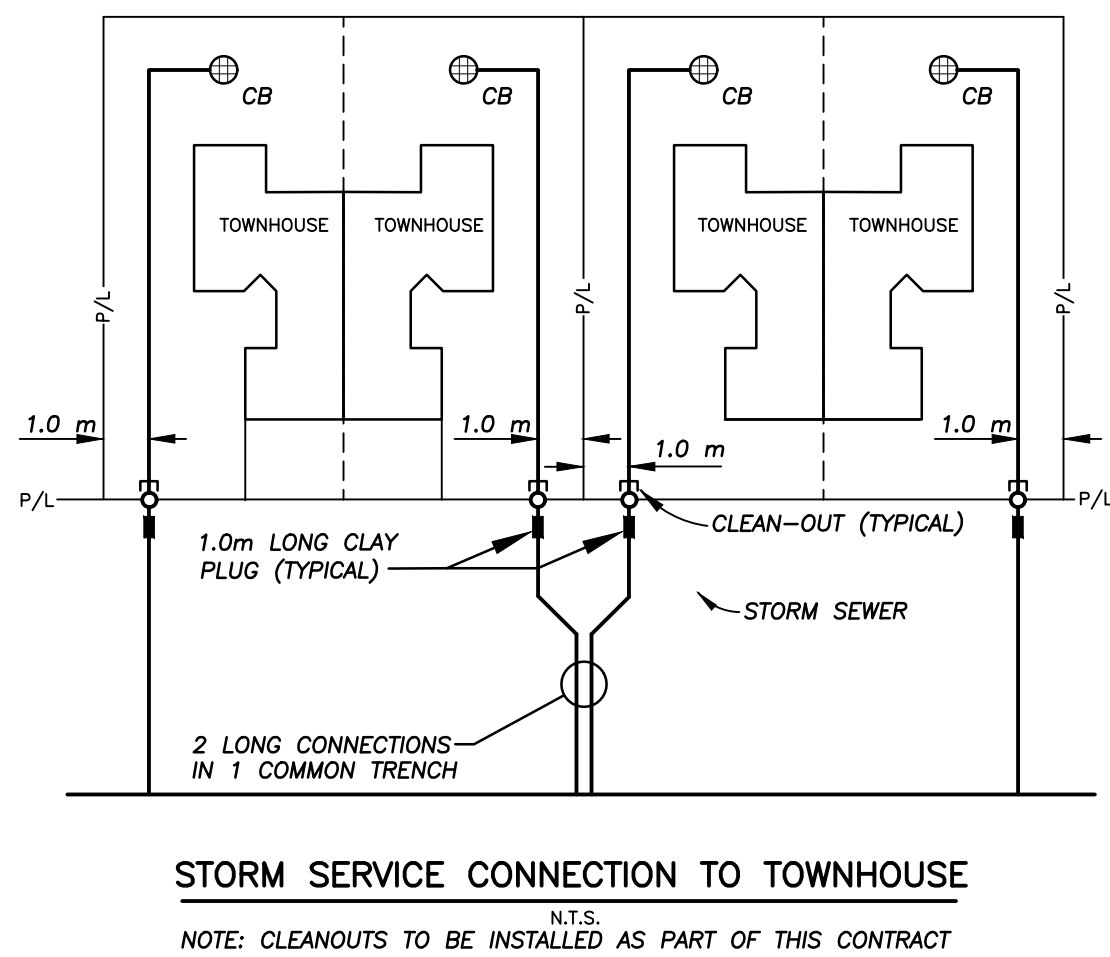
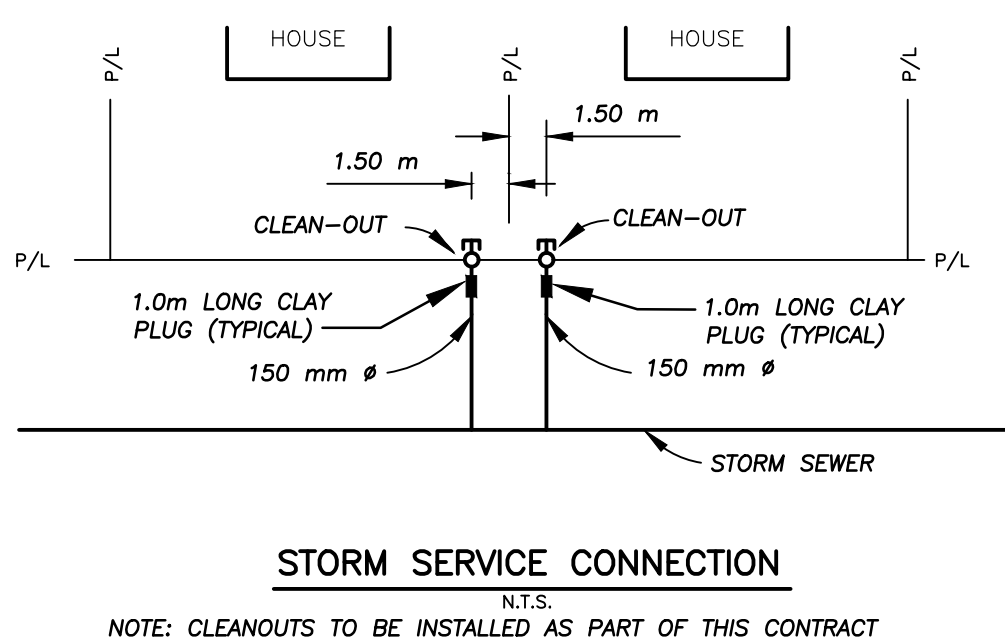
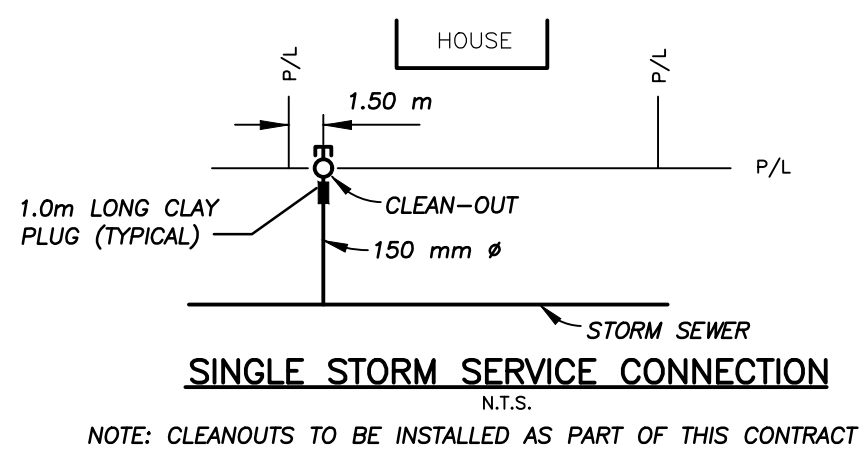
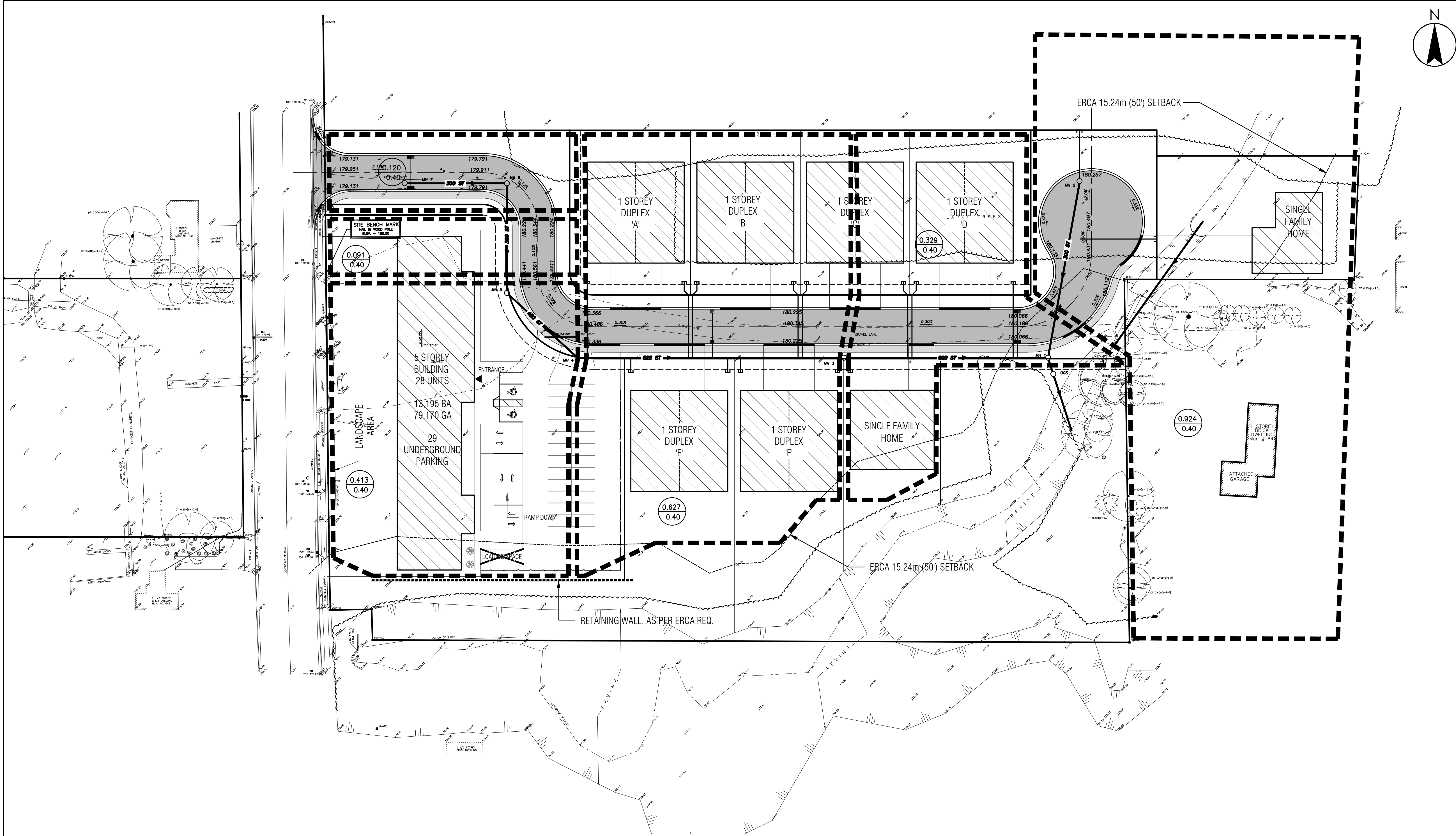
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C-001

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Legend

- 375 ST DENOTES SIZE OF EXISTING STORM SEWER
- 375 ST DENOTES SIZE OF PROPOSED STORM SEWER
- MH 4 DENOTES MANHOLE AND MANHOLE NUMBER
- OVERLAND FLOW ROUTE
- 2.972 DENOTES AREA IN HECTARES
- 0.90 DENOTES RUNOFF COEFFICIENT

Notes

Revision By Appd. YY.MM.DD

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FRONT ROAD SUBDIVISION

Town of Amherstburg, Ontario
Title
OVERALL STORM SEWER PLAN

Project No.
165620244

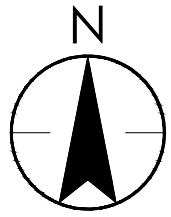
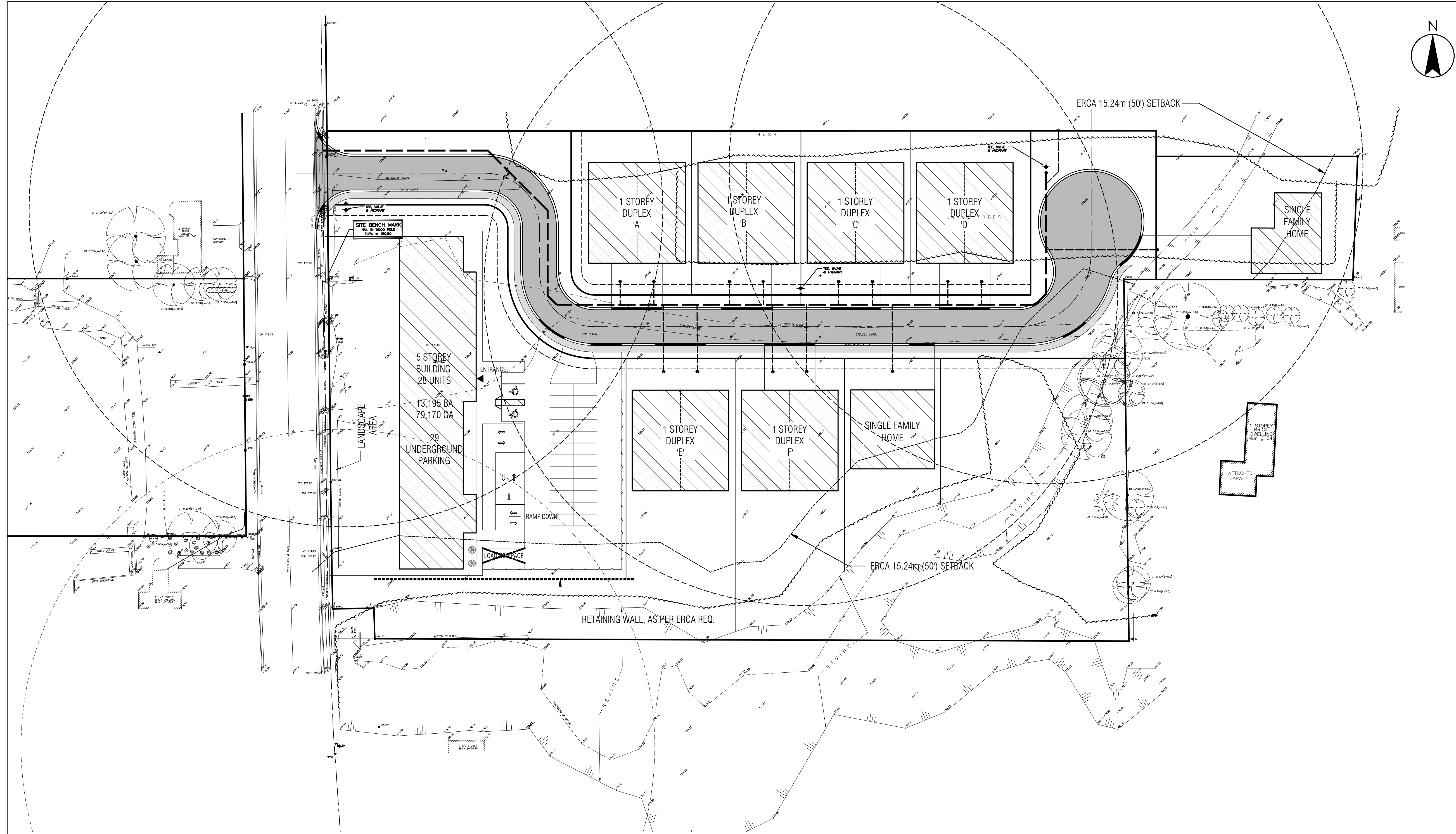
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Legend

- 150 W DENOTES SIZE OF EXISTING WATERMAIN
- 200 W DENOTES SIZE OF PROPOSED WATERMAIN
- 150 W DENOTES SIZE OF FUTURE WATERMAIN
- DENOTES FIRE HYDRANT
- DENOTES BLOW-OFF
- DENOTES WATER VALVE
- WSV DENOTES PRIVATE WATER SERVICE VALVE

Notes

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Title
OVERALL WATERMAIN LAYOUT PLAN

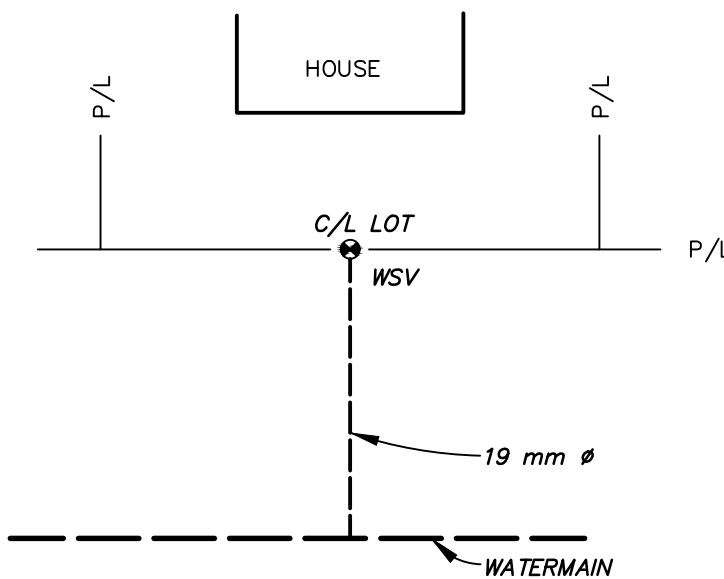
Project No.
165620244

Revision Sheet

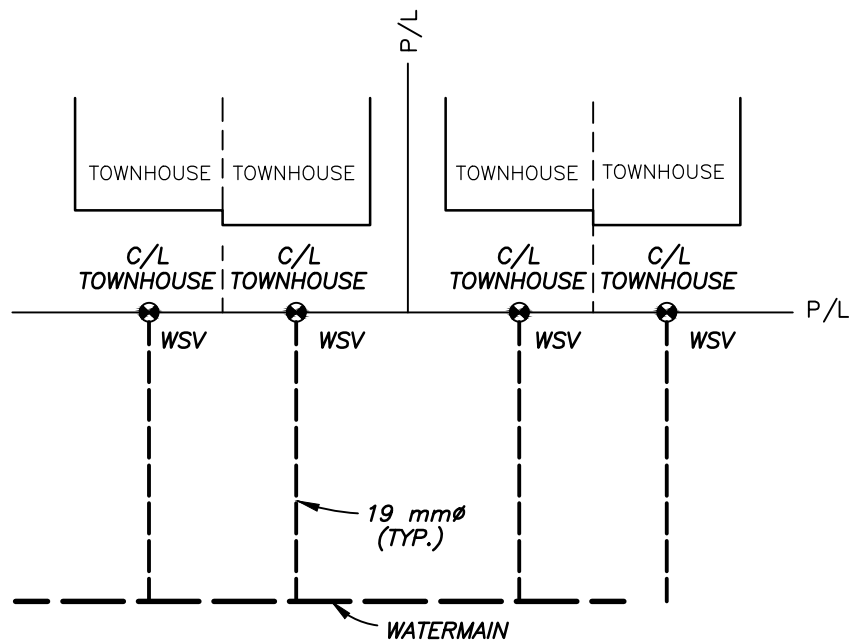
Scale
1:500

Drawing No.

C-003



TYPICAL WATER SERVICE CONNECTION
N.T.S.



WATERMAIN SERVICE CONNECTION TO TOWNHOUSE
N.T.S.



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Revision	By	Appd.	YY.MM.DD
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File Name: 165620244_C-001-3	Dwn.	Chkd.	2020. YY.MM.DD

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Client/Project
WATERSTONE ANDERDON DEVELOPMENT

FRONT ROAD SUBDIVISION

Town of Amherstburg, Ontario

Title
LOT GRADING PLAN

Project No.

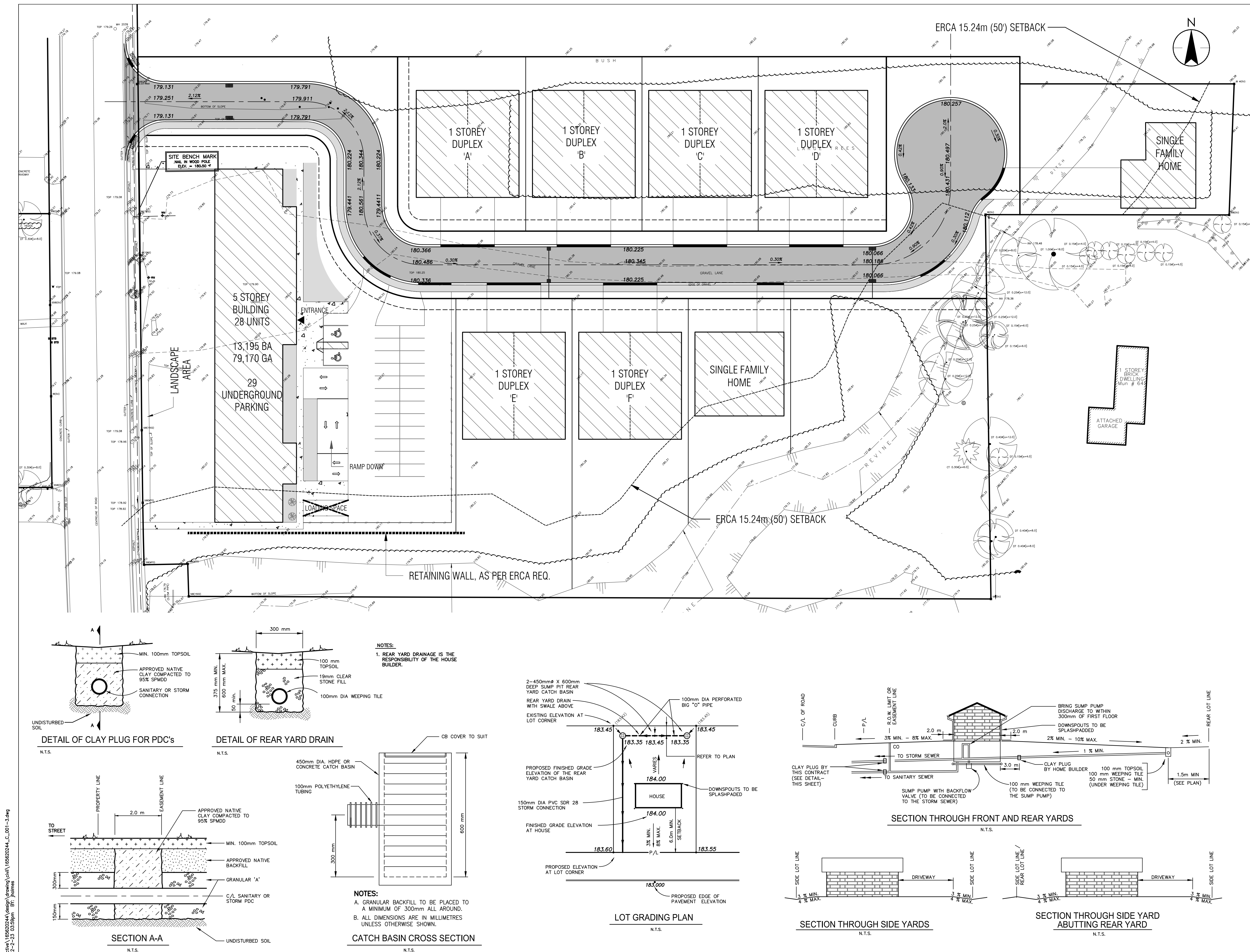
165620244
Revision Sheet

Scale

1:400

Drawing No.

