



September 20, 2023

Town of Midland
Public Works Department
575 Dominion Avenue
Midland, ON L4R 1R2

Dear Sir/Madam:

**Subject: 710 Balm Beach Road, 1277 Sundowner Road, and 337 Sundowner Road
Midland, Ontario
Functional Servicing Letter
Site Plan Control Application
Additional Buildings C & D Residential Units**

On behalf of our Client, Coland Development Corporation, we are pleased to provide this letter to summarize the servicing for the proposed mixed-use plaza development on 710 Balm Beach Road, 1277 Sundowner Road, and 337 Sundowner Road located in Midland, Ontario. The previously approved Functional Servicing Report for the site prepared by WSP, dated March 1, 2019 (710 Balm Beach Road Midland, ON - Functional Servicing Report) defines the servicing parameters for the plaza development. The scope of the plaza development has been revised per the site plan drawings prepared by Chamberlain Architect Services Ltd (received August 23, 2023) to include newly proposed residential units on top of two of the originally proposed commercial buildings (Buildings C and D). It is additionally proposed to infill the previously proposed dry pond area to create additional parking and an amenity area. This letter provides an outline of the water distribution, sanitary drainage, storm drainage and site grading for the development, and demonstrates how the servicing conforms to the servicing and grading strategy outlined in the previously approved Functional Servicing Report. A Stormwater Management (SWM) Report has been provided under separate cover. The SWM Report evaluates the proposed revisions to the development and addresses all stormwater management related impacts from the project.

Site

The Site is a 3.19 ha parcel of land bounded by Balm Beach Road East to the south, Sundowner Road to the north and west, and commercial buildings to the east. The first phase of development has proceeded within the site including clearing, servicing, grading, parking and three of the proposed buildings. The proposed development consists of approximately 68 residential units (5838m² residential Gross Floor Area), 7989.66m² commercial/office Gross Floor Area (GFA), 0.72 ha landscape area, and 1.90 ha of paved area including parking.



Water Servicing

Under existing conditions, there is a 150mm and a 300mm municipal watermain along Sundowner Road. Water servicing for the proposed development will be provided by the existing 300mm watermain on Sundowner Road. An internal watermain network which will form a looped connection with the existing 300mm watermain on Sundowner Road is proposed within the Site. The proposed buildings will each have one (1) 150mm diameter water service connection. A water meter will be installed on each water service inside the mechanical rooms. The proposed mechanical rooms will be located within the buildings and will be accessible by the Town to provide remote read-out locations for the Town's use in reading the meters.

In addition to the three (3) existing fire hydrants located in the vicinity of the Site along Sundowner Road, new hydrants will be required within the development, spaced per Town requirements, to provide adequate fire protection coverage. Hydrants will be located such that the Siamese connections to the buildings are a maximum of 45m away from a hydrant.

The total average day water demand for the site is estimated as 19.2 US GPM (1.21 L/s), the total maximum day water demand is 38.2 US GPM (2.41 L/s), while the total peak water demand is 86.1 US GPM (5.43 L/s). The fire flow calculations indicate that Buildings "C" and "D" have the highest fire flow requirement of 1585 US GPM (100 L/s). Hydrant flow tests were conducted in July 2018 by the Town of Midland at 1378 Sundowner Road (H728). The available projected fire flow at 20 psi is recorded at approximately 7086 US GPM (447 L/s) which is greater than the required total domestic maximum day flow and fire water flow of 102 L/s. Refer to Appendix A for detailed domestic water demand and Fire Flow calculations as well as the results of the hydrant flow test.

Therefore, the watermain adjacent to the site is adequate to support the domestic and fire water demand for the proposed development. Refer to the Site General Servicing Plan Dwg. No GS1 in Appendix C for the proposed watermain servicing system.

Storm Servicing

For details regarding the on-site Stormwater Management, refer to the Stormwater Management Report by WSP Canada Inc.

Storm runoff from the proposed development for events up to and including the 100-year storm will be controlled to the pre-development levels in accordance with the MOECC and Town design guidelines. An underground storage facility – ADS StormTech MC-4500 chamber system, is proposed at the north limit of the property to provide quantity control. The storm flows from the chamber system will be discharged to the existing ditch on Sundowner Road. A 100 mm orifice tube and a 175 mm orifice tube are proposed to control the release rate from the underground chamber system. Quality control within the Site will be provided by catchbasin shields, an Oil-Grit Separator as well as Isolator Row Plus (IR+) incorporated within the underground chamber system. Low Impact Development (LID) practices such as French Drains, Infiltration Trenches, and Permeable Pavements will also be implemented to meet stormwater management criteria. For storm events exceeding the 100-year storm event, an overland flow route will be designed to direct excess flows to public roads.

The quantity and quality control measures outlined in WSP's Stormwater Management Report demonstrate that the required targets are met or exceeded. Refer to the Site General Servicing Plan Dwg. No GS1 in Appendix C for the proposed storm servicing system.



Sanitary Servicing

Under existing conditions, there is a 250mm sanitary sewer on Sundowner Road located 258m from the Site which drains east to a 450mm sanitary sewer on Yonge Street. A 250mm sanitary sewer was proposed to extend from the existing 250mm sanitary sewer on Sundowner Road to service the development. The construction of the proposed 250mm municipal sanitary sewer extensions was completed in 2023. Sanitary drainage from the proposed development will be conveyed to the newly constructed 250mm diameter municipal sanitary sewer extension on Sundowner Road via an internal sanitary sewer network. The proposed buildings will each have one (1) 150mm diameter sanitary service connection. A sanitary control manhole will be provided on private property close to the property line and will be accessible by the Town.

The approved March 2019 FSR analyses identified a peak sanitary flow rate of 0.94 L/s for the development. Based on the latest site statistics provided by Chamberlain Architect Services Limited, the peak sanitary flow rate from the Site is 3.94 L/s. Although the proposed sanitary flows from the development exceeds the sanitary flow rate identified in the approved March 2019 report by 3.00 L/s, the sanitary flow from the development will represent 9.4% of the newly constructed 250mm sanitary sewer capacity (42.0 L/s using a Mannings coefficient (n) of 0.013 and pipe slope of 0.50%) and 8.9% of the existing 250mm sanitary sewer capacity (44.5 L/s using a Mannings coefficient (n) of 0.013 and pipe slope of 0.56%). Therefore, the existing municipal sanitary sewer system has sufficient capacity to service the development. Please refer to Appendix B for the sanitary demand calculations based on the Town of Midland Engineering Development Design Standards.

Refer to the Site General Servicing Plan Dwg. No GSI in Appendix C or the proposed sanitary servicing system.

Site Grading

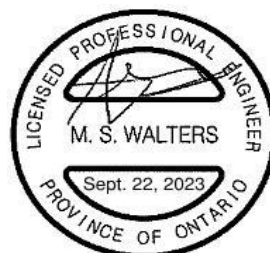
The site currently drains from south to north to Sundowner Road at the north-east corner of the site. The proposed grades around the site will be set to match existing grades at the property limits. The grading design for the proposed development comply with the Town of Midland Standards and will direct minor storm drainage to the on-site collection points so that drainage is self-contained. The major storm drainage will be directed away from the proposed structure to the approved outlet points.

Refer to the Site General Grading Plan Dwg. No GR1 in Appendix C for the proposed grading design.

We trust that the information provided in this letter is sufficient to satisfy the requirement for a functional servicing review of the proposed development. Please call me at 289-982-4304 if you have any questions or require additional information.

Yours sincerely,
WSP CANADA INC.

Shawn Walters, P.Eng.
Manager



APPENDIX

A DOMESTIC WATER DEMAND, FUS FIRE FLOW CALCULATIONS AND HYDRANT FLOW TEST RESULT

APPENDIX A-1
Tripair - Midland Ontario
Proposed Water Demand

Project: 710 Balm Beach RD, 1277 & 1337 Sundowner RD

Job No.: 18M-01130

September 20, 2023

Proposed Site Area (ha)	3.19	
Average Daily Demand (L/capita/day)	450	Town of Midland Engineering Development Design Standards Section 11.2.3 Page 74
Commercial/Industrial Employment Density (person/ha)	30	Town of Midland Official Plan Review and Update Project - Growth Management Strategy May 2009, Page 21
Commercial Population	96	
Residential Population	136	According to 68 residential units and 2 persons per apartment unit per the Town of Midland Development Standards Section 6.1.4 Page 53
Total Population	232	
Max. Day demand Factor	2	
Peak Factor	4.5	
PROPOSED WATER DEMAND		
Average Daily (L/s)	1.21	
Maximum Day (L/s)	2.41	
Peak Hour (L/s)	5.43	

APPENDIX A-2

Calculation of FUS Fire Flow for Tripar, Midland Proposed 2-Storey Building 'A' Office

Step 1 FUS Fire Flow calculation will consider gross floor area for preliminary design purposes

Proposed building will be constructed with fire resistive construction

Area, A = **2,767.72 m²** (Total floor area in the building being considered)

C = 0.60 Assume fire resistive Construction

$$\begin{aligned} F &= 220 \times C \times A^{0.5} \\ &= \\ &= 6944 \text{ litres/min} \\ &= 7000 \text{ litres/min (Required fire flow to nearest 1000 L/min)} \end{aligned}$$

Step 2

For low fire hazard occupancy, 25% percentage reduction

$$\begin{aligned} F &= 7000 \text{ litres/min (from Step 1)} \\ &- \frac{1750 \text{ litres/min (25\% decrease)}}{5250 \text{ litres/min}} \end{aligned}$$

Step 3

Decrease due to Sprinkler System

30% reduction for NFPA Sprinkler System¹

$$\begin{aligned} F &= 5250 \text{ litres/min (from Step 2)} \\ &- \frac{1575 \text{ litres/min (30\% decrease)}}{3675 \text{ litres/min}} \end{aligned}$$