C-004



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2022-2-23 03:59pm BY: jholmes

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Legend

- ASPHALT ROAD
- ASPHALT WALKS, DRIVEWAYS
- CONCRETE - WALKS, DRIVEWAYS
- MILL ASPHALT
- STRIP AND REMOVE DELETERIOUS MATERIAL AND INFILL DITCH WITH APPROVED FILL MATERIAL, COMPACT AS SPECIFIED
- CLEAR AND GRUB TREES AND BRUSH
- TREES TO BE REMOVED (INCLUDING STUMPS) BY OTHERS PRIOR TO CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR REMOVAL OF STUMPS.
- C.B. TO BE REMOVED & LEAD PLUGGED UNLESS OTHERWISE NOTED ON UTILITY DRAWINGS.
- UTILITY POLES (H. & L. ETC.) AND TRAFFIC POLES (T.L.) TO BE REMOVED.
- SEWERS, GUIDE RAILS, CURBS, ETC. TO BE REMOVED

Notes

- CONTRACTOR TO PROVIDE DRIVEWAY ACCESS FOR ALL PROPERTIES AT ALL TIMES DURING CONSTRUCTION UNLESS ALTERNATE ARRANGEMENTS HAVE BEEN MADE WITH THE PROPERTY OWNER.
- CONTRACTOR TO PROVIDE PEDESTRIAN ACCESS THROUGH THE SITE AND TO ALL BUSINESSES AT ALL TIMES DURING CONSTRUCTION.
- COORDINATE ALL WORK WITH THE DETOUR STAGING.
- COORDINATE ALL UTILITY REMOVALS WITH THE APPROPRIATE UTILITY.
- CONTRACTOR TO SAWCUT FULL DEPTH ALL CURBS, ASPHALT, CONCRETE DRIVEWAYS, PARKING LOTS, WALKWAYS AND ROADWAYS TO BE FULLY REMOVED PRIOR TO REMOVAL.
- EXISTING SIGNS TO BE REMOVED OR RELOCATED AS DIRECTED BY THE ENGINEER OR THE TOWN.
- EXISTING GARBAGE BINS, PLANTERS, BENCHES, ETC ARE TO BE REMOVED BY THE TOWN PRIOR TO CONSTRUCTION.

Revision

	By	Appd.	YY.MM.DD

Issued

File Name:	165620244_C_001-3	2020.
	Dwn.	Chkd.
	Dsgn.	

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WATERSTONE ANDERDON DEVELOPMENT

FRONT ROAD SUBDIVISION

Town of Amherstburg, Ontario

Title

REMOVALS

Project No.

165620244

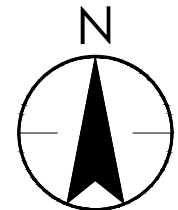
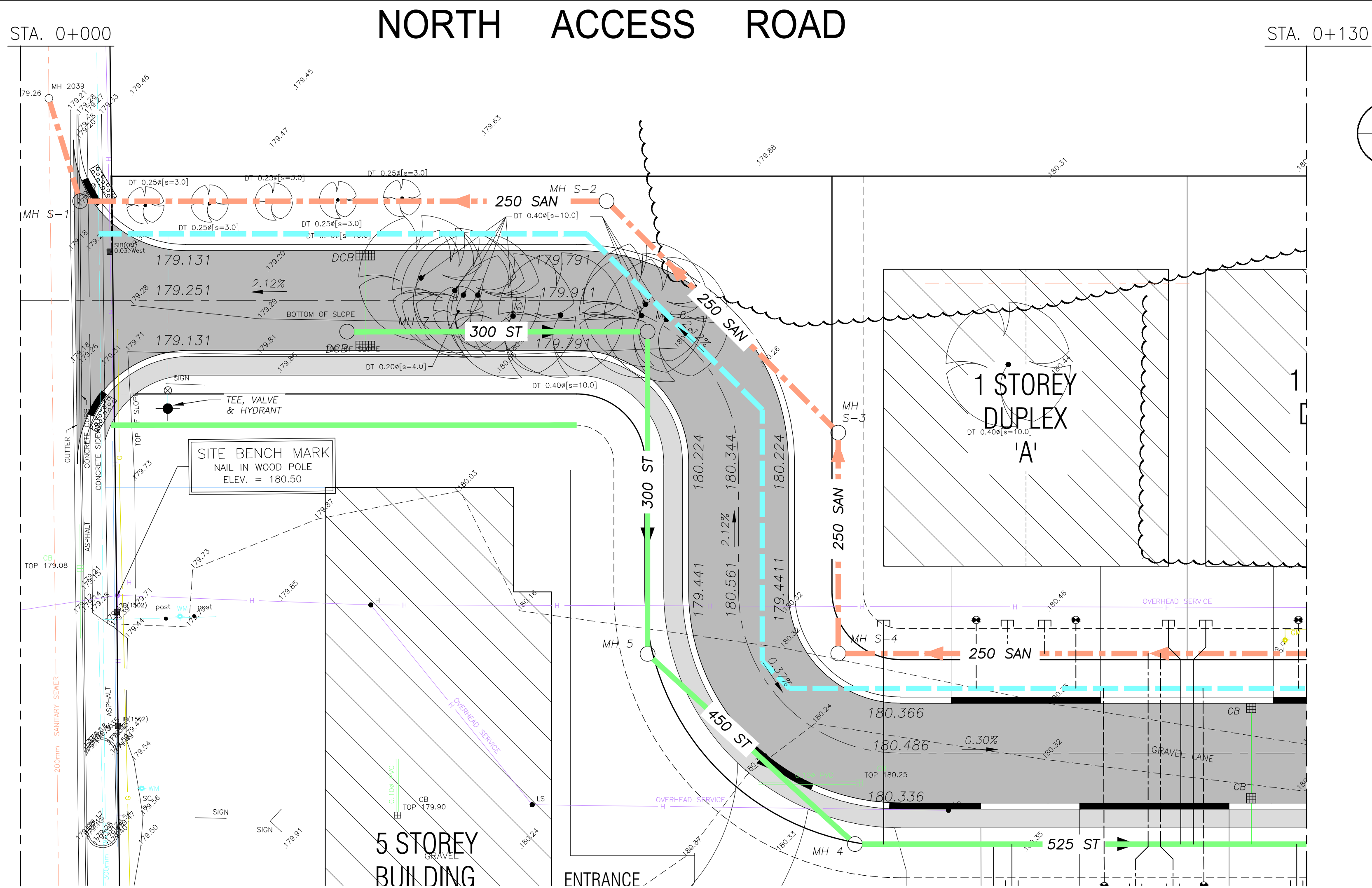
Revision Sheet

Scale

1:400

Drawing No.

C-005



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Legend

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File Name: 165620244_C_001-3 Dwn. Chkd. Dsgn. YY.MM.DD

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Client/Project
WATERSTONE ANDERDON DEVELOPMENT

FRONT ROAD SUBDIVISION

Town of Amherstburg, Ontario

Title
PLAN AND PROFILE
STA. 0+000 TO STA. 0+135

Project No.

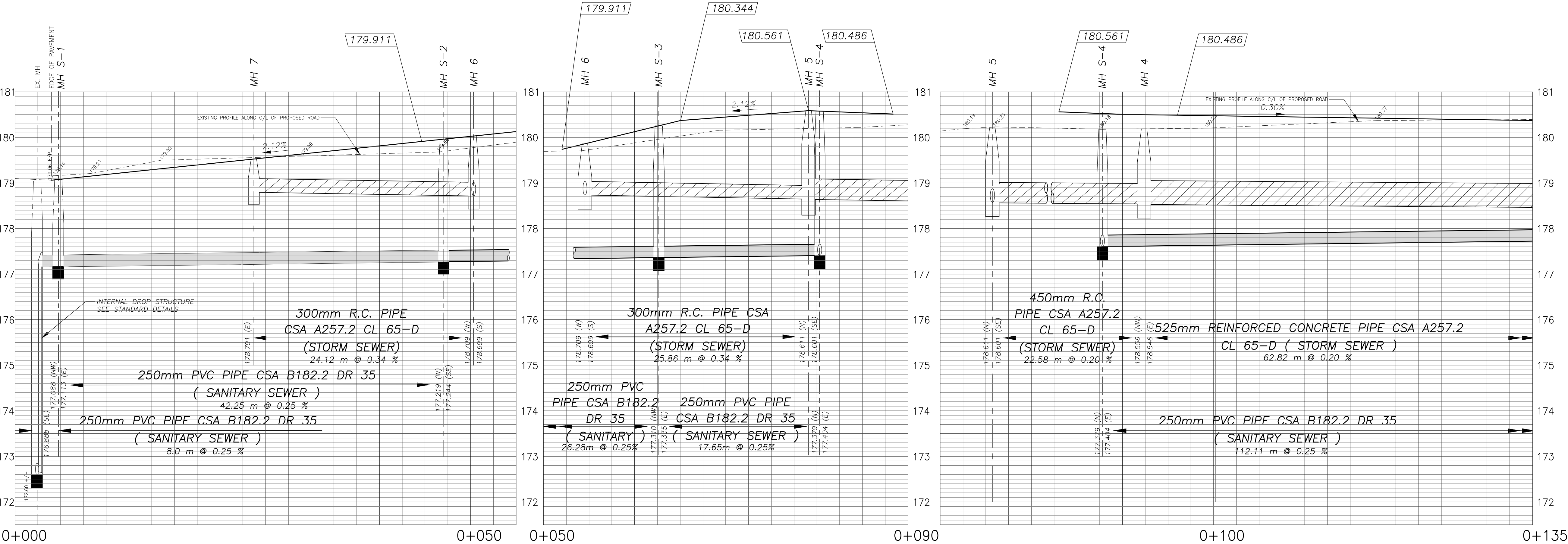
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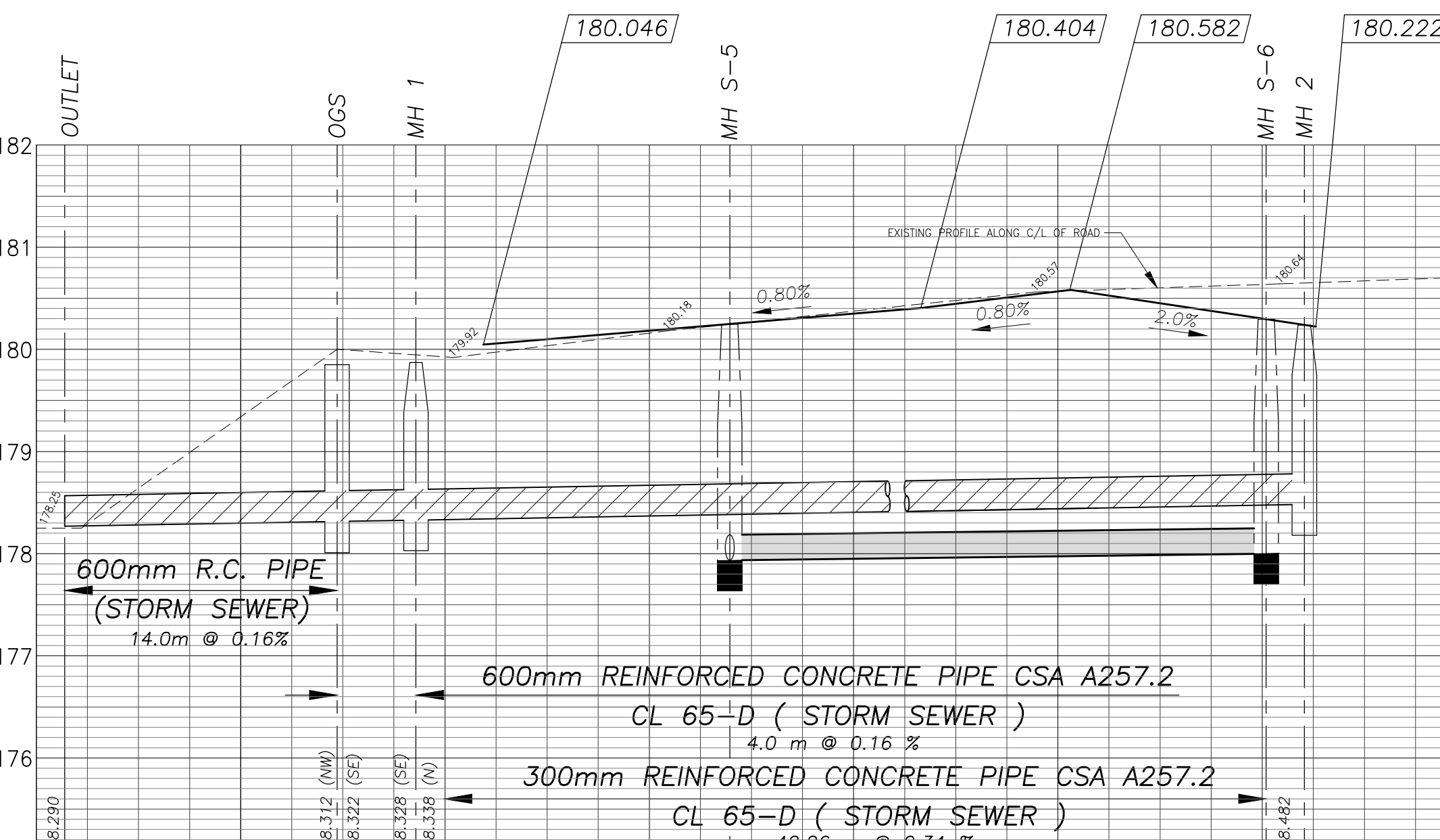
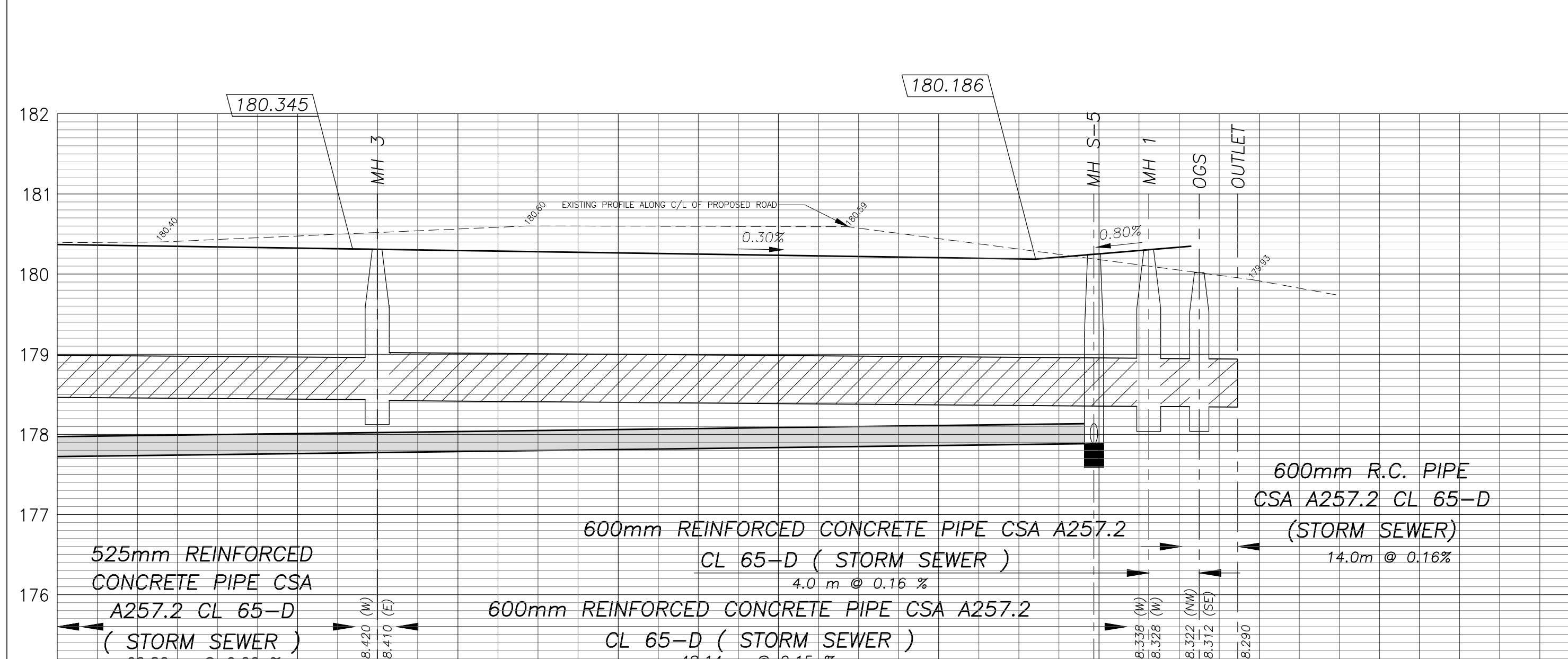
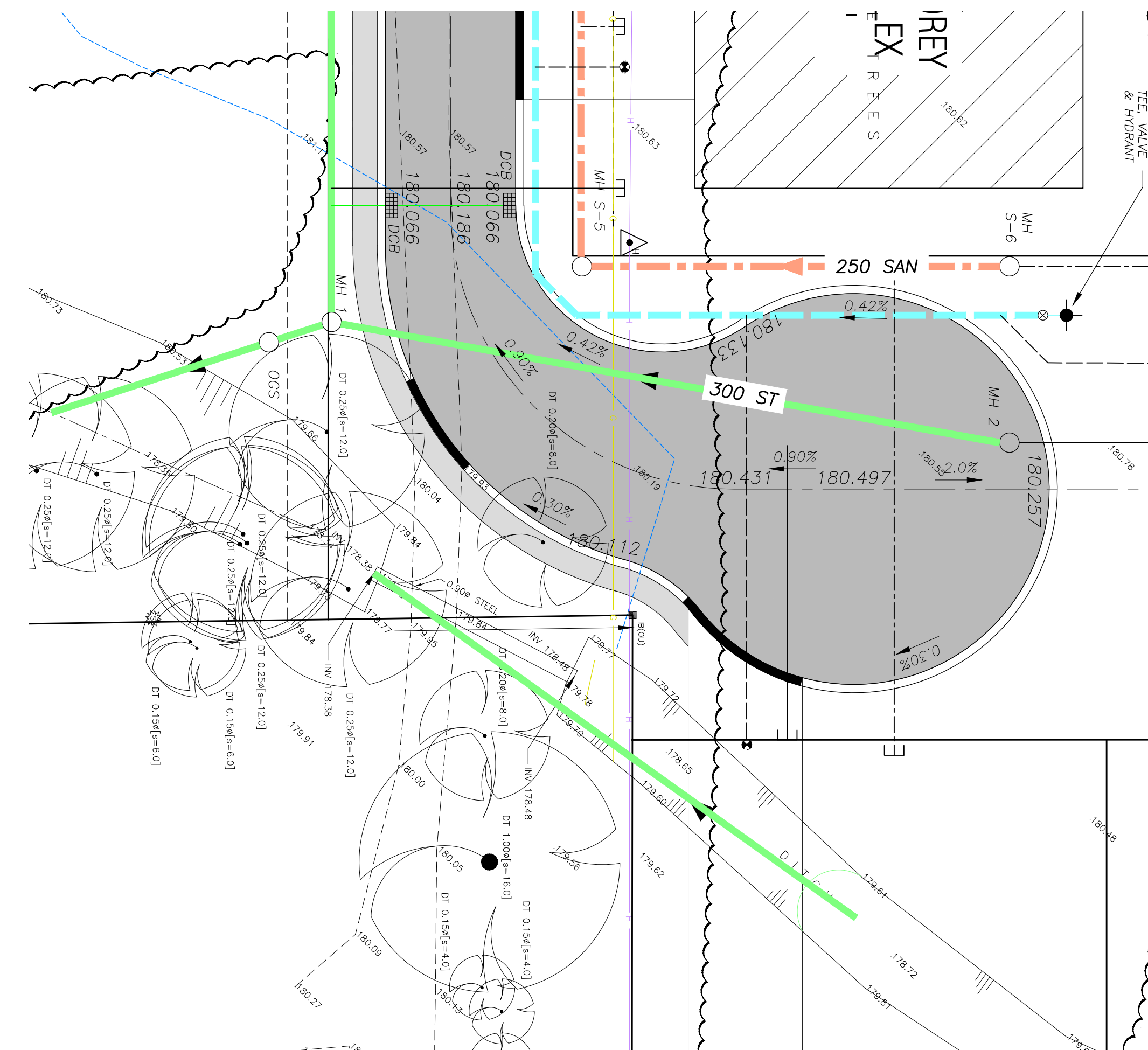
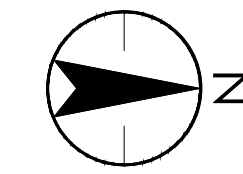
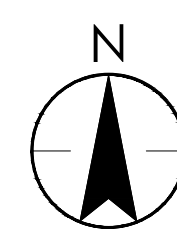
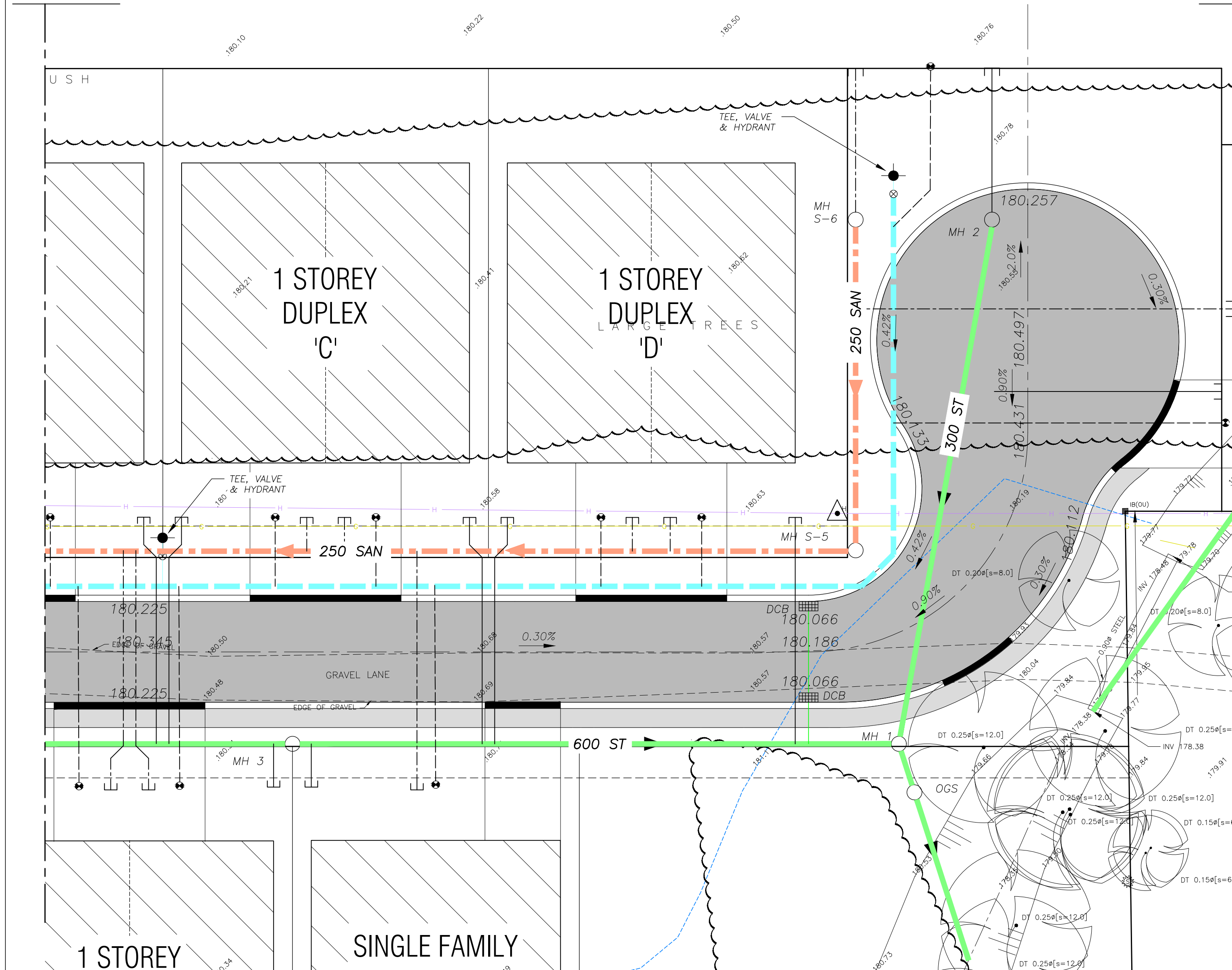
Revision Sheet