Step 4

Separations Charge

Face	Distance(m)	Charge
West	>45	0%
East	>45	0%
North	>45	0%
South	>45	0%
Total Exposures		0%

$$\begin{aligned} F &= 3675 \text{ litres/min (from Step 2)} \\ &+ \frac{0 \text{ litres/min (0\% increase)}}{3675 \text{ litres/min}} \end{aligned}$$

FUS Fire Flow

$$\begin{aligned} F &= \text{Step 2-Step 3 + Step 4} \\ &= 5250 - 1575 + 0 = 3675 \text{ L/min} \\ &\text{Rounded off to the nearest 1,000 L/min} = 4000 \text{ L/min} \\ &= 67 \text{ L/s} \\ &= 1057 \text{ USGPM} \end{aligned}$$

Note

1. GFA based on Concept Site Plan prepared by Baldassara dated Jan. 2019.
2. Assumed to have sprinkler protection.
3. The new development building is the fire resistive building

APPENDIX A-2

Calculation of FUS Fire Flow for Tripar, Midland Proposed 2-Storey Building 'B' Office/Medical

Step 1 *FUS Fire Flow calculation will consider gross floor area for preliminary design purposes*

Proposed building will be constructed with fire resistive construction

Area, A = **1,836.65 m²** (Total floor area in the building being considered)

C = 0.60 Assume fire resistive Construction

$$\begin{aligned}
 F &= 220 \times C \times A^{0.5} \\
 &= \\
 &= 5657 \text{ litres/min} \\
 &= 6000 \text{ litres/min (Required fire flow to nearest 1000 L/min)}
 \end{aligned}$$

Step 2

For low fire hazard occupancy, 25% percentage reduction

$$\begin{aligned}
 F &= 6000 \text{ litres/min (from Step 1)} \\
 &- 1500 \text{ litres/min (25\% decrease)} \\
 &= 4500 \text{ litres/min}
 \end{aligned}$$

Step 3

Decrease due to Sprinkler System

30% reduction for NFPA Sprinkler System¹

$$\begin{aligned}
 F &= 4500 \text{ litres/min (from Step 2)} \\
 &- 1350 \text{ litres/min (30\% decrease)} \\
 &=
 \end{aligned}$$

Step 4

Separations Charge

Face	Distance(m)	Charge
West	>45	0%
East	>45	0%
North	16.8	15%
South	>45	0%
Total Exposures		15%

$$\begin{aligned}
 F &= 4500 \text{ litres/min (from Step 2)} \\
 &+ 675 \text{ litres/min (15\% increase)}
 \end{aligned}$$

FUS Fire Flow

$$\begin{aligned}
 F &= \text{Step 2-Step 3 + Step 4} \\
 &= 4500 - 1350 + 675 = 3825 \text{ L/min} \\
 &\text{Rounded off to the nearest 1,000 L/min} = 4000 \text{ L/min} \\
 &= 67 \text{ L/s} \\
 &= 1057 \text{ USGPM}
 \end{aligned}$$

Note

1. GFA based on Concept Site Plan prepared by Baldassara dated Jan. 2019.
2. Assumed to have sprinkler protection.
3. The new development building is the fire resistive building

APPENDIX A-2

Calculation of FUS Fire Flow for Tripar, Midland Proposed 1-Storey Building 'C' Retail

Project: 710 Balm Beach RD, 1277 & 1337 Sundowner RD
Job No.: 18M-01130

Step 1 FUS Fire Flow calculation will consider gross floor area for preliminary design purposes

Proposed building will be constructed with fire resistive construction

Area, A = **3,851.00 m²** (Total floor area in the building being considered)

C = 0.60 Assume fire resistive Construction

$$\begin{aligned} F &= 220 \times C \times A^{0.5} \\ &= \\ &= 8191 \text{ litres/min} \\ &= 8000 \text{ litres/min (Required fire flow to nearest 1000 L/min)} \end{aligned}$$

Step 2

For low fire hazard occupancy, 25% percentage reduction

$$\begin{aligned} F &= 8000 \text{ litres/min (from Step 1)} \\ &- \frac{2000 \text{ litres/min (25\% decrease)}}{6000 \text{ litres/min}} \end{aligned}$$

Step 3

Decrease due to Sprinkler System

30% reduction for NFPA Sprinkler System¹

$$\begin{aligned} F &= 6000 \text{ litres/min (from Step 2)} \\ &- \frac{1800 \text{ litres/min (30\% decrease)}}{6000 \text{ litres/min}} \end{aligned}$$

Step 4

Separations Charge

Face	Distance(m)	Charge
West	>45	0%
East	>45	0%
North	12.7	15%
South	16.8	15%
Total Exposures		30%

$$\begin{aligned} F &= 6000 \text{ litres/min (from Step 2)} \\ &+ \frac{1800 \text{ litres/min (30\% increase)}}{6000 \text{ litres/min}} \end{aligned}$$

FUS Fire Flow

$$\begin{aligned} F &= \text{Step 2-Step 3 + Step 4} \\ &= 6000 - 1800 + 1800 = 6000 \text{ L/min} \\ \text{Rounded off to the nearest 1,000 L/min} &= 6000 \text{ L/min} \\ &= 100 \text{ L/s} \\ &= 1585 \text{ USGPM} \end{aligned}$$

Note

1. GFA based on Concept Site Plan prepared by Baldassara dated Jan. 2019.
2. Assumed to have sprinkler protection.
3. The new development building is the fire resistive building.