Drawing No.

CU-001



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2022-2-23 04:00pm B6 jhmms



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Legend

Notes

[illegible]

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Client/Project
WATERSTONE ANDERDON DEVELOPMENT

FRONT ROAD SUBDIVISION

Town of Amherstburg, Ontario
Title
PLAN AND PROFILE
STA 0+130 TO STA 0+270



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Technical drawing of a road cross-section showing a 150mm deep swale. The drawing includes dimensions for the finished road surface, the 150mm deep swale, and the 150mm deep backfill behind the curb. The swale is filled with 19mm clear stone and has a 150mm diameter perforated plastic pipe wrapped in geotextile fabric. The backfill is to be filled to the final grade upon completion of house construction.

Diagram illustrating a typical cross-section of a road and its associated infrastructure, showing various components and dimensions.

Dimensions and Layout:

- Overall Width:** 15.00m C/L of ROW.
- Travel Lanes:** 10.00m (each side of centerline).
- Shoulders:** 0.50m (each side of travel lanes).
- Sidewalks:** 1.50m (each side of travel lanes).
- Curbs:** 0.20m (each side of travel lanes).
- Offsets:** 0.30m (each side of travel lanes).
- Utilities:**
 - Gasmain (0.6m offset from curb)
 - Sanitary Sewer (0.6m offset from curb)
 - Fire Hydrant (0.6m offset from curb)
 - Watermain (1.7m min cover)
 - Storm Sewer (0.6m offset from curb)
 - Transformer (0.6m offset from curb)
 - Cable and Bell (0.6m offset from curb)
- Landscaping:** Light Standard, Trees and Light Standard (0.6m offset from curb).
- Other Dimensions:** 2.50m, 5.50m, 10.00m, 15.00m, 0.30m, 0.6m, 1.35m, 2.70m, 3.70m, 5.00m, 10.00m, 15.00m.

Materials and Construction:

- 40 mm HL3 ASPHALT - SURFACE COURSE
- 50 mm HL4 ASPHALT - BASE COURSE
- MINIMUM 150 mm GRANULAR 'A' ON MINIMUM 300 mm GRANULAR 'B' COMPACTED TO 100% S.P.M.D.D.
- BARRIER CONCRETE CURB AND GUTTER (OPSD 600.04)

Slopes:

- 3% MIN. (Roadway)
- 2% TO 4% (Sidewalk)

Labels:

- NORTH OR EAST EASEMENT
- NORTH OR WEST P/L
- SOUTH OR WEST EASEMENT
- LIGHT STANDARD
- TREES AND LIGHT STANDARD
- GASMAIN
- SANITARY SEWER
- FIRE HYDRANT
- WATERMAIN (MIN 1.7m COVER)
- STORM SEWER
- TRANSFORMER
- CABLE AND BELL

TYPICAL CROSS-SECTION

The diagram illustrates a typical cross-section of a road with the following components and dimensions:

- Overall Width:** 15.00m C/L OF ROW
- Left Side (North or East Easement):**
 - 2.50m from easement to tree/light standard.
 - 5.50m from tree/light standard to curb.
 - 2.00m from curb to fire hydrant.
 - 3.70m from fire hydrant to centerline.
 - 1.00m from centerline to gasmain.
 - 0.30m from gasmain to easement.
- Right Side (South or West Easement):**
 - 2.50m from easement to tree/light standard.
 - 3.70m from tree/light standard to curb.
 - 1.50m from curb to sidewalk.
 - 0.20m from sidewalk to centerline.
 - 0.30m from centerline to gasmain.
 - 1.35m from gasmain to easement.
- Centerline (C/L OF ROW):**
 - 10.00m from left curb to centerline.
 - 10.00m from centerline to right curb.
 - 0.50m from centerline to right sidewalk.
- Pavement and Structure Details:**
 - 40 mm HL3 ASPHALT - SURFACE COURSE
 - 50 mm HL4 ASPHALT - BASE COURSE
 - MINIMUM 150 mm GRANULAR 'A' ON MINIMUM 300 mm GRANULAR 'B' COMPACTED TO 100% S.P.M.D.D.
 - BARRIER CONCRETE CURB AND GUTTER (OPSD 600.04)
 - 3.0% slope on both sides of the centerline.
 - 2% TO 4% slope on the right sidewalk.
 - 0.20m high curb.
 - 0.30m high gutter.
 - 1.70m (MIN) depth for watermain.
 - 0.6m depth for gasmain.
- Utilities:**
 - GASMAIN
 - SANITARY SEWER
 - FIRE HYDRANT, TREES AND LIGHT STANDARD
 - WATERMAIN (MIN 1.7 m COVER)
 - TRANSFORMER (C/L HYDRO, CABLE AND BELL)
 - STORM SEWER

TYPICAL CROSS-SECTION

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Town of Amherstburg, Ontario
Title
TYPICAL CROSS SECTIONS

Project No.	Scale
165620244	1:50
Revision	Sheet
	Drawing No.

C-301

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Legend

Notes

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Issued	By	Appd.	YY.MM.DD
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File Name:	165620244_C_301		2020.
	Dwn.	Chkd.	Dsgn.

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Client/Project
WATERSTONE ANDERDON DEVELOPMENT

FRONT ROAD SUBDIVISION

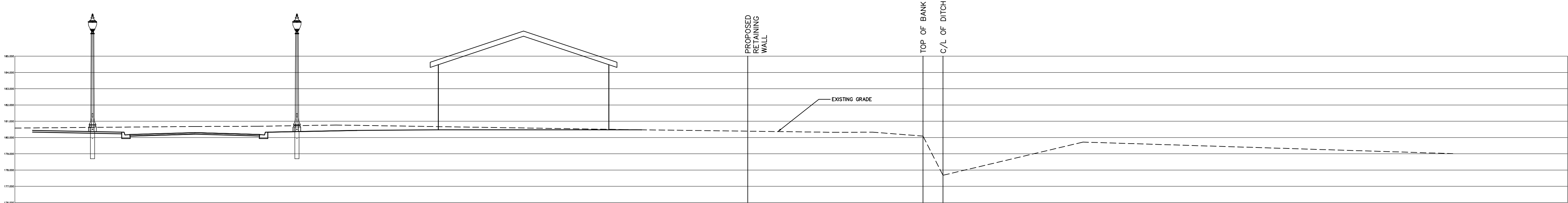
Town of Amherstburg, Ontario

Title
CROSS SECTIONS OF UNITS ALONG
SOUTH SIDE OF ROAD

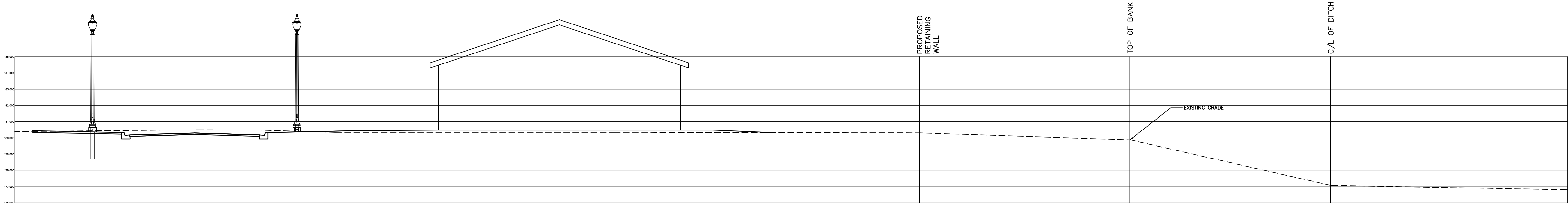
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Revision	Sheet	Drawing No.
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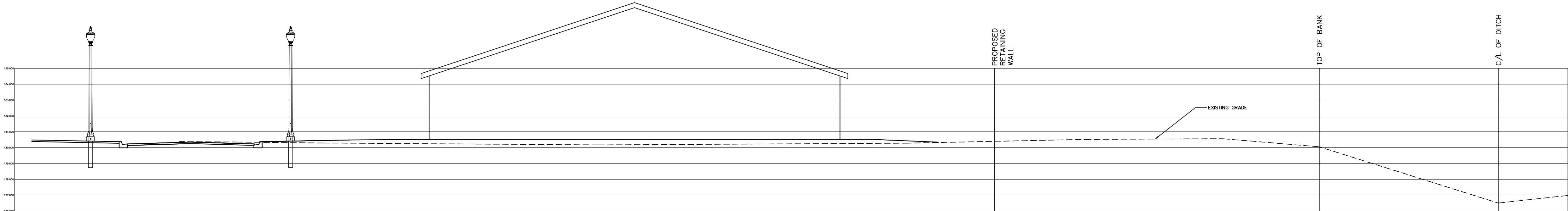
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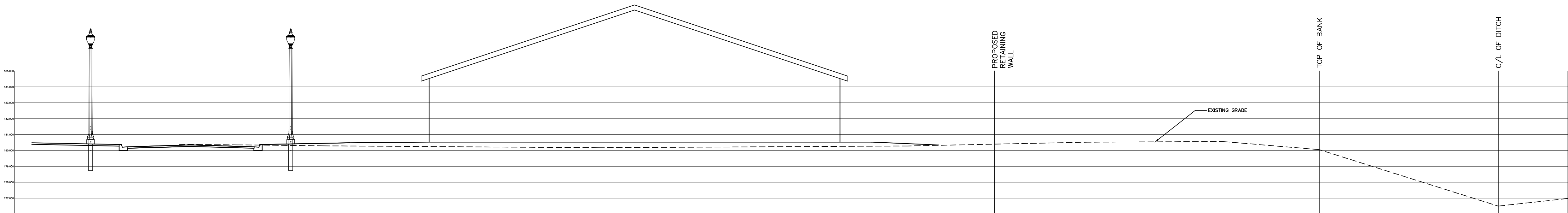
SINGLE FAMILY HOME - SECTION ALONG EAST PROPERTY LINE



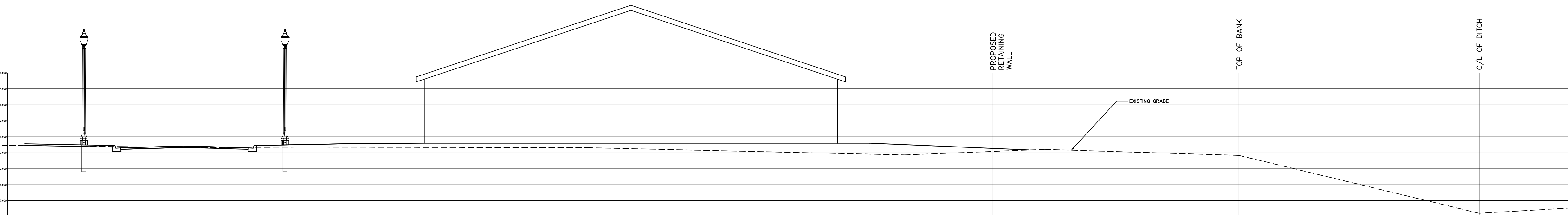
SINGLE FAMILY HOME - SECTION ALONG WEST PROPERTY LINE



1 STOREY DUPLEX 'F'



1 STOREY DUPLEX 'F'

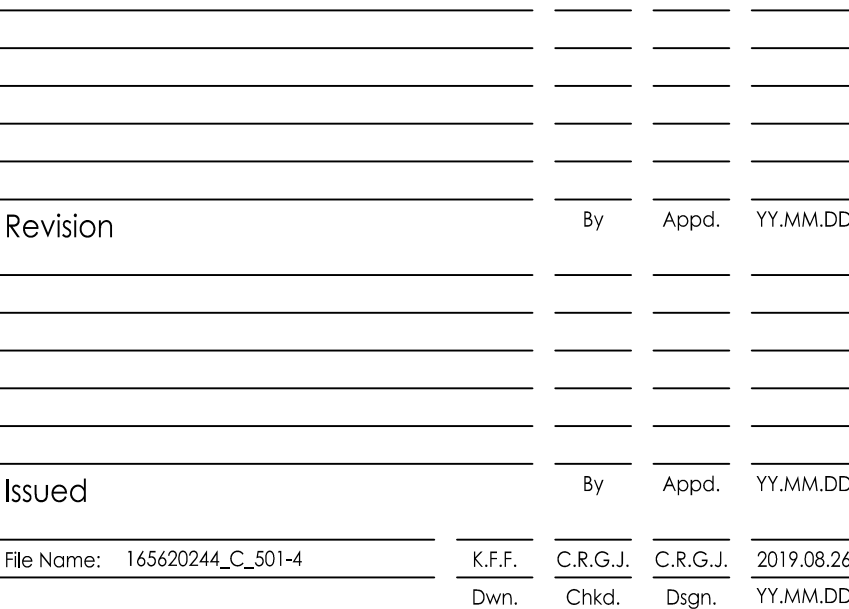
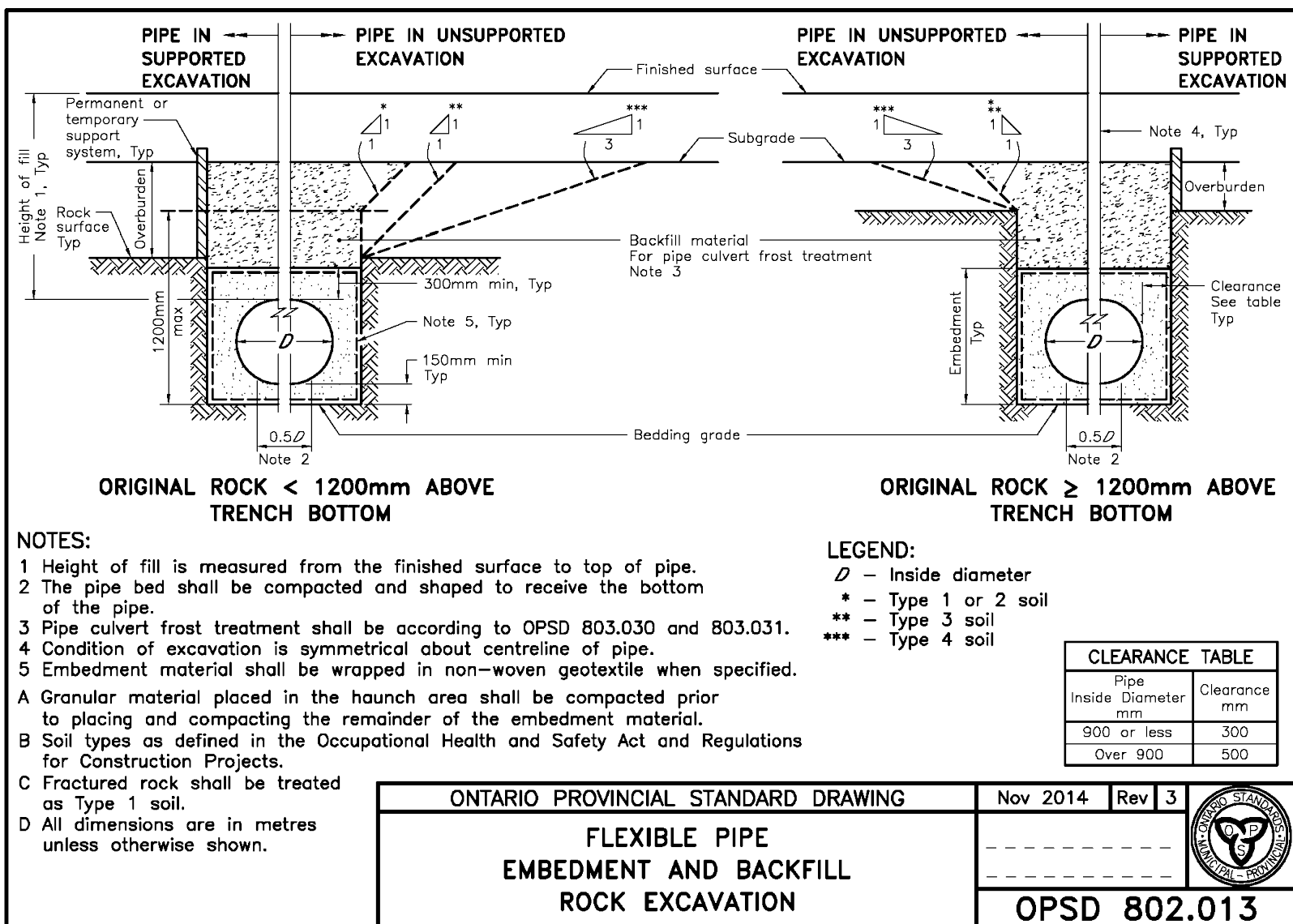
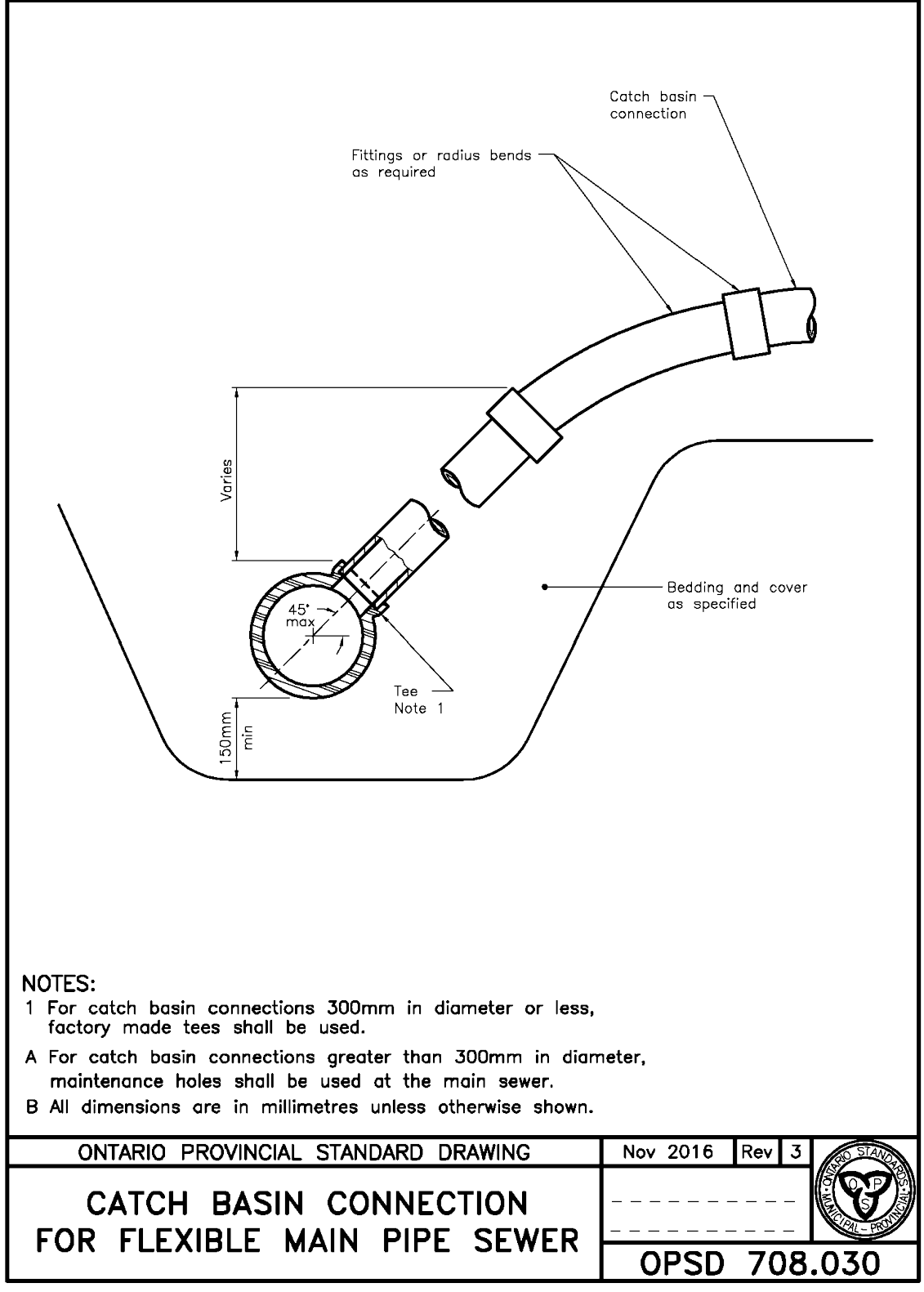
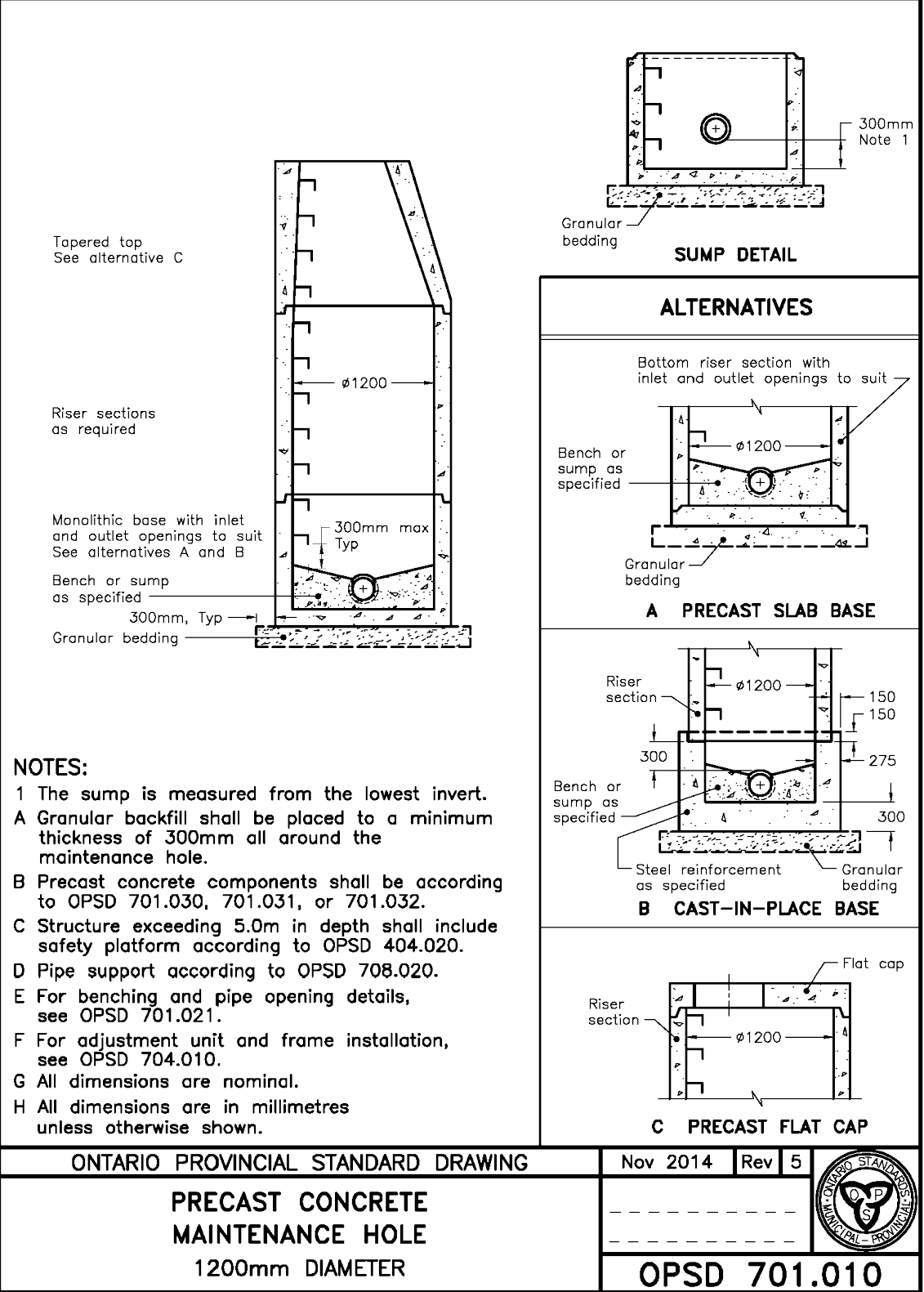


1 STOREY DUPLEX 'E'



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WATERSTONE ANDERDON DEVELOPMENT

FRONT ROAD SUBDIVISION

Town of Amherstburg, Ontario

STANDARD DETAILS

Project No.

165620244

Scale

SCALE

Revision Sheet

Drawing No.

C-501



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File Name:	165620244_C_501-4	K.F.F. Dwn.	C.R.G.J. Chkd.	2019.08.26 Dsnn. YY-MM-DD

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WATERSTONE ANDERDON DEVELOPMENT

FRONT ROAD SUBDIVISION

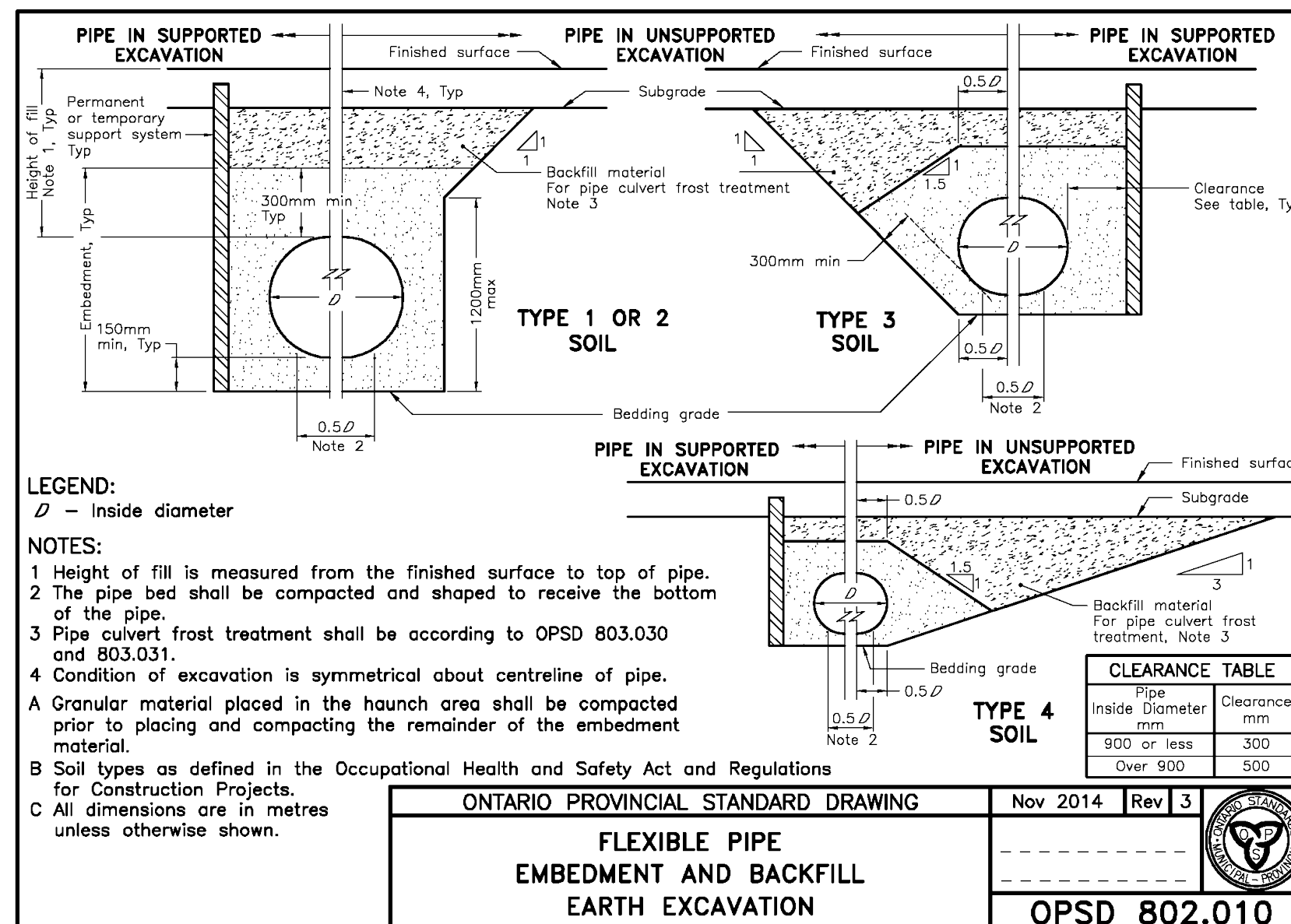
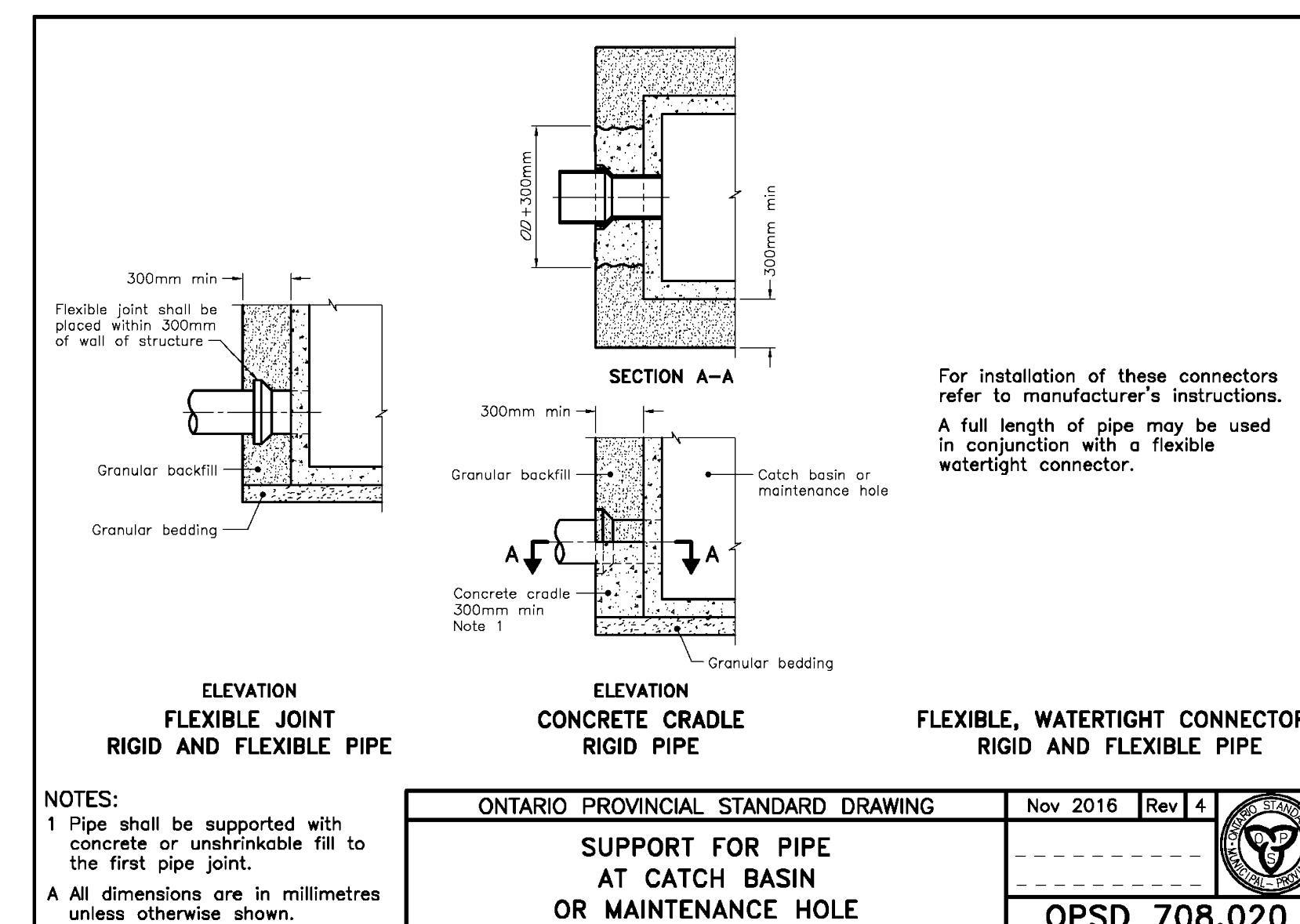
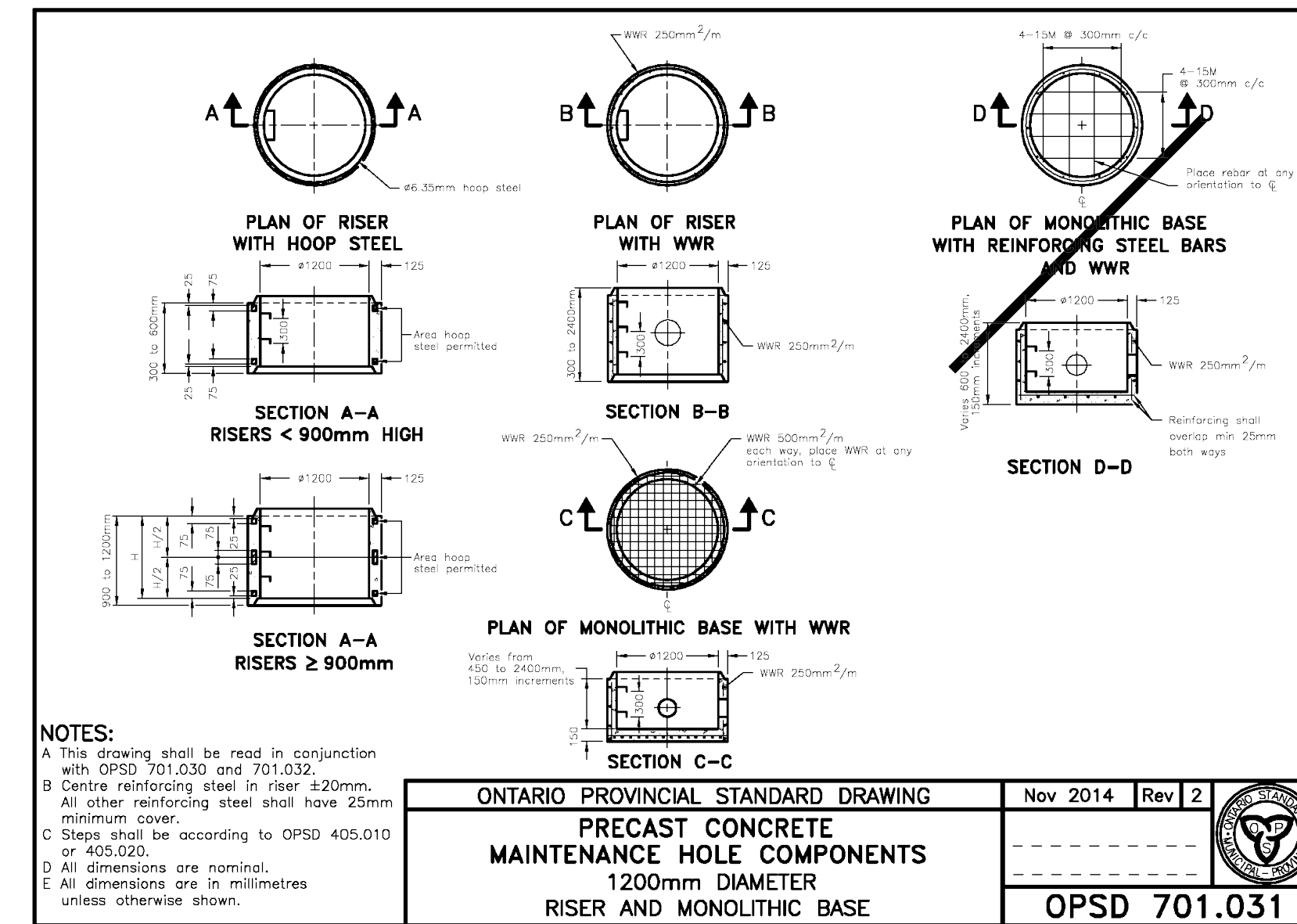
Town of Amherstburg, Ontario

STANDARD DETAILS

Project No.
165620244

Scale
SCALE
Drawing No

C-502



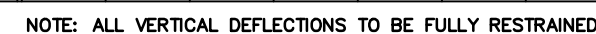
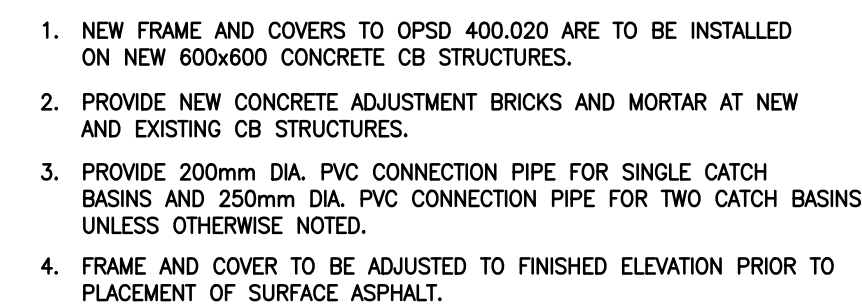