APPENDIX A-2

Calculation of FUS Fire Flow for Tripar, Midland Proposed 1-Storey Building 'D' Retail

Step 1 FUS Fire Flow calculation will consider gross floor area for preliminary design purposes

Proposed building will be constructed with fire resistive construction

Area, A = 4,261.00 m² (Total floor area in the building being considered)

C = 0.60 Assume fire resistive Construction

F = $220 \times C \times A^{0.5}$
= 8616 litres/min
= 9000 litres/min (Required fire flow to nearest 1000 L/min)

Step 2

For low fire hazard occupancy, 25% percentage reduction

F = 9000 litres/min (from Step 1)
- 2250 litres/min (25% decrease)
= 6750 litres/min

Step 3

Decrease due to Sprinkler System

30% reduction for NFPA Sprinkler System¹

F = 6750 litres/min (from Step 2)
- 2025 litres/min (30% decrease)

Step 4

Separations Charge

Face	Distance(m)	Charge
West	>45	0%
East	>45	0%
North	>45	0%
South	12.7	15%
Total Exposures		15%

F = 6750 litres/min (from Step 2)
+ 1013 litres/min (15% increase)

FUS Fire Flow

F = $\text{Step 2-Step 3} + \text{Step 4}$
 $6750 - 2025 + 1013 = 5738 \text{ L/min}$
Rounded off to the nearest 1,000 L/min = 6000 L/min
= 100 L/s
= 1585 USGPM

Note

1. GFA based on Concept Site Plan prepared by Baldassara dated Jan. 2019.
2. Assumed to have sprinkler protection.
3. The new development building is the fire resistive building.

APPENDIX A-2

Calculation of FUS Fire Flow for Tripar, Midland Proposed 1-Storey Building 'E' Child Care Centre

Step 1 FUS Fire Flow calculation will consider gross floor area for preliminary design purposes

Proposed building will be constructed with fire resistive construction

Area, A = **466.29 m²** (Total floor area in the building being considered)

C = 0.60 Assume fire resistive Construction

F = $220 \times C \times A^{0.5}$
= 2850 litres/min
= 3000 litres/min (Required fire flow to nearest 1000 L/min)

Step 2

For low fire hazard occupancy, 25% percentage reduction

F = 3000 litres/min (from Step 1)
- 750 litres/min (25% decrease)
= 2250 litres/min

Step 3

Decrease due to Sprinkler System

30% reduction for NFPA Sprinkler System¹

F = 2250 litres/min (from Step 2)
- 675 litres/min (30% decrease)

Step 4

Separations Charge

Face	Distance(m)	Charge
West	>45	0%
East	>45	0%
North	>45	0%
South	>45	0%
Total Exposures		0%

F = 2250 litres/min (from Step 2)
+ 0 litres/min (0% increase)