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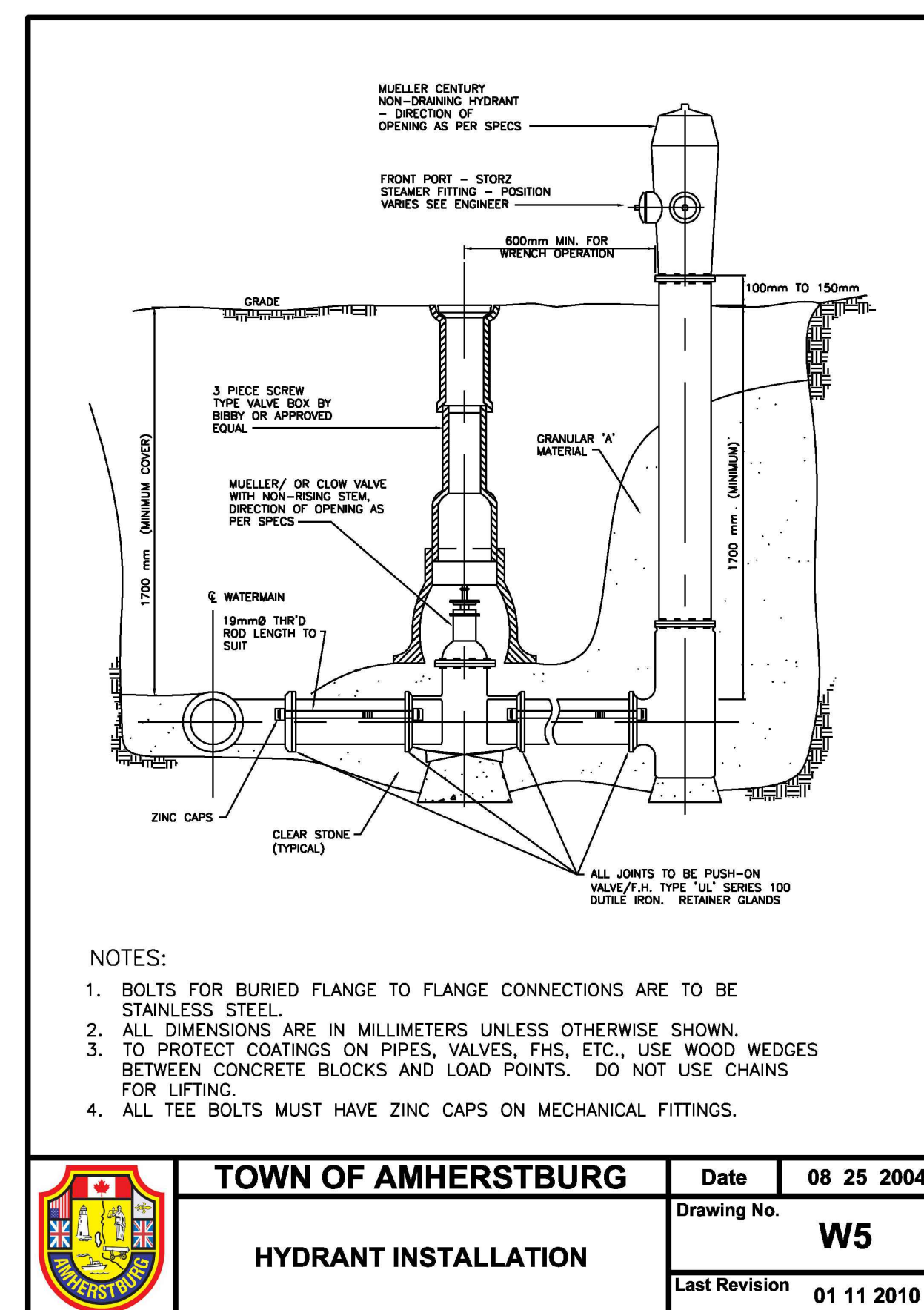
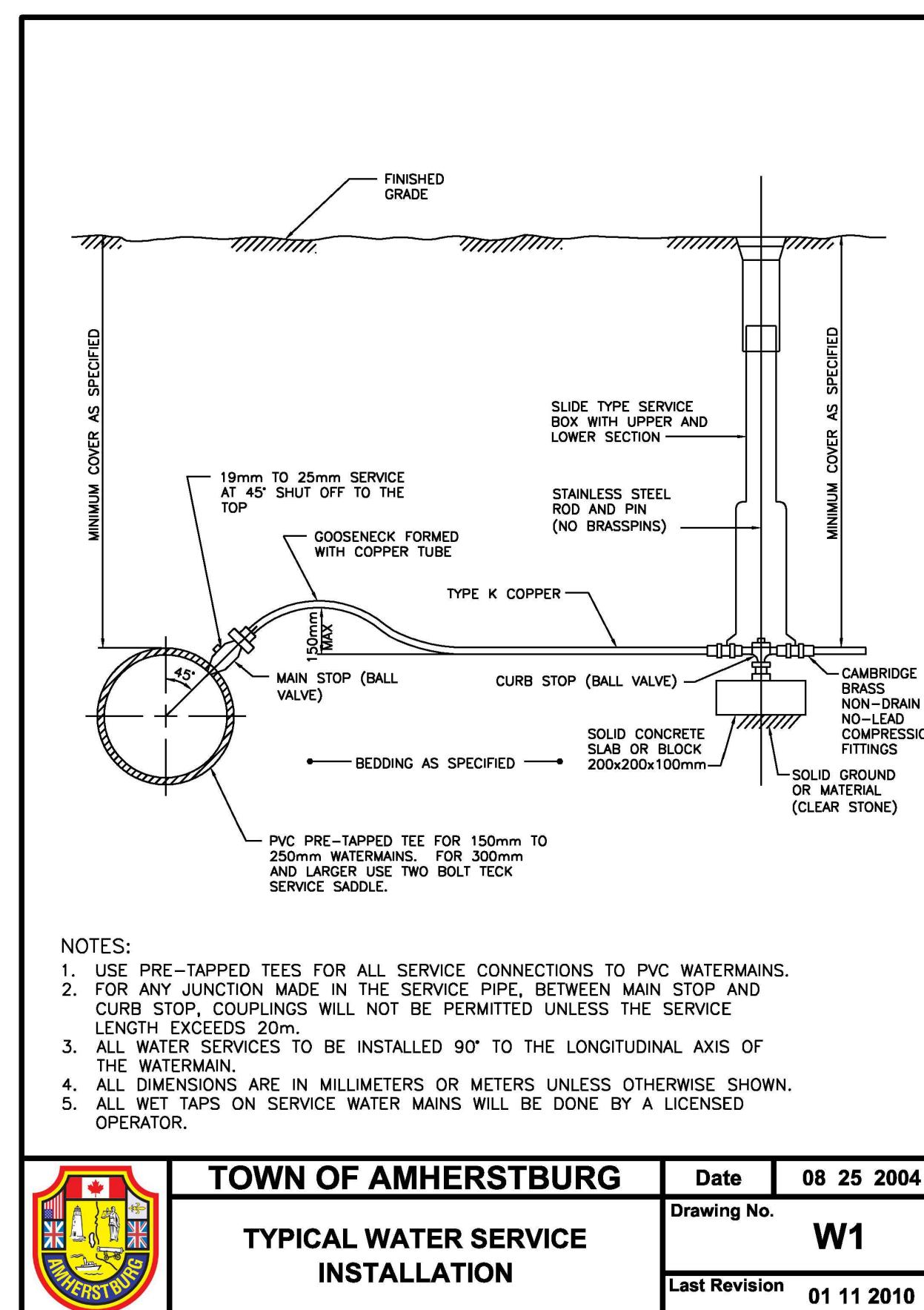
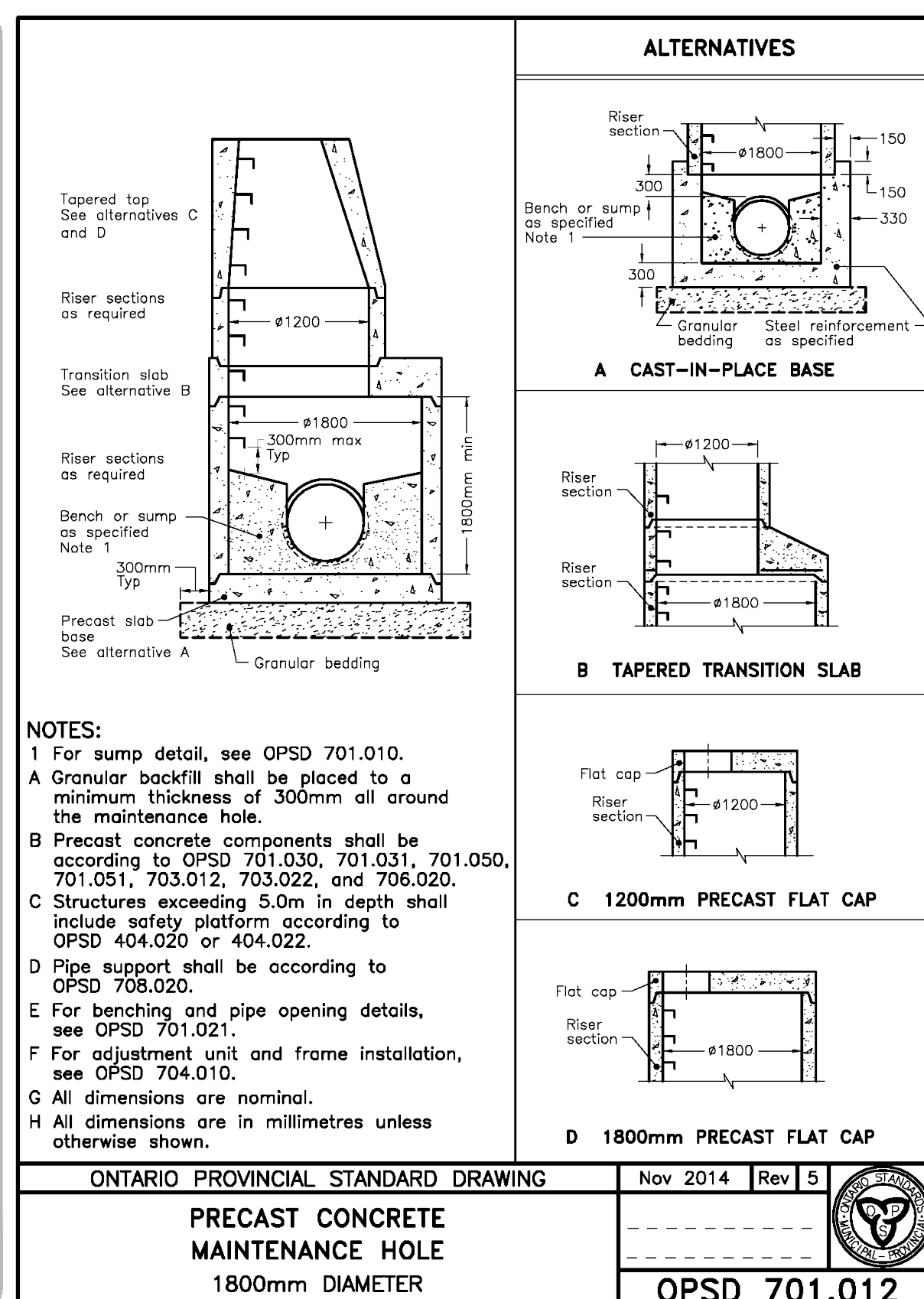


1. SUPPORT SIDES OF TRENCH EXCAVATION BY APPROVED SHORING METHOD IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST OCCUPATIONAL HEALTH AND SAFETY ACT & REGULATIONS FOR CONSTRUCTION PROJECTS.
2. WALLS OF TRENCH BOX SHALL NOT EXTEND BELOW SPRING LINE OF SEWER / WATERMAIN PIPE.
3. GRANULAR BEDDING MATERIAL TO BE MECHANICALLY COMPACTED AT SPRINGLINE OF WATERMAIN / SEWER PIPE PRIOR TO PLACING GRANULAR COVER MATERIAL.
4. TRENCH WIDTH VARIES TO SUIT CONSTRUCTION METHOD AND GROUND CONDITIONS.