FUS Fire Flow

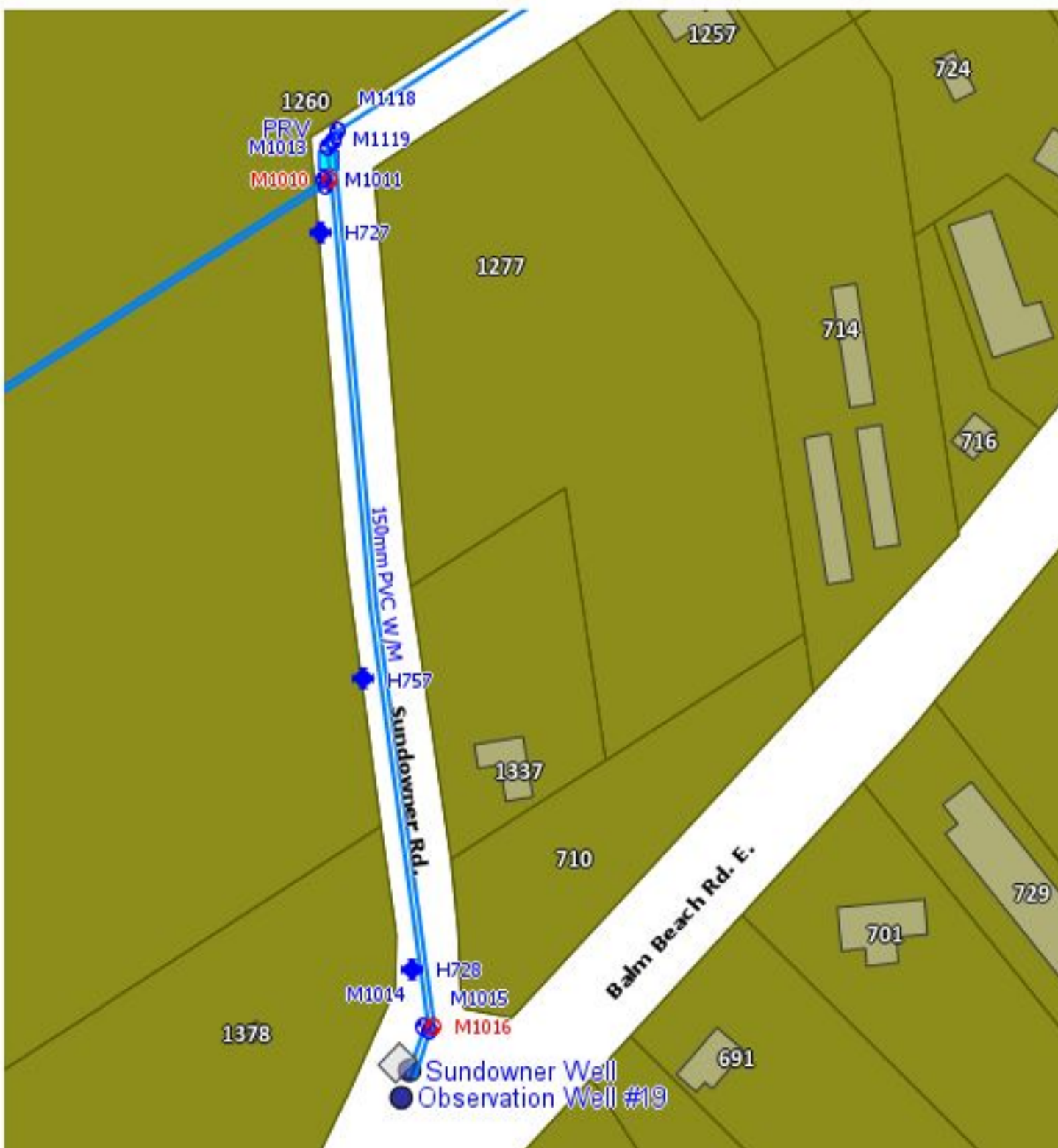
F = $\text{Step 2-Step 3} + \text{Step 4}$
 $2250 - 675 + 0 = 1575 \text{ L/min}$
Rounded off to the nearest 1,000 L/min = 2000 L/min
= 33 L/s
= 528 USGPM

Note

1. GFA based on Concept Site Plan prepared by Baldassara dated Jan. 2019.
2. Assumed to have sprinkler protection.
3. The new development building is the fire resistive building.

Pitot: 25psi
One (1) 2.5" outlet.
Flow at time of test: 839 gpm
Projected available hydrant flow: 7086 gpm

Note: Flows are estimates.



APPENDIX

B

SANITARY FLOWS
CALCULATIONS

APPENDIX B

Tripar - Midland Ontario Sanitary Flows

Project: 710 Balm Beach RD, 1277 & 1337 Sundowner RD
Job No.: 18M-01130

Existing Site Conditions

Single 2-Storey Dwelling Building		230.00	m ²
¹ Use Population density of 3 person/Single Family Dwelling			
² Use Average Flow: 450 L/day/capita			
Infiltration Rate: 20,000L/hectare/day = 0.23 L/s/ha			
Average daily domestic flow generation rate		450	L/cap/day
Design average daily flow	=	1,350	L/day
		0.02	L/sec
Harmon Peaking Factor	=	4.45	
Infiltration flow	=	0.01	L/sec
Total Peak Design Flow for Existing Development	=	0.075	L/sec

Proposed Site Conditions

Proposed Site Area =	31,938.70	m ²	or	3.19	hectares
Retail/Commercial GFA =	7,989.66	m ²	or	0.80	hectares
³ Use Average Flow: 2.5L/day/m ² of floor area					
Average daily domestic flow generation rate - Commercial		2.5		L/day/m ²	GFA
Design average daily flow - Commercial	=	19,974		L/day	
		0.23		L/sec	
⁴ Use Population density of 2 person/Apartment Unit		2		persons	
Number of Residential Units		68		units	
Average daily domestic flow generation rate - Residential		450		L/cap/day	
Design average daily flow - Residential	=	61,200		L/day	
Average Residential Flow	=	0.71		L/sec	
Harmon Peaking Factor	=	4.20			
Peak Residential Flow	=	2.98		L/sec	
Infiltration flow	=	0.73		L/sec	
⁵ Infiltration Rate: 20,000L/hectare/day = 0.23 L/s/ha					
Total Peak Design Flow for Proposed Development	=	3.94		L/sec	

¹ Based on Town of Midland "Engineering Development Design Standards" Section 6.1.4 "Design Flows" Page 53.

APPENDIX

C

SITE SERVICING AND SITE
GRADING PLANS

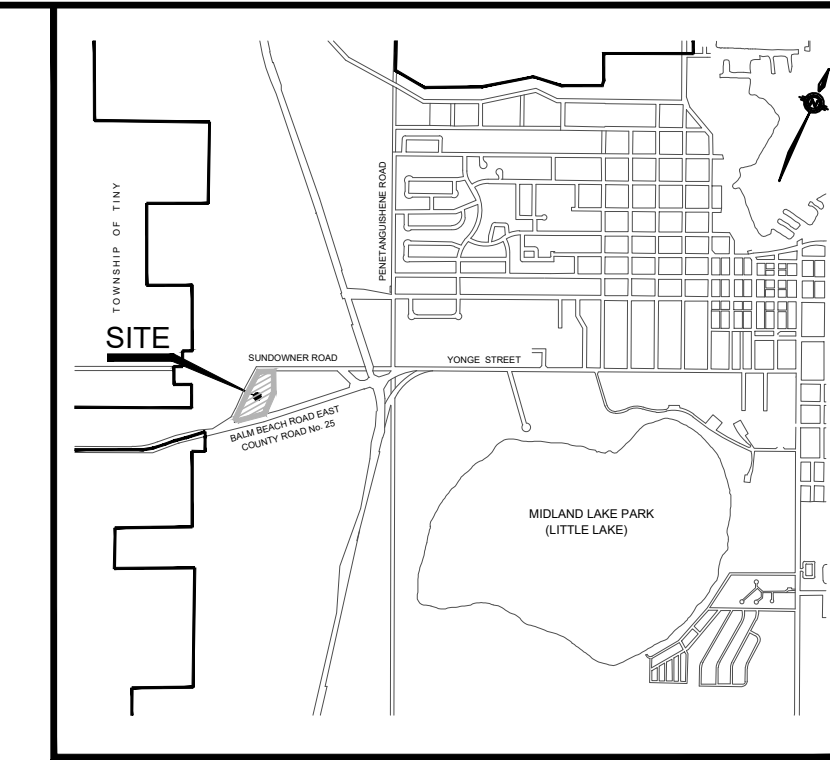


IN ORDER TO PROVIDE ADEQUATE DRAINAGE FOR SUNDOWNER ROAD A NEW DITCH SHALL BE NECESSARY ALONG MOST OF THE WEST LIMIT OF THE PROPOSED SITE. SEE TYPICAL CROSS-SECTION DETAIL ON DRAWING GR1.

ALL PROPOSED RETAINING WALLS SHALL BE "RisiStone - Sonoma Stone". CONTRACTOR TO PROVIDE CERTIFIED SHOP DRAWINGS OF THE PROPOSED RETAINING WALLS. ALL WALLS ABOVE 0.6m HEIGHT SHALL HAVE PEDESTRIAN HANDRAIL.

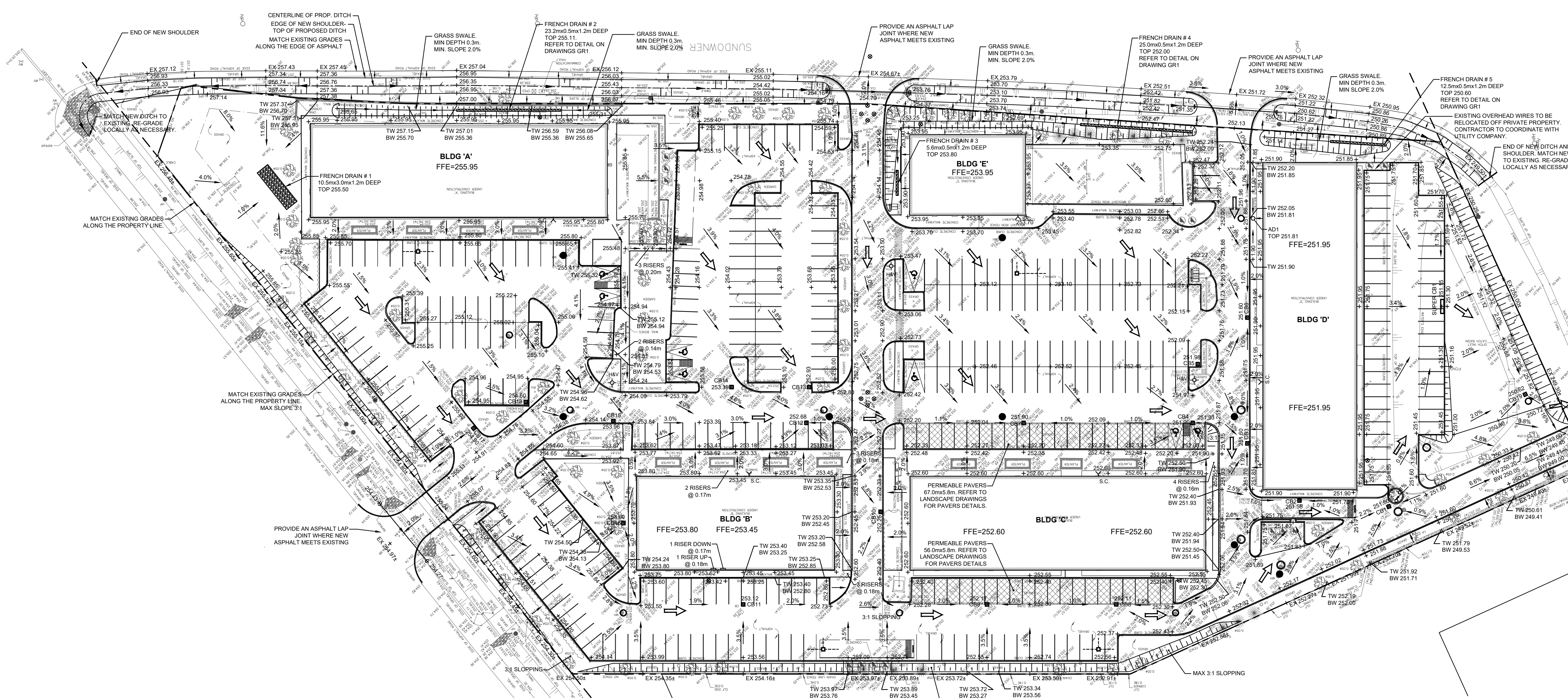
PROPOSED RETAINING WALLS ADJACENT TO THE BUILDINGS WILL FORM PART OF THE BUILDING STRUCTURAL DESIGN AND CERTIFIED DRAWINGS WILL BE PROVIDED AS PART OF THE BUILDING PERMIT APPLICATIONS FOR THESE STRUCTURES.