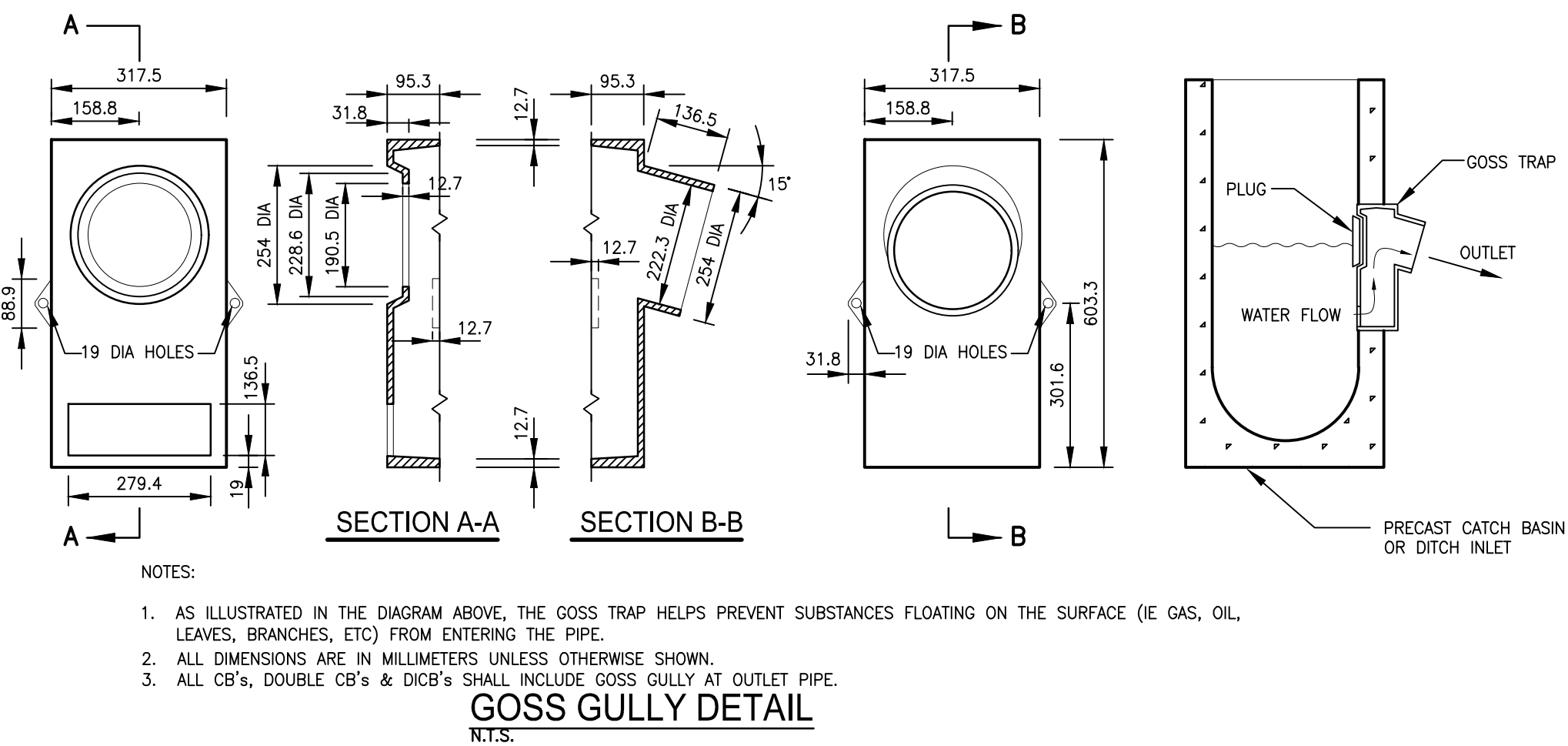
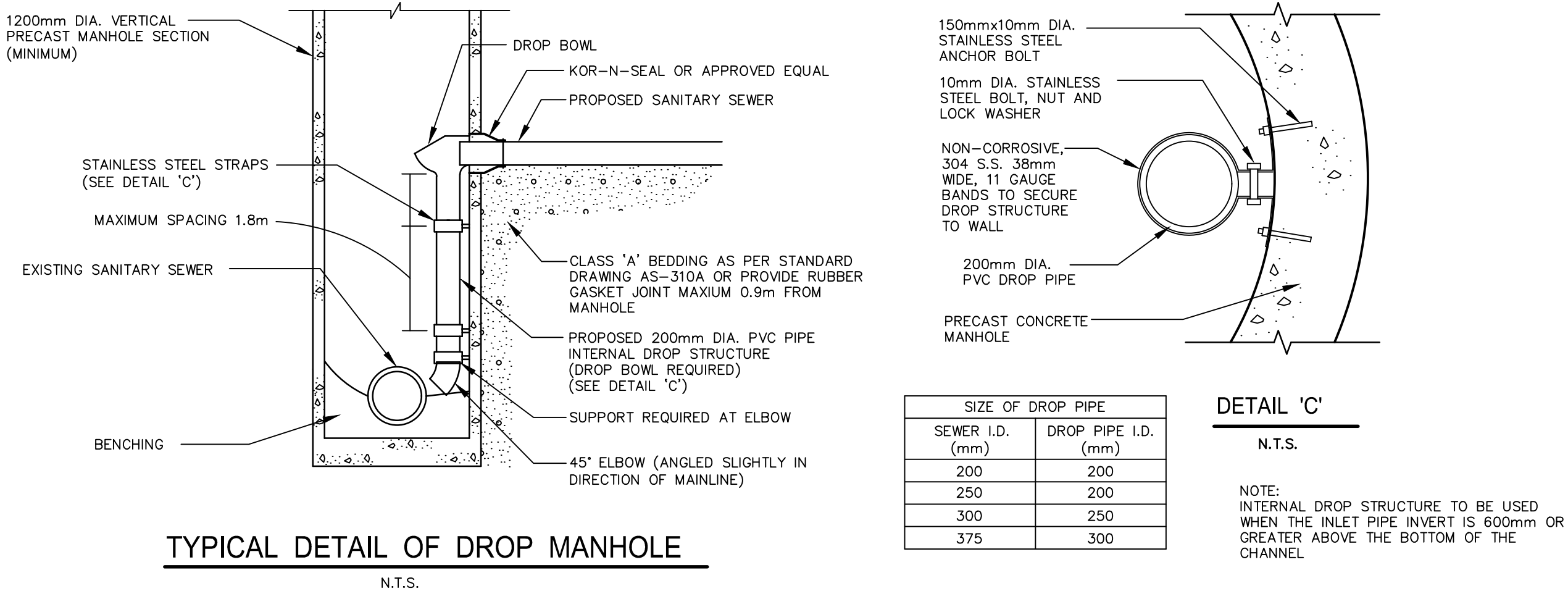
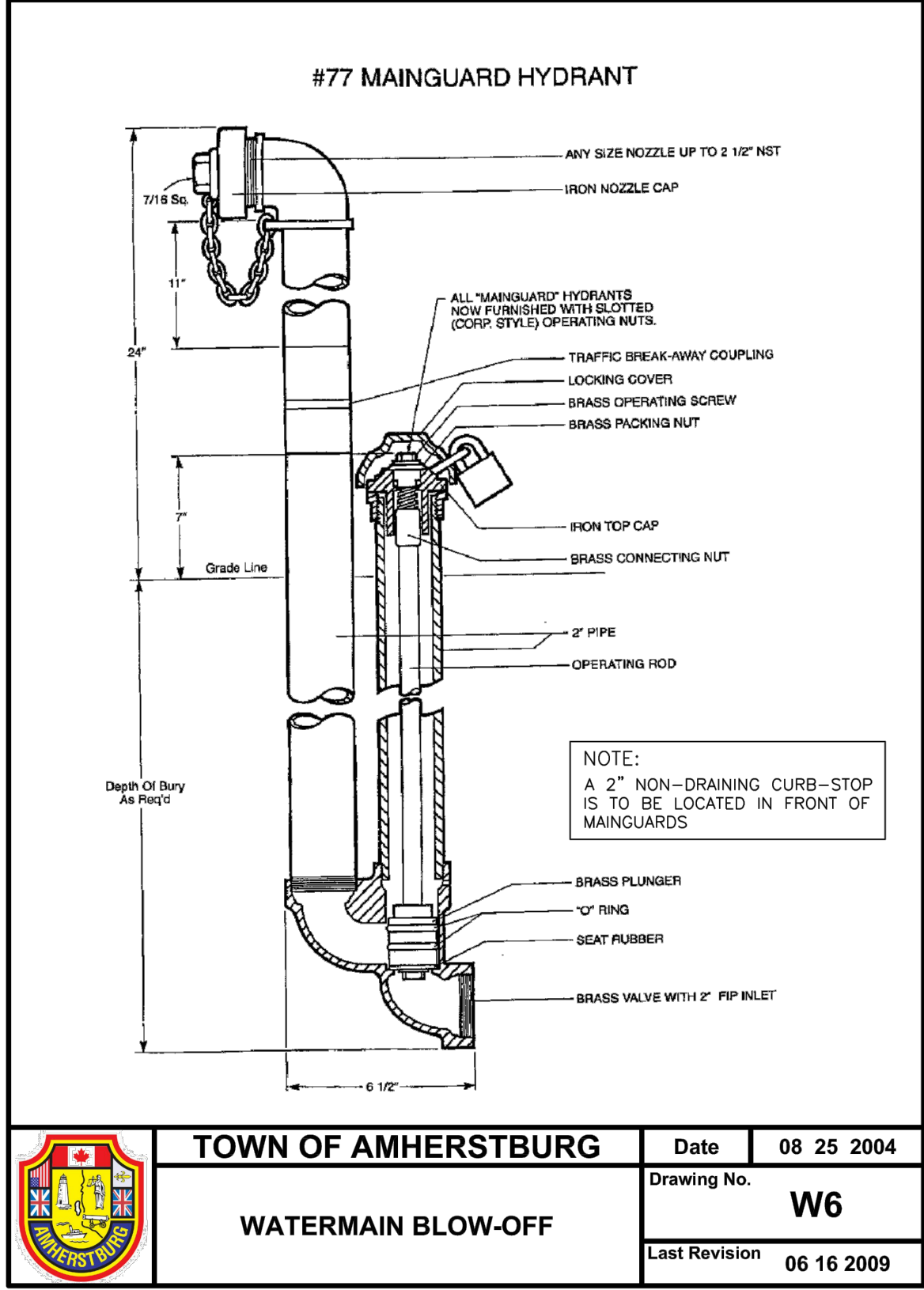
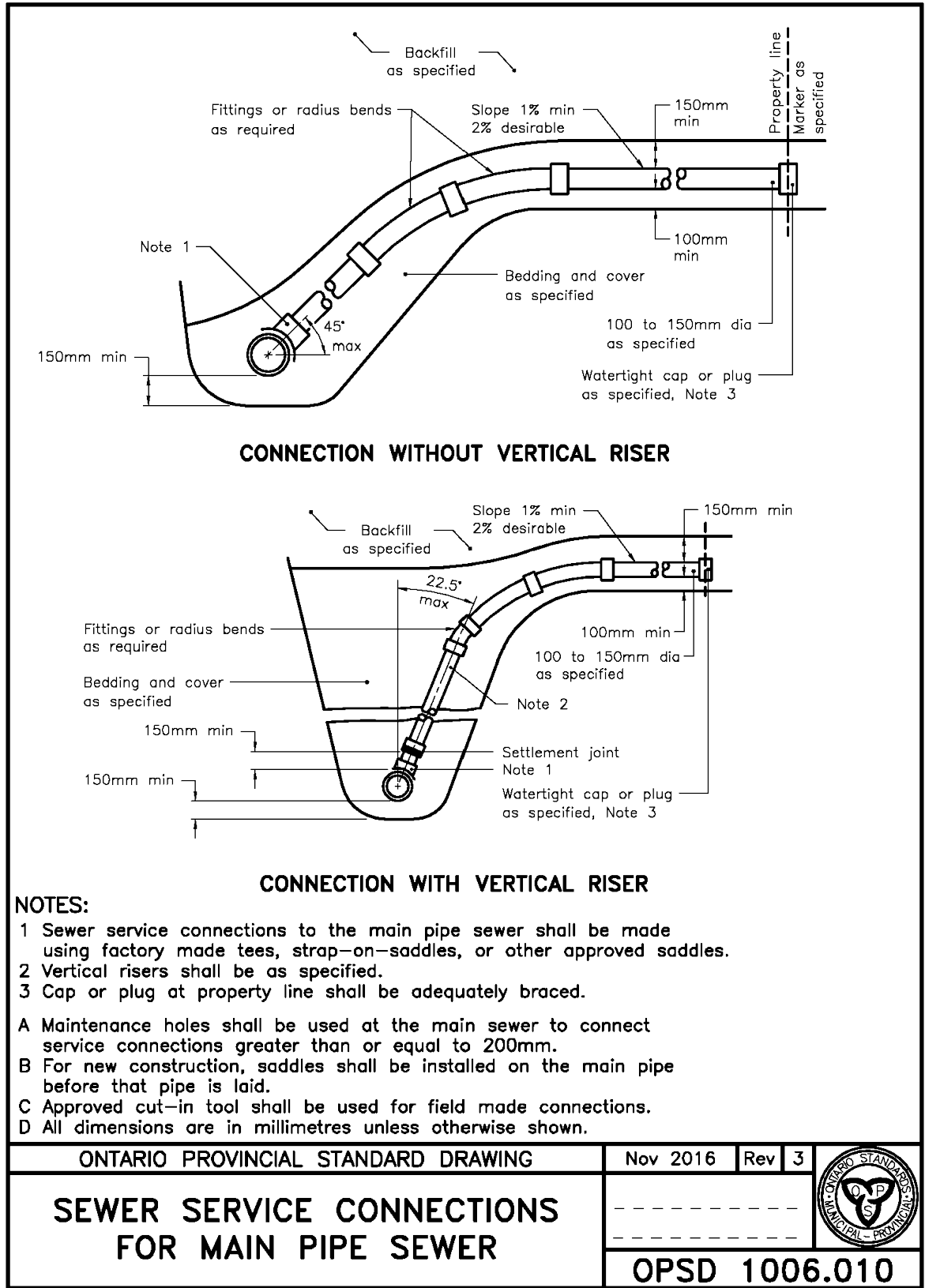
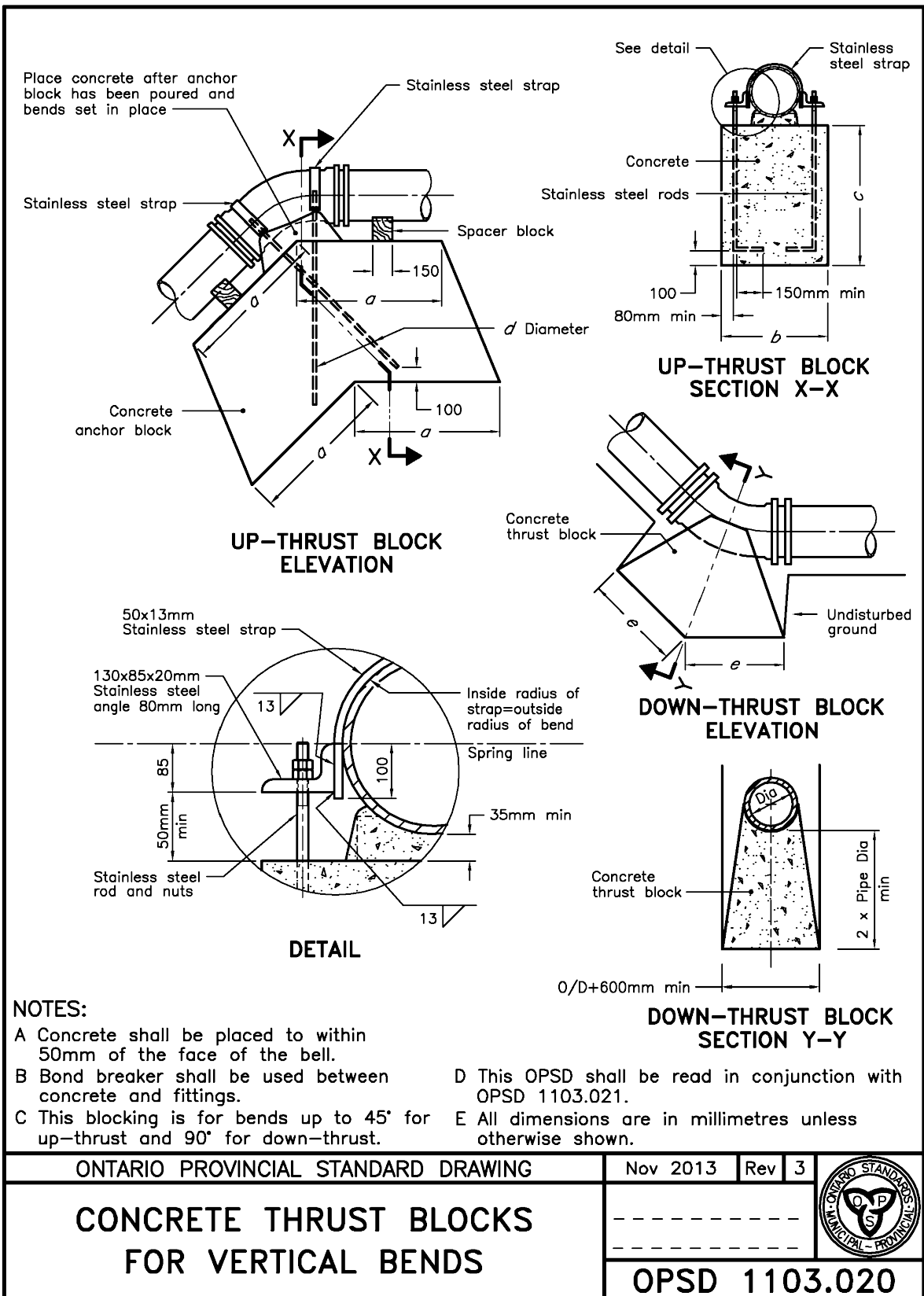
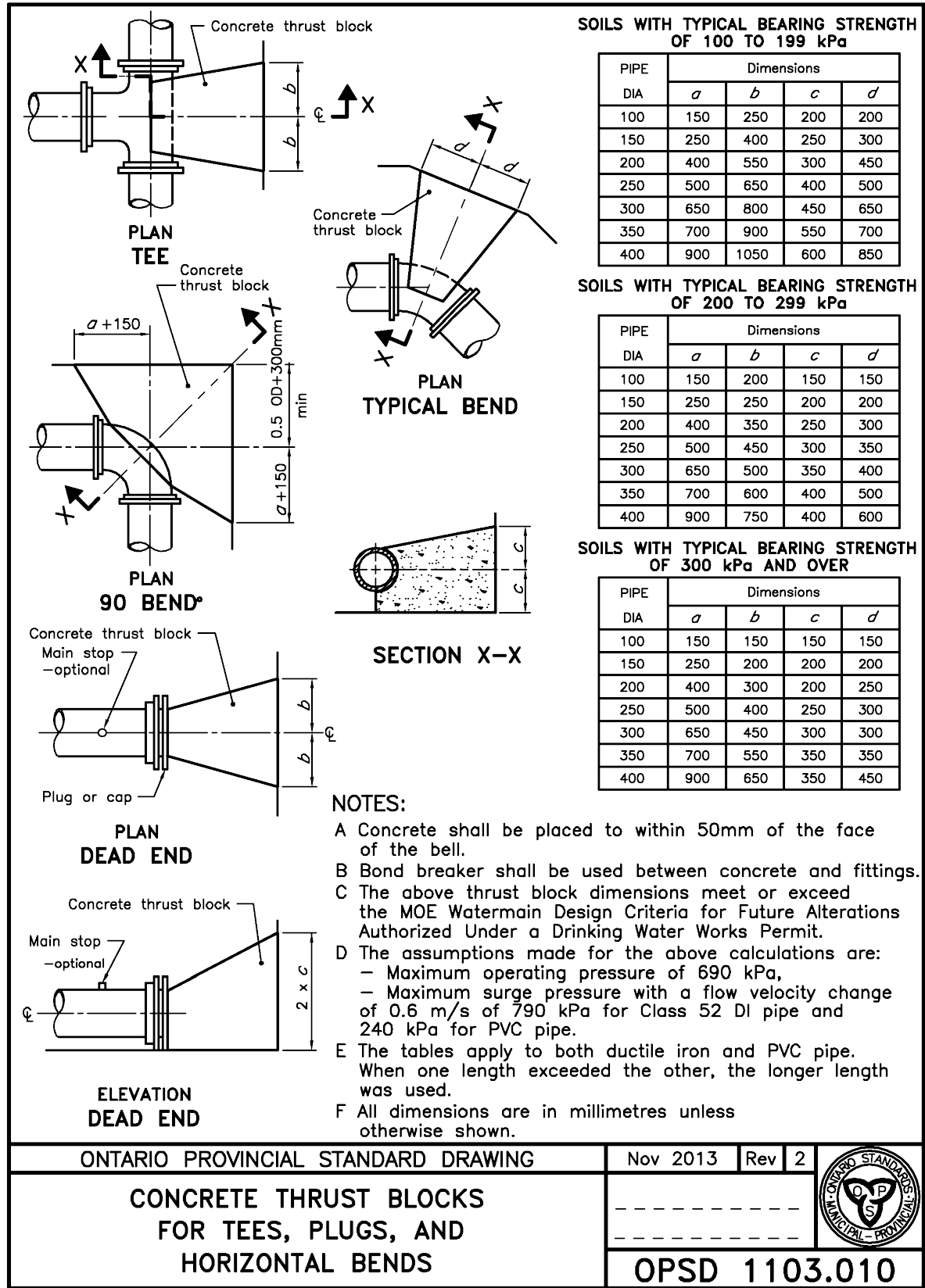


N.I.S.

HORIZONTAL PIPE RESTRAINING FOR PVC AND DUCTILE IRON FITTINGS AND VALVES



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2022-2-23 04:06pm BR j.homes



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Revision	By	Appd.	YY.MM.DD
Issued	By	Appd.	YY.MM.DD
File Name:	165620244_C_501-4	K.F.F.	C.R.G.J.
		Dwn.	Chkd.
			Dsgn.
			2019.08.26
			YY.MM.DD

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Client/Project
WATERSTONE ANDERDON DEVELOPMENT

FRONT ROAD SUBDIVISION

Town of Amherstburg, Ontario
Title
STANDARD DETAILS

Project No.
165620244
Revision Sheet

Scale
SCALE
Drawing No.

C-504

APPENDIX D

Synchro Results- Existing 2022

Queues

101: Texas Road & Front Road North

06/08/2022



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	212	278	512	212	417
v/c Ratio	0.62	0.56	0.27	0.23	0.24
Control Delay	32.8	9.7	8.0	2.2	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.8	9.7	8.0	2.2	7.9
Queue Length 50th (m)	24.7	3.6	14.7	0.3	11.7
Queue Length 95th (m)	21.7	0.0	16.8	1.1	18.1
Internal Link Dist (m)	128.4		107.9		531.0
Turn Bay Length (m)	20.0			20.0	
Base Capacity (vph)	858	883	1907	938	1732
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.25	0.31	0.27	0.23	0.24
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

101: Texas Road & Front Road North

06/08/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	106	139	302	125	18	286
Future Volume (vph)	106	139	302	125	18	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0		7.0
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1630	1458	3259	1458		3249
Flt Permitted	0.95	1.00	1.00	1.00		0.91
Satd. Flow (perm)	1630	1458	3259	1458		2961
Peak-hour factor, PHF	0.50	0.50	0.59	0.59	0.73	0.73
Adj. Flow (vph)	212	278	512	212	25	392
RTOR Reduction (vph)	0	192	0	85	0	0
Lane Group Flow (vph)	212	86	512	127	0	417
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	4		2			6
Permitted Phases		4		2	6	
Actuated Green, G (s)	14.4	14.4	40.1	40.1		40.1
Effective Green, g (s)	14.4	14.4	40.1	40.1		40.1
Actuated g/C Ratio	0.21	0.21	0.59	0.59		0.59
Clearance Time (s)	7.0	7.0	7.0	7.0		7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	342	306	1907	853		1733
v/s Ratio Prot	c0.13		c0.16			
v/s Ratio Perm		0.06		0.09		0.14
v/c Ratio	0.62	0.28	0.27	0.15		0.24
Uniform Delay, d1	24.6	22.7	7.0	6.4		6.9
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	3.3	0.5	0.1	0.1		0.1
Delay (s)	27.9	23.2	7.1	6.5		6.9
Level of Service	C	C	A	A		A
Approach Delay (s)	25.2		6.9			6.9
Approach LOS	C		A			A
Intersection Summary						
HCM 2000 Control Delay			12.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.36			
Actuated Cycle Length (s)			68.5		Sum of lost time (s)	14.0
Intersection Capacity Utilization			78.3%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Queues

102: Front Road North & Kingsbridge Drive

06/08/2022



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	108	154	649	416
v/c Ratio	0.40	0.42	0.32	0.34
Control Delay	29.1	8.6	6.5	7.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	29.1	8.6	6.5	7.0
Queue Length 50th (m)	11.7	0.0	16.1	10.5
Queue Length 95th (m)	22.2	10.7	18.7	18.1
Internal Link Dist (m)	120.7		531.0	113.0
Turn Bay Length (m)	15.0			
Base Capacity (vph)	906	879	2012	1235
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.12	0.18	0.32	0.34
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

102: Front Road North & Kingsbridge Drive

06/08/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	90	128	435	6	139	214
Future Volume (vph)	90	128	435	6	139	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0			7.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			0.98
Satd. Flow (prot)	1630	1458	3252			3196
Flt Permitted	0.95	1.00	1.00			0.61
Satd. Flow (perm)	1630	1458	3252			1998
Peak-hour factor, PHF	0.83	0.83	0.68	0.68	0.85	0.85
Adj. Flow (vph)	108	154	640	9	164	252
RTOR Reduction (vph)	0	129	1	0	0	0
Lane Group Flow (vph)	108	25	648	0	0	416
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	10.7	10.7	40.0			40.0
Effective Green, g (s)	10.7	10.7	40.0			40.0
Actuated g/C Ratio	0.17	0.17	0.62			0.62
Clearance Time (s)	7.0	7.0	7.0			7.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	269	241	2010			1235
v/s Ratio Prot	c0.07		0.20			
v/s Ratio Perm		0.02				c0.21
v/c Ratio	0.40	0.11	0.32			0.34
Uniform Delay, d1	24.1	22.9	5.9			6.0
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.0	0.2	0.1			0.2
Delay (s)	25.1	23.1	6.0			6.1
Level of Service	C	C	A			A
Approach Delay (s)	24.0		6.0			6.1
Approach LOS	C		A			A

Intersection Summary

HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	64.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues

101: Texas Road & Front Road North

05/20/2022



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	74	15	609	192	635
v/c Ratio	0.29	0.06	0.27	0.18	0.34
Control Delay	27.5	12.8	5.3	2.0	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.5	12.8	5.3	2.0	5.9
Queue Length 50th (m)	7.9	0.0	15.0	1.4	16.6
Queue Length 95th (m)	17.0	4.0	22.4	7.4	21.3
Internal Link Dist (m)	128.4		107.9		531.0
Turn Bay Length (m)	20.0			20.0	
Base Capacity (vph)	905	816	2294	1072	1877
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.08	0.02	0.27	0.18	0.34
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

101: Texas Road & Front Road North

05/20/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	63	13	536	169	56	439
Future Volume (vph)	63	13	536	169	56	439
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0		7.0
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		0.99
Satd. Flow (prot)	1630	1458	3259	1458		3241
Flt Permitted	0.95	1.00	1.00	1.00		0.82
Satd. Flow (perm)	1630	1458	3259	1458		2666
Peak-hour factor, PHF	0.85	0.85	0.88	0.88	0.78	0.78
Adj. Flow (vph)	74	15	609	192	72	563
RTOR Reduction (vph)	0	13	0	52	0	0
Lane Group Flow (vph)	74	2	609	140	0	635
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	4		2			6
Permitted Phases		4		2	6	
Actuated Green, G (s)	8.1	8.1	44.2	44.2		44.2
Effective Green, g (s)	8.1	8.1	44.2	44.2		44.2
Actuated g/C Ratio	0.12	0.12	0.67	0.67		0.67
Clearance Time (s)	7.0	7.0	7.0	7.0		7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	199	178	2172	972		1777
v/s Ratio Prot	c0.05		0.19			
v/s Ratio Perm		0.00		0.10		c0.24
v/c Ratio	0.37	0.01	0.28	0.14		0.36
Uniform Delay, d1	26.8	25.6	4.5	4.1		4.8
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.2	0.0	0.1	0.1		0.1
Delay (s)	27.9	25.6	4.6	4.1		5.0
Level of Service	C	C	A	A		A
Approach Delay (s)	27.5		4.5			5.0
Approach LOS	C		A			A
Intersection Summary						
HCM 2000 Control Delay			6.0		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.36			
Actuated Cycle Length (s)			66.3		Sum of lost time (s)	14.0
Intersection Capacity Utilization			78.3%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Queues

102: Front Road North & Kingsbridge Drive

05/20/2022



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	16	160	806	688
v/c Ratio	0.06	0.44	0.41	0.49
Control Delay	23.8	9.2	6.3	8.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.8	9.2	6.3	8.0
Queue Length 50th (m)	1.7	0.0	19.8	19.8
Queue Length 95th (m)	5.7	11.1	19.1	28.1
Internal Link Dist (m)	120.7		531.0	113.0
Turn Bay Length (m)	15.0			
Base Capacity (vph)	916	890	1986	1399
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.18	0.41	0.49
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

102: Front Road North & Kingsbridge Drive

05/20/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	13	133	425	123	103	482
Future Volume (vph)	13	133	425	123	103	482
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0			7.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	0.97			1.00
Flt Protected	0.95	1.00	1.00			0.99
Satd. Flow (prot)	1630	1458	3149			3231
Flt Permitted	0.95	1.00	1.00			0.69
Satd. Flow (perm)	1630	1458	3149			2238
Peak-hour factor, PHF	0.83	0.83	0.68	0.68	0.85	0.85
Adj. Flow (vph)	16	160	625	181	121	567
RTOR Reduction (vph)	0	135	20	0	0	0
Lane Group Flow (vph)	16	25	786	0	0	688
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	10.0	10.0	40.0			40.0
Effective Green, g (s)	10.0	10.0	40.0			40.0
Actuated g/C Ratio	0.16	0.16	0.62			0.62
Clearance Time (s)	7.0	7.0	7.0			7.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	254	227	1968			1398
v/s Ratio Prot	0.01		0.25			
v/s Ratio Perm		c0.02				c0.31
v/c Ratio	0.06	0.11	0.40			0.49
Uniform Delay, d1	23.0	23.2	6.0			6.5
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	0.2	0.1			0.3
Delay (s)	23.1	23.4	6.1			6.8
Level of Service	C	C	A			A
Approach Delay (s)	23.4		6.1			6.8
Approach LOS	C		A			A

Intersection Summary

HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX E

Synchro Results- Future Background 2024 & 2029

Queues

101: Texas Road & Front Road North

06/08/2022



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	220	288	532	222	434
v/c Ratio	0.63	0.59	0.28	0.24	0.25
Control Delay	33.1	11.4	8.3	2.4	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	11.4	8.3	2.4	8.1
Queue Length 50th (m)	25.8	6.2	15.7	0.7	12.6
Queue Length 95th (m)	22.5	1.2	17.7	1.5	19.1
Internal Link Dist (m)	128.4		107.9		531.0
Turn Bay Length (m)	20.0			20.0	
Base Capacity (vph)	854	873	1899	935	1720
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.26	0.33	0.28	0.24	0.25
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

101: Texas Road & Front Road North

06/08/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	110	144	314	131	19	298
Future Volume (vph)	110	144	314	131	19	298
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0		7.0
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1630	1458	3259	1458		3249
Flt Permitted	0.95	1.00	1.00	1.00		0.91
Satd. Flow (perm)	1630	1458	3259	1458		2953
Peak-hour factor, PHF	0.50	0.50	0.59	0.59	0.73	0.73
Adj. Flow (vph)	220	288	532	222	26	408
RTOR Reduction (vph)	0	180	0	86	0	0
Lane Group Flow (vph)	220	108	532	136	0	434
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	4		2			6
Permitted Phases		4		2	6	
Actuated Green, G (s)	14.7	14.7	40.1	40.1		40.1
Effective Green, g (s)	14.7	14.7	40.1	40.1		40.1
Actuated g/C Ratio	0.21	0.21	0.58	0.58		0.58
Clearance Time (s)	7.0	7.0	7.0	7.0		7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	348	311	1899	849		1721
v/s Ratio Prot	c0.14		c0.16			
v/s Ratio Perm		0.07		0.09		0.15
v/c Ratio	0.63	0.35	0.28	0.16		0.25
Uniform Delay, d1	24.6	23.0	7.2	6.6		7.0
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	3.7	0.7	0.1	0.1		0.1
Delay (s)	28.3	23.6	7.2	6.7		7.1
Level of Service	C	C	A	A		A
Approach Delay (s)	25.7		7.1			7.1
Approach LOS	C		A			A
Intersection Summary						
HCM 2000 Control Delay			12.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.37			
Actuated Cycle Length (s)			68.8		Sum of lost time (s)	14.0
Intersection Capacity Utilization			78.3%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Queues

102: Front Road North & Kingsbridge Drive

06/08/2022



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	112	160	674	431
v/c Ratio	0.41	0.43	0.34	0.35
Control Delay	29.2	9.4	6.7	7.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	29.2	9.4	6.7	7.2
Queue Length 50th (m)	12.2	0.8	17.0	11.0
Queue Length 95th (m)	23.0	11.7	19.8	19.2
Internal Link Dist (m)	120.7		531.0	113.0
Turn Bay Length (m)	15.0			
Base Capacity (vph)	905	877	2009	1223
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.12	0.18	0.34	0.35
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

102: Front Road North & Kingsbridge Drive

06/08/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	93	133	452	6	144	223
Future Volume (vph)	93	133	452	6	144	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0			7.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			0.98
Satd. Flow (prot)	1630	1458	3253			3196
Flt Permitted	0.95	1.00	1.00			0.61
Satd. Flow (perm)	1630	1458	3253			1982
Peak-hour factor, PHF	0.83	0.83	0.68	0.68	0.85	0.85
Adj. Flow (vph)	112	160	665	9	169	262
RTOR Reduction (vph)	0	127	1	0	0	0
Lane Group Flow (vph)	112	33	673	0	0	431
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	10.8	10.8	40.0			40.0
Effective Green, g (s)	10.8	10.8	40.0			40.0
Actuated g/C Ratio	0.17	0.17	0.62			0.62
Clearance Time (s)	7.0	7.0	7.0			7.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	271	243	2008			1223
v/s Ratio Prot	c0.07		0.21			
v/s Ratio Perm		0.02				c0.22
v/c Ratio	0.41	0.14	0.34			0.35
Uniform Delay, d1	24.2	23.0	6.0			6.1
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.0	0.3	0.1			0.2
Delay (s)	25.2	23.3	6.1			6.2
Level of Service	C	C	A			A
Approach Delay (s)	24.1		6.1			6.2
Approach LOS	C		A			A
Intersection Summary						
HCM 2000 Control Delay			9.7		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.37			
Actuated Cycle Length (s)			64.8		Sum of lost time (s)	14.0
Intersection Capacity Utilization			92.5%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

Queues

101: Texas Road & Front Road North

05/20/2022



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	78	16	634	200	659
v/c Ratio	0.30	0.07	0.28	0.19	0.36
Control Delay	27.3	12.6	5.5	2.1	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	12.6	5.5	2.1	6.2
Queue Length 50th (m)	8.3	0.0	15.7	1.7	17.5
Queue Length 95th (m)	17.7	4.1	23.7	7.9	22.7
Internal Link Dist (m)	128.4		107.9		531.0
Turn Bay Length (m)	20.0			20.0	
Base Capacity (vph)	918	828	2275	1065	1850
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.08	0.02	0.28	0.19	0.36
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

101: Texas Road & Front Road North

05/20/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	66	14	558	176	58	456
Future Volume (vph)	66	14	558	176	58	456
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0		7.0
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		0.99
Satd. Flow (prot)	1630	1458	3259	1458		3241
Flt Permitted	0.95	1.00	1.00	1.00		0.81
Satd. Flow (perm)	1630	1458	3259	1458		2649
Peak-hour factor, PHF	0.85	0.85	0.88	0.88	0.78	0.78
Adj. Flow (vph)	78	16	634	200	74	585
RTOR Reduction (vph)	0	14	0	53	0	0
Lane Group Flow (vph)	78	2	634	147	0	659
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	4		2			6
Permitted Phases		4		2	6	
Actuated Green, G (s)	8.2	8.2	43.2	43.2		43.2
Effective Green, g (s)	8.2	8.2	43.2	43.2		43.2
Actuated g/C Ratio	0.13	0.13	0.66	0.66		0.66
Clearance Time (s)	7.0	7.0	7.0	7.0		7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	204	182	2152	963		1749
v/s Ratio Prot	c0.05		0.19			
v/s Ratio Perm		0.00		0.10		c0.25
v/c Ratio	0.38	0.01	0.29	0.15		0.38
Uniform Delay, d1	26.3	25.0	4.7	4.2		5.0
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.2	0.0	0.1	0.1		0.1
Delay (s)	27.5	25.1	4.8	4.3		5.2
Level of Service	C	C	A	A		A
Approach Delay (s)	27.1		4.6			5.2
Approach LOS	C		A			A

Intersection Summary

HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Queues

102: Front Road North & Kingsbridge Drive

05/20/2022



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	17	166	839	715
v/c Ratio	0.07	0.46	0.42	0.52
Control Delay	23.8	9.9	6.5	8.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.8	9.9	6.5	8.4
Queue Length 50th (m)	1.7	0.7	21.0	21.1
Queue Length 95th (m)	5.9	12.1	20.5	30.6
Internal Link Dist (m)	120.7		531.0	113.0
Turn Bay Length (m)	15.0			
Base Capacity (vph)	915	888	1984	1373
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.19	0.42	0.52
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

102: Front Road North & Kingsbridge Drive

05/20/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	14	138	443	128	107	501
Future Volume (vph)	14	138	443	128	107	501
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0			7.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	0.97			1.00
Flt Protected	0.95	1.00	1.00			0.99
Satd. Flow (prot)	1630	1458	3149			3231
Flt Permitted	0.95	1.00	1.00			0.67
Satd. Flow (perm)	1630	1458	3149			2200
Peak-hour factor, PHF	0.83	0.83	0.68	0.68	0.85	0.85
Adj. Flow (vph)	17	166	651	188	126	589
RTOR Reduction (vph)	0	134	20	0	0	0
Lane Group Flow (vph)	17	32	819	0	0	715
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	10.1	10.1	40.0			40.0
Effective Green, g (s)	10.1	10.1	40.0			40.0
Actuated g/C Ratio	0.16	0.16	0.62			0.62
Clearance Time (s)	7.0	7.0	7.0			7.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	256	229	1965			1372
v/s Ratio Prot	0.01		0.26			
v/s Ratio Perm		c0.02				c0.33
v/c Ratio	0.07	0.14	0.42			0.52
Uniform Delay, d1	23.0	23.3	6.1			6.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	0.3	0.1			0.4
Delay (s)	23.1	23.5	6.3			7.1
Level of Service	C	C	A			A
Approach Delay (s)	23.5		6.3			7.1
Approach LOS	C		A			A

Intersection Summary

HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	64.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues

101: Texas Road & Front Road North

06/08/2022



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	244	318	588	244	480
v/c Ratio	0.67	0.67	0.31	0.26	0.29
Control Delay	34.0	17.1	9.0	3.0	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	17.1	9.0	3.0	8.9
Queue Length 50th (m)	29.1	13.9	18.6	1.9	14.8
Queue Length 95th (m)	24.4	7.0	20.7	2.9	22.4
Internal Link Dist (m)	128.4		107.9		531.0
Turn Bay Length (m)	20.0			20.0	
Base Capacity (vph)	842	847	1872	925	1681
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	0.38	0.31	0.26	0.29
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

101: Texas Road & Front Road North

06/08/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	122	159	347	144	21	329
Future Volume (vph)	122	159	347	144	21	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0		7.0
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1630	1458	3259	1458		3249
Flt Permitted	0.95	1.00	1.00	1.00		0.90
Satd. Flow (perm)	1630	1458	3259	1458		2926
Peak-hour factor, PHF	0.50	0.50	0.59	0.59	0.73	0.73
Adj. Flow (vph)	244	318	588	244	29	451
RTOR Reduction (vph)	0	150	0	88	0	0
Lane Group Flow (vph)	244	168	588	156	0	480
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	4		2			6
Permitted Phases		4		2	6	
Actuated Green, G (s)	15.7	15.7	40.2	40.2		40.2
Effective Green, g (s)	15.7	15.7	40.2	40.2		40.2
Actuated g/C Ratio	0.22	0.22	0.58	0.58		0.58
Clearance Time (s)	7.0	7.0	7.0	7.0		7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	366	327	1874	838		1682
v/s Ratio Prot	c0.15		c0.18			
v/s Ratio Perm		0.12		0.11		0.16
v/c Ratio	0.67	0.51	0.31	0.19		0.29
Uniform Delay, d1	24.7	23.8	7.7	7.1		7.5
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	4.5	1.4	0.1	0.1		0.1
Delay (s)	29.3	25.1	7.8	7.2		7.6
Level of Service	C	C	A	A		A
Approach Delay (s)	26.9		7.6			7.6
Approach LOS	C		A			A
Intersection Summary						
HCM 2000 Control Delay			13.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.41			
Actuated Cycle Length (s)			69.9		Sum of lost time (s)	14.0
Intersection Capacity Utilization			78.3%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Queues

102: Front Road North & Kingsbridge Drive

06/08/2022



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	124	176	744	476
v/c Ratio	0.45	0.51	0.37	0.40
Control Delay	29.9	14.5	7.1	7.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	29.9	14.5	7.1	7.9
Queue Length 50th (m)	13.6	5.6	19.2	12.6
Queue Length 95th (m)	24.9	17.6	22.6	22.5
Internal Link Dist (m)	120.7		531.0	113.0
Turn Bay Length (m)	15.0			
Base Capacity (vph)	902	861	2002	1189
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.20	0.37	0.40
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

102: Front Road North & Kingsbridge Drive

06/08/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	103	146	499	7	159	246
Future Volume (vph)	103	146	499	7	159	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0			7.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			0.98
Satd. Flow (prot)	1630	1458	3252			3196
Flt Permitted	0.95	1.00	1.00			0.59
Satd. Flow (perm)	1630	1458	3252			1932
Peak-hour factor, PHF	0.83	0.83	0.68	0.68	0.85	0.85
Adj. Flow (vph)	124	176	734	10	187	289
RTOR Reduction (vph)	0	102	1	0	0	0
Lane Group Flow (vph)	124	74	743	0	0	476
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	11.0	11.0	40.0			40.0
Effective Green, g (s)	11.0	11.0	40.0			40.0
Actuated g/C Ratio	0.17	0.17	0.62			0.62
Clearance Time (s)	7.0	7.0	7.0			7.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	275	246	2001			1188
v/s Ratio Prot	c0.08		0.23			
v/s Ratio Perm		0.05				c0.25
v/c Ratio	0.45	0.30	0.37			0.40
Uniform Delay, d1	24.3	23.6	6.2			6.4
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.2	0.7	0.1			0.2
Delay (s)	25.5	24.3	6.3			6.6
Level of Service	C	C	A			A
Approach Delay (s)	24.8		6.3			6.6
Approach LOS	C		A			A

Intersection Summary

HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues

101: Texas Road & Front Road North

05/20/2022



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	86	18	700	220	728
v/c Ratio	0.33	0.07	0.31	0.21	0.40
Control Delay	27.8	12.2	5.7	2.4	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	12.2	5.7	2.4	6.7
Queue Length 50th (m)	9.2	0.0	17.8	2.6	20.3
Queue Length 95th (m)	19.1	4.4	27.0	9.4	26.3
Internal Link Dist (m)	128.4		107.9		531.0
Turn Bay Length (m)	20.0			20.0	
Base Capacity (vph)	918	829	2271	1063	1801
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.02	0.31	0.21	0.40
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

101: Texas Road & Front Road North

05/20/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	73	15	616	194	64	504
Future Volume (vph)	73	15	616	194	64	504
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0		7.0
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		0.99
Satd. Flow (prot)	1630	1458	3259	1458		3241
Flt Permitted	0.95	1.00	1.00	1.00		0.79
Satd. Flow (perm)	1630	1458	3259	1458		2585
Peak-hour factor, PHF	0.85	0.85	0.88	0.88	0.78	0.78
Adj. Flow (vph)	86	18	700	220	82	646
RTOR Reduction (vph)	0	16	0	53	0	0
Lane Group Flow (vph)	86	2	700	167	0	728
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	4		2			6
Permitted Phases		4		2	6	
Actuated Green, G (s)	8.3	8.3	43.1	43.1		43.1
Effective Green, g (s)	8.3	8.3	43.1	43.1		43.1
Actuated g/C Ratio	0.13	0.13	0.66	0.66		0.66
Clearance Time (s)	7.0	7.0	7.0	7.0		7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	206	185	2147	960		1703
v/s Ratio Prot	c0.05		0.21			
v/s Ratio Perm		0.00		0.11		c0.28
v/c Ratio	0.42	0.01	0.33	0.17		0.43
Uniform Delay, d1	26.3	25.0	4.8	4.3		5.3
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.4	0.0	0.1	0.1		0.2
Delay (s)	27.7	25.0	4.9	4.4		5.5
Level of Service	C	C	A	A		A
Approach Delay (s)	27.2		4.8			5.5
Approach LOS	C		A			A

Intersection Summary

HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues

102: Front Road North & Kingsbridge Drive

05/20/2022



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	18	183	928	790
v/c Ratio	0.07	0.53	0.47	0.62
Control Delay	23.3	15.0	7.3	10.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.3	15.0	7.3	10.5
Queue Length 50th (m)	1.9	5.7	24.2	25.5
Queue Length 95th (m)	6.0	18.0	26.6	42.3
Internal Link Dist (m)	120.7		531.0	113.0
Turn Bay Length (m)	15.0			
Base Capacity (vph)	907	869	1969	1277
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.21	0.47	0.62
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

102: Front Road North & Kingsbridge Drive

05/20/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	152	489	142	118	553
Future Volume (vph)	15	152	489	142	118	553
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0			7.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	0.97			1.00
Flt Protected	0.95	1.00	1.00			0.99
Satd. Flow (prot)	1630	1458	3149			3231
Flt Permitted	0.95	1.00	1.00			0.63
Satd. Flow (perm)	1630	1458	3149			2063
Peak-hour factor, PHF	0.83	0.83	0.68	0.68	0.85	0.85
Adj. Flow (vph)	18	183	719	209	139	651
RTOR Reduction (vph)	0	108	21	0	0	0
Lane Group Flow (vph)	18	75	907	0	0	790
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	10.6	10.6	40.0			40.0
Effective Green, g (s)	10.6	10.6	40.0			40.0
Actuated g/C Ratio	0.16	0.16	0.62			0.62
Clearance Time (s)	7.0	7.0	7.0			7.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	267	239	1949			1277
v/s Ratio Prot	0.01		0.29			
v/s Ratio Perm		c0.05				c0.38
v/c Ratio	0.07	0.31	0.47			0.62
Uniform Delay, d1	22.8	23.8	6.6			7.6
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	0.8	0.2			0.9
Delay (s)	22.9	24.6	6.8			8.5
Level of Service	C	C	A			A
Approach Delay (s)	24.4		6.8			8.5
Approach LOS	C		A			A

Intersection Summary

HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	64.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX F

Synchro Results- Future Total 2024 & 2029

Queues

101: Texas Road & Front Road North

06/08/2022



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	220	288	532	222	436
v/c Ratio	0.63	0.59	0.28	0.24	0.25
Control Delay	33.1	11.4	8.3	2.4	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	11.4	8.3	2.4	8.2
Queue Length 50th (m)	25.8	6.2	15.7	0.7	12.7
Queue Length 95th (m)	22.5	1.2	17.7	1.5	19.1
Internal Link Dist (m)	128.4		107.9		256.1
Turn Bay Length (m)	20.0			20.0	
Base Capacity (vph)	854	873	1899	935	1720
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.26	0.33	0.28	0.24	0.25
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

101: Texas Road & Front Road North

06/08/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	110	144	314	131	19	299
Future Volume (vph)	110	144	314	131	19	299
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0		7.0
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1630	1458	3259	1458		3249
Flt Permitted	0.95	1.00	1.00	1.00		0.91
Satd. Flow (perm)	1630	1458	3259	1458		2953
Peak-hour factor, PHF	0.50	0.50	0.59	0.59	0.73	0.73
Adj. Flow (vph)	220	288	532	222	26	410
RTOR Reduction (vph)	0	180	0	86	0	0
Lane Group Flow (vph)	220	108	532	136	0	436
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	4		2			6
Permitted Phases		4		2	6	
Actuated Green, G (s)	14.7	14.7	40.1	40.1		40.1
Effective Green, g (s)	14.7	14.7	40.1	40.1		40.1
Actuated g/C Ratio	0.21	0.21	0.58	0.58		0.58
Clearance Time (s)	7.0	7.0	7.0	7.0		7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	348	311	1899	849		1721
v/s Ratio Prot	c0.14		c0.16			
v/s Ratio Perm		0.07		0.09		0.15
v/c Ratio	0.63	0.35	0.28	0.16		0.25
Uniform Delay, d1	24.6	23.0	7.2	6.6		7.0
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	3.7	0.7	0.1	0.1		0.1
Delay (s)	28.3	23.6	7.2	6.7		7.1
Level of Service	C	C	A	A		A
Approach Delay (s)	25.7		7.1			7.1
Approach LOS	C		A			A
Intersection Summary						
HCM 2000 Control Delay			12.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.37			
Actuated Cycle Length (s)			68.8		Sum of lost time (s)	14.0
Intersection Capacity Utilization			78.3%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Queues

102: Front Road North & Kingsbridge Drive

06/08/2022



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	112	160	691	436
v/c Ratio	0.41	0.44	0.34	0.36
Control Delay	29.2	10.2	6.7	7.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	29.2	10.2	6.7	7.3
Queue Length 50th (m)	12.2	1.6	17.4	11.2
Queue Length 95th (m)	23.0	12.5	20.3	19.5
Internal Link Dist (m)	120.7		250.9	113.0
Turn Bay Length (m)	15.0			
Base Capacity (vph)	905	874	2009	1217
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.12	0.18	0.34	0.36
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

102: Front Road North & Kingsbridge Drive

06/08/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	93	133	464	6	144	227
Future Volume (vph)	93	133	464	6	144	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0			7.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			0.98
Satd. Flow (prot)	1630	1458	3253			3197
Flt Permitted	0.95	1.00	1.00			0.61
Satd. Flow (perm)	1630	1458	3253			1973
Peak-hour factor, PHF	0.83	0.83	0.68	0.68	0.85	0.85
Adj. Flow (vph)	112	160	682	9	169	267
RTOR Reduction (vph)	0	121	1	0	0	0
Lane Group Flow (vph)	112	39	690	0	0	436
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	10.8	10.8	40.0			40.0
Effective Green, g (s)	10.8	10.8	40.0			40.0
Actuated g/C Ratio	0.17	0.17	0.62			0.62
Clearance Time (s)	7.0	7.0	7.0			7.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	271	243	2008			1217
v/s Ratio Prot	c0.07		0.21			
v/s Ratio Perm		0.03				c0.22
v/c Ratio	0.41	0.16	0.34			0.36
Uniform Delay, d1	24.2	23.1	6.0			6.1
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.0	0.3	0.1			0.2
Delay (s)	25.2	23.4	6.1			6.3
Level of Service	C	C	A			A
Approach Delay (s)	24.2		6.1			6.3
Approach LOS	C		A			A
Intersection Summary						
HCM 2000 Control Delay			9.7		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.37			
Actuated Cycle Length (s)			64.8		Sum of lost time (s)	14.0
Intersection Capacity Utilization			92.5%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis

103: Front Road North & Development Access

06/08/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (veh/h)	1	12	458	0	4	316
Future Volume (Veh/h)	1	12	458	0	4	316
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	13	498	0	4	343
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			280			275
pX, platoon unblocked						
vC, conflicting volume	678	249			498	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	678	249			498	
tC, single (s)	7.0	7.1			4.3	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	100	98			100	
cM capacity (veh/h)	363	721			995	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	14	332	166	118	229	
Volume Left	1	0	0	4	0	
Volume Right	13	0	0	0	0	
cSH	674	1700	1700	995	1700	
Volume to Capacity	0.02	0.20	0.10	0.00	0.13	
Queue Length 95th (m)	0.5	0.0	0.0	0.1	0.0	
Control Delay (s)	10.5	0.0	0.0	0.3	0.0	
Lane LOS	B			A		
Approach Delay (s)	10.5	0.0		0.1		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			22.7%		ICU Level of Service	A
Analysis Period (min)			15			

Queues

101: Texas Road & Front Road North

05/21/2022



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	78	16	635	200	660
v/c Ratio	0.30	0.07	0.28	0.19	0.36
Control Delay	27.3	12.6	5.5	2.1	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	12.6	5.5	2.1	6.2
Queue Length 50th (m)	8.3	0.0	15.8	1.7	17.5
Queue Length 95th (m)	17.7	4.1	23.8	7.9	22.7
Internal Link Dist (m)	128.4		107.9		254.1
Turn Bay Length (m)	20.0			20.0	
Base Capacity (vph)	918	828	2275	1065	1850
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.08	0.02	0.28	0.19	0.36
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

101: Texas Road & Front Road North

05/21/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	66	14	559	176	58	457
Future Volume (vph)	66	14	559	176	58	457
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0		7.0
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		0.99
Satd. Flow (prot)	1630	1458	3259	1458		3241
Flt Permitted	0.95	1.00	1.00	1.00		0.81
Satd. Flow (perm)	1630	1458	3259	1458		2649
Peak-hour factor, PHF	0.85	0.85	0.88	0.88	0.78	0.78
Adj. Flow (vph)	78	16	635	200	74	586
RTOR Reduction (vph)	0	14	0	53	0	0
Lane Group Flow (vph)	78	2	635	147	0	660
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	4		2			6
Permitted Phases		4		2	6	
Actuated Green, G (s)	8.2	8.2	43.2	43.2		43.2
Effective Green, g (s)	8.2	8.2	43.2	43.2		43.2
Actuated g/C Ratio	0.13	0.13	0.66	0.66		0.66
Clearance Time (s)	7.0	7.0	7.0	7.0		7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	204	182	2152	963		1749
v/s Ratio Prot	c0.05		0.19			
v/s Ratio Perm		0.00		0.10		c0.25
v/c Ratio	0.38	0.01	0.30	0.15		0.38
Uniform Delay, d1	26.3	25.0	4.7	4.2		5.0
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.2	0.0	0.1	0.1		0.1
Delay (s)	27.5	25.1	4.8	4.3		5.2
Level of Service	C	C	A	A		A
Approach Delay (s)	27.1		4.6			5.2
Approach LOS	C		A			A
Intersection Summary						
HCM 2000 Control Delay			6.2		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.38			
Actuated Cycle Length (s)			65.4		Sum of lost time (s)	14.0
Intersection Capacity Utilization			78.3%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Queues

102: Front Road North & Kingsbridge Drive

05/21/2022



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	17	166	848	728
v/c Ratio	0.07	0.46	0.43	0.53
Control Delay	23.7	10.3	6.6	8.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.7	10.3	6.6	8.6
Queue Length 50th (m)	1.7	1.1	21.2	21.7
Queue Length 95th (m)	5.9	12.5	21.1	31.7
Internal Link Dist (m)	120.7		252.9	113.0
Turn Bay Length (m)	15.0			
Base Capacity (vph)	914	886	1984	1372
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.19	0.43	0.53
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

102: Front Road North & Kingsbridge Drive

05/21/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	14	138	449	128	107	512
Future Volume (vph)	14	138	449	128	107	512
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0			7.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	0.97			1.00
Flt Protected	0.95	1.00	1.00			0.99
Satd. Flow (prot)	1630	1458	3151			3231
Flt Permitted	0.95	1.00	1.00			0.68
Satd. Flow (perm)	1630	1458	3151			2200
Peak-hour factor, PHF	0.83	0.83	0.68	0.68	0.85	0.85
Adj. Flow (vph)	17	166	660	188	126	602
RTOR Reduction (vph)	0	131	20	0	0	0
Lane Group Flow (vph)	17	35	828	0	0	728
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	10.1	10.1	40.0			40.0
Effective Green, g (s)	10.1	10.1	40.0			40.0
Actuated g/C Ratio	0.16	0.16	0.62			0.62
Clearance Time (s)	7.0	7.0	7.0			7.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	256	229	1966			1372
v/s Ratio Prot	0.01		0.26			
v/s Ratio Perm		c0.02				c0.33
v/c Ratio	0.07	0.15	0.42			0.53
Uniform Delay, d1	23.0	23.3	6.1			6.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	0.3	0.1			0.4
Delay (s)	23.1	23.6	6.3			7.2
Level of Service	C	C	A			A
Approach Delay (s)	23.6		6.3			7.2
Approach LOS	C		A			A
Intersection Summary						
HCM 2000 Control Delay			8.5		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.45			
Actuated Cycle Length (s)			64.1		Sum of lost time (s)	14.0
Intersection Capacity Utilization			92.5%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis

103: Front Road North & Development Access

05/21/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (veh/h)	1	6	571	1	11	515
Future Volume (Veh/h)	1	6	571	1	11	515
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	7	621	1	12	560
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			278			277
pX, platoon unblocked	0.97	0.97			0.97	
vC, conflicting volume	926	311			622	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	861	237			556	
tC, single (s)	7.0	7.1			4.3	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	100	99			99	
cM capacity (veh/h)	265	715			919	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	8	414	208	199	373	
Volume Left	1	0	0	12	0	
Volume Right	7	0	1	0	0	
cSH	590	1700	1700	919	1700	
Volume to Capacity	0.01	0.24	0.12	0.01	0.22	
Queue Length 95th (m)	0.3	0.0	0.0	0.3	0.0	
Control Delay (s)	11.2	0.0	0.0	0.7	0.0	
Lane LOS	B			A		
Approach Delay (s)	11.2	0.0		0.2		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			32.1%		ICU Level of Service	A
Analysis Period (min)			15			

Queues

101: Texas Road & Front Road North

06/09/2022



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	244	318	588	244	481
v/c Ratio	0.67	0.67	0.31	0.26	0.29
Control Delay	34.0	17.1	9.0	3.0	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	17.1	9.0	3.0	8.9
Queue Length 50th (m)	29.1	13.9	18.6	1.9	15.0
Queue Length 95th (m)	24.4	7.0	20.7	2.9	22.4
Internal Link Dist (m)	128.4		107.9		256.1
Turn Bay Length (m)	20.0			20.0	
Base Capacity (vph)	842	847	1872	925	1681
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	0.38	0.31	0.26	0.29
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

101: Texas Road & Front Road North

06/09/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	122	159	347	144	21	330
Future Volume (vph)	122	159	347	144	21	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0		7.0
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1630	1458	3259	1458		3249
Flt Permitted	0.95	1.00	1.00	1.00		0.90
Satd. Flow (perm)	1630	1458	3259	1458		2927
Peak-hour factor, PHF	0.50	0.50	0.59	0.59	0.73	0.73
Adj. Flow (vph)	244	318	588	244	29	452
RTOR Reduction (vph)	0	150	0	88	0	0
Lane Group Flow (vph)	244	168	588	156	0	481
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	4		2			6
Permitted Phases		4		2	6	
Actuated Green, G (s)	15.7	15.7	40.2	40.2		40.2
Effective Green, g (s)	15.7	15.7	40.2	40.2		40.2
Actuated g/C Ratio	0.22	0.22	0.58	0.58		0.58
Clearance Time (s)	7.0	7.0	7.0	7.0		7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	366	327	1874	838		1683
v/s Ratio Prot	c0.15		c0.18			
v/s Ratio Perm		0.12		0.11		0.16
v/c Ratio	0.67	0.51	0.31	0.19		0.29
Uniform Delay, d1	24.7	23.8	7.7	7.1		7.6
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	4.5	1.4	0.1	0.1		0.1
Delay (s)	29.3	25.1	7.8	7.2		7.6
Level of Service	C	C	A	A		A
Approach Delay (s)	26.9		7.6			7.6
Approach LOS	C		A			A
Intersection Summary						
HCM 2000 Control Delay			13.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.41			
Actuated Cycle Length (s)			69.9		Sum of lost time (s)	14.0
Intersection Capacity Utilization			78.3%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Queues

102: Front Road North & Kingsbridge Drive

06/09/2022



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	124	176	761	481
v/c Ratio	0.45	0.51	0.38	0.41
Control Delay	29.9	15.4	7.1	7.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	29.9	15.4	7.1	7.9
Queue Length 50th (m)	13.6	6.2	19.8	12.8
Queue Length 95th (m)	24.9	18.4	23.2	22.8
Internal Link Dist (m)	120.7		250.9	113.0
Turn Bay Length (m)	15.0			
Base Capacity (vph)	902	859	2002	1183
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.20	0.38	0.41
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

102: Front Road North & Kingsbridge Drive

06/09/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	103	146	511	7	159	250
Future Volume (vph)	103	146	511	7	159	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0			7.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			0.98
Satd. Flow (prot)	1630	1458	3253			3197
Flt Permitted	0.95	1.00	1.00			0.59
Satd. Flow (perm)	1630	1458	3253			1922
Peak-hour factor, PHF	0.83	0.83	0.68	0.68	0.85	0.85
Adj. Flow (vph)	124	176	751	10	187	294
RTOR Reduction (vph)	0	97	1	0	0	0
Lane Group Flow (vph)	124	79	760	0	0	481
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	11.0	11.0	40.0			40.0
Effective Green, g (s)	11.0	11.0	40.0			40.0
Actuated g/C Ratio	0.17	0.17	0.62			0.62
Clearance Time (s)	7.0	7.0	7.0			7.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	275	246	2001			1182
v/s Ratio Prot	c0.08		0.23			
v/s Ratio Perm		0.05				c0.25
v/c Ratio	0.45	0.32	0.38			0.41
Uniform Delay, d1	24.3	23.7	6.3			6.4
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.2	0.8	0.1			0.2
Delay (s)	25.5	24.5	6.4			6.6
Level of Service	C	C	A			A
Approach Delay (s)	24.9		6.4			6.6
Approach LOS	C		A			A

Intersection Summary

HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

103: Front Road North & Development Access

06/09/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (veh/h)	1	12	506	0	4	349
Future Volume (Veh/h)	1	12	506	0	4	349
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	13	550	0	4	379
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			280			275
pX, platoon unblocked						
vC, conflicting volume	748	275			550	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	748	275			550	
tC, single (s)	7.0	7.1			4.3	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	100	98			100	
cM capacity (veh/h)	327	693			950	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	14	367	183	130	253	
Volume Left	1	0	0	4	0	
Volume Right	13	0	0	0	0	
cSH	642	1700	1700	950	1700	
Volume to Capacity	0.02	0.22	0.11	0.00	0.15	
Queue Length 95th (m)	0.5	0.0	0.0	0.1	0.0	
Control Delay (s)	10.7	0.0	0.0	0.3	0.0	
Lane LOS	B			A		
Approach Delay (s)	10.7	0.0		0.1		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			24.0%		ICU Level of Service	A
Analysis Period (min)			15			

Queues

101: Texas Road & Front Road North

05/21/2022



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	86	18	701	220	729
v/c Ratio	0.33	0.07	0.31	0.21	0.40
Control Delay	27.8	12.2	5.7	2.4	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	12.2	5.7	2.4	6.7
Queue Length 50th (m)	9.2	0.0	17.8	2.6	20.3
Queue Length 95th (m)	19.1	4.4	27.1	9.4	26.4
Internal Link Dist (m)	128.4		107.9		254.1
Turn Bay Length (m)	20.0			20.0	
Base Capacity (vph)	918	829	2271	1063	1801
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.02	0.31	0.21	0.40
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

101: Texas Road & Front Road North

05/21/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	73	15	617	194	64	505
Future Volume (vph)	73	15	617	194	64	505
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0		7.0
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		0.99
Satd. Flow (prot)	1630	1458	3259	1458		3241
Flt Permitted	0.95	1.00	1.00	1.00		0.79
Satd. Flow (perm)	1630	1458	3259	1458		2585
Peak-hour factor, PHF	0.85	0.85	0.88	0.88	0.78	0.78
Adj. Flow (vph)	86	18	701	220	82	647
RTOR Reduction (vph)	0	16	0	53	0	0
Lane Group Flow (vph)	86	2	701	167	0	729
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	4		2			6
Permitted Phases		4		2	6	
Actuated Green, G (s)	8.3	8.3	43.1	43.1		43.1
Effective Green, g (s)	8.3	8.3	43.1	43.1		43.1
Actuated g/C Ratio	0.13	0.13	0.66	0.66		0.66
Clearance Time (s)	7.0	7.0	7.0	7.0		7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	206	185	2147	960		1703
v/s Ratio Prot	c0.05		0.22			
v/s Ratio Perm		0.00		0.11		c0.28
v/c Ratio	0.42	0.01	0.33	0.17		0.43
Uniform Delay, d1	26.3	25.0	4.8	4.3		5.3
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.4	0.0	0.1	0.1		0.2
Delay (s)	27.7	25.0	4.9	4.4		5.5
Level of Service	C	C	A	A		A
Approach Delay (s)	27.2		4.8			5.5
Approach LOS	C		A			A

Intersection Summary

HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues

102: Front Road North & Kingsbridge Drive

05/21/2022



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	18	183	937	803
v/c Ratio	0.07	0.53	0.48	0.63
Control Delay	23.3	15.5	7.4	10.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.3	15.5	7.4	10.7
Queue Length 50th (m)	1.9	6.1	24.6	26.3
Queue Length 95th (m)	6.0	18.5	27.1	43.7
Internal Link Dist (m)	120.7		252.9	113.0
Turn Bay Length (m)	15.0			
Base Capacity (vph)	907	866	1969	1274
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.21	0.48	0.63
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

102: Front Road North & Kingsbridge Drive

05/21/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	152	495	142	118	564
Future Volume (vph)	15	152	495	142	118	564
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0			7.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	0.97			1.00
Flt Protected	0.95	1.00	1.00			0.99
Satd. Flow (prot)	1630	1458	3150			3231
Flt Permitted	0.95	1.00	1.00			0.63
Satd. Flow (perm)	1630	1458	3150			2059
Peak-hour factor, PHF	0.83	0.83	0.68	0.68	0.85	0.85
Adj. Flow (vph)	18	183	728	209	139	664
RTOR Reduction (vph)	0	104	20	0	0	0
Lane Group Flow (vph)	18	79	917	0	0	803
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	10.7	10.7	40.0			40.0
Effective Green, g (s)	10.7	10.7	40.0			40.0
Actuated g/C Ratio	0.17	0.17	0.62			0.62
Clearance Time (s)	7.0	7.0	7.0			7.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	269	241	1947			1272
v/s Ratio Prot	0.01		0.29			
v/s Ratio Perm		c0.05				c0.39
v/c Ratio	0.07	0.33	0.47			0.63
Uniform Delay, d1	22.8	23.8	6.7			7.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.1	0.8	0.2			1.0
Delay (s)	22.9	24.6	6.8			8.8
Level of Service	C	C	A			A
Approach Delay (s)	24.5		6.8			8.8
Approach LOS	C		A			A

Intersection Summary

HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	64.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

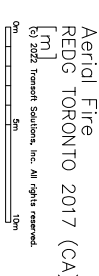
103: Front Road North & Development Access

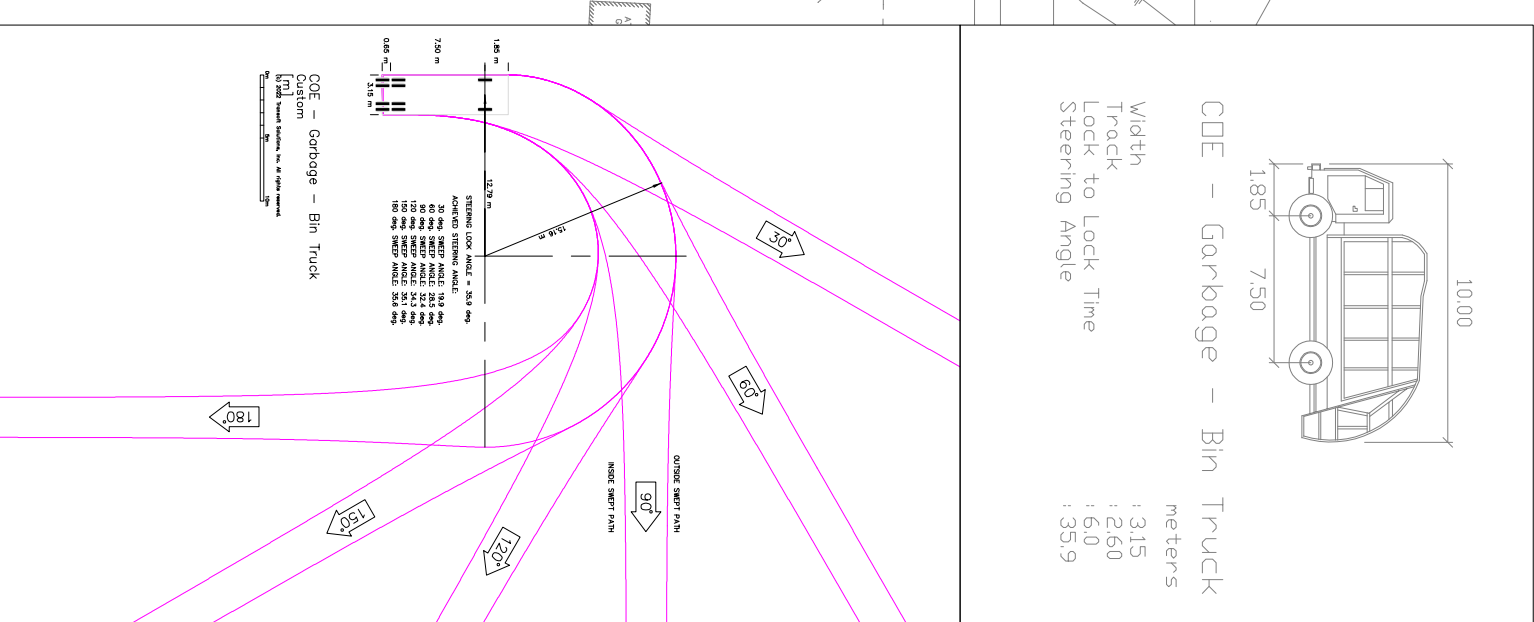
05/21/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	6	631	1	11	568
Future Volume (Veh/h)	1	6	631	1	11	568
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	7	686	1	12	617
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			278			277
pX, platoon unblocked	0.97	0.96			0.96	
vC, conflicting volume	1019	344			687	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	841	221			580	
tC, single (s)	7.0	7.1			4.3	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	100	99			99	
cM capacity (veh/h)	271	720			883	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	8	457	230	218	411	
Volume Left	1	0	0	12	0	
Volume Right	7	0	1	0	0	
cSH	597	1700	1700	883	1700	
Volume to Capacity	0.01	0.27	0.14	0.01	0.24	
Queue Length 95th (m)	0.3	0.0	0.0	0.3	0.0	
Control Delay (s)	11.1	0.0	0.0	0.6	0.0	
Lane LOS	B			A		
Approach Delay (s)	11.1	0.0		0.2		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			33.5%		ICU Level of Service	A
Analysis Period (min)			15			

APPENDIX G

Swept Path Reports

165620244



DRAWN	YS
CHECKED	AM
SCALE	1:1000
DATE	June 2022
PROJECT NUMBER	165620244