REFER TO SITE PLAN AND LANDSCAPE PLANS FOR ALL CROSSWALK BARRIER FREE CURB DROP DETAILS.



KEY PLAN NTS

- LEGEND**
- EX ELEVATION
 - PROP. ELEVATION
 - EX. CONTOUR
 - OVERLAND FLOW
 - DIRECTION OF FLOW
 - SANITARY MANHOLE
 - STORM MANHOLE
 - CATCHBASIN
 - DOUBLE CATCHBASIN
 - VALVE AND BOX
 - HYDRANT AND VALVE
 - LIMIT OF PROPERTY

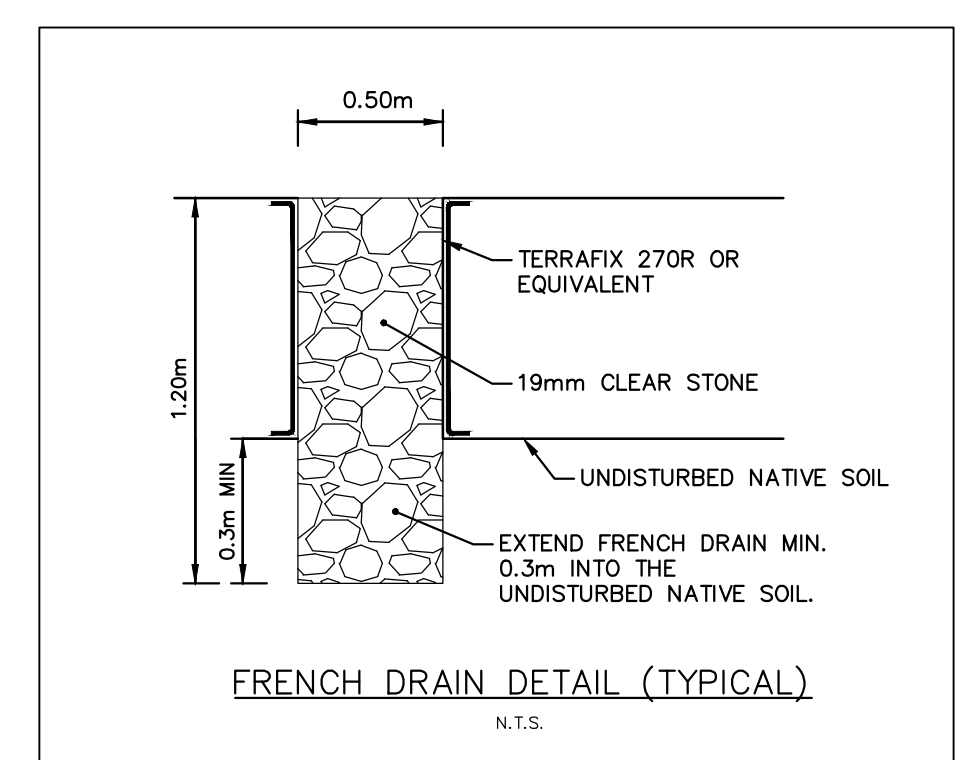
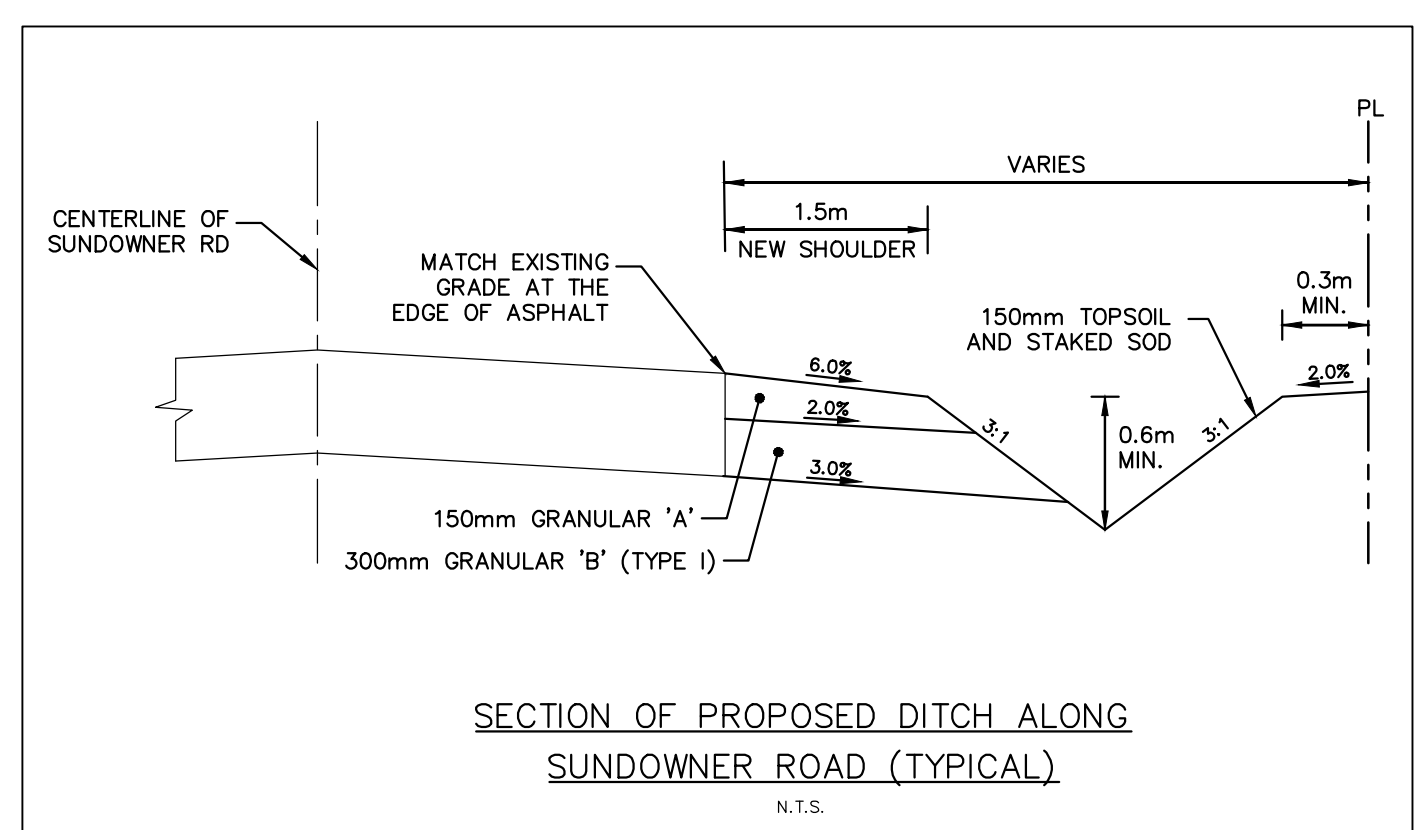


BENCHMARK
ELEVATIONS SHOWN GEODETIC DRIVEN FROM TOWN OF MIDLAND BENCH MARK #V414U71, ELEVATION 245.61M

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED				

CLIENT COLAND DEVELOPMENT CORPORATION	
MUNICIPALITY Town of Midland	
PROJECT TITLE 710 BALM BEACH ROAD, 1277 AND 1337 SUNDOWNER ROAD	
SHEET TITLE GENERAL GRADING PLAN	
CONSULTANT WSP <small>100 Commerce Valley Dr. West, Thornhill, ON, Canada L3T 0A1 1 905 882 1100 1 905 882 0200 www.wsp.com</small>	
APPROVALS TOWN OF MIDLAND	STAMP
DIRECTOR OF ENGINEERING	
DATE	
DESIGNED	CHECKED
P.Q.A.	P.Q.A.
DRAWN	Y.W.C.
SCALE	DATE
1:500	OCTOBER 2018
PROJECT NUMBER	DWG. NUMBER
18M-01130	GR1-2

SITE PLAN APPROVAL
This drawing is approved under Section 41 of the Planning Act by Council of the Corporation of the Town of Midland by Resolution No. _____ passed the ___ day of _____ or by the Director of Planning and Building Services on the ___ of _____ pursuant to By-law 2013-13.
Wesley R. Crown, MCP, RPP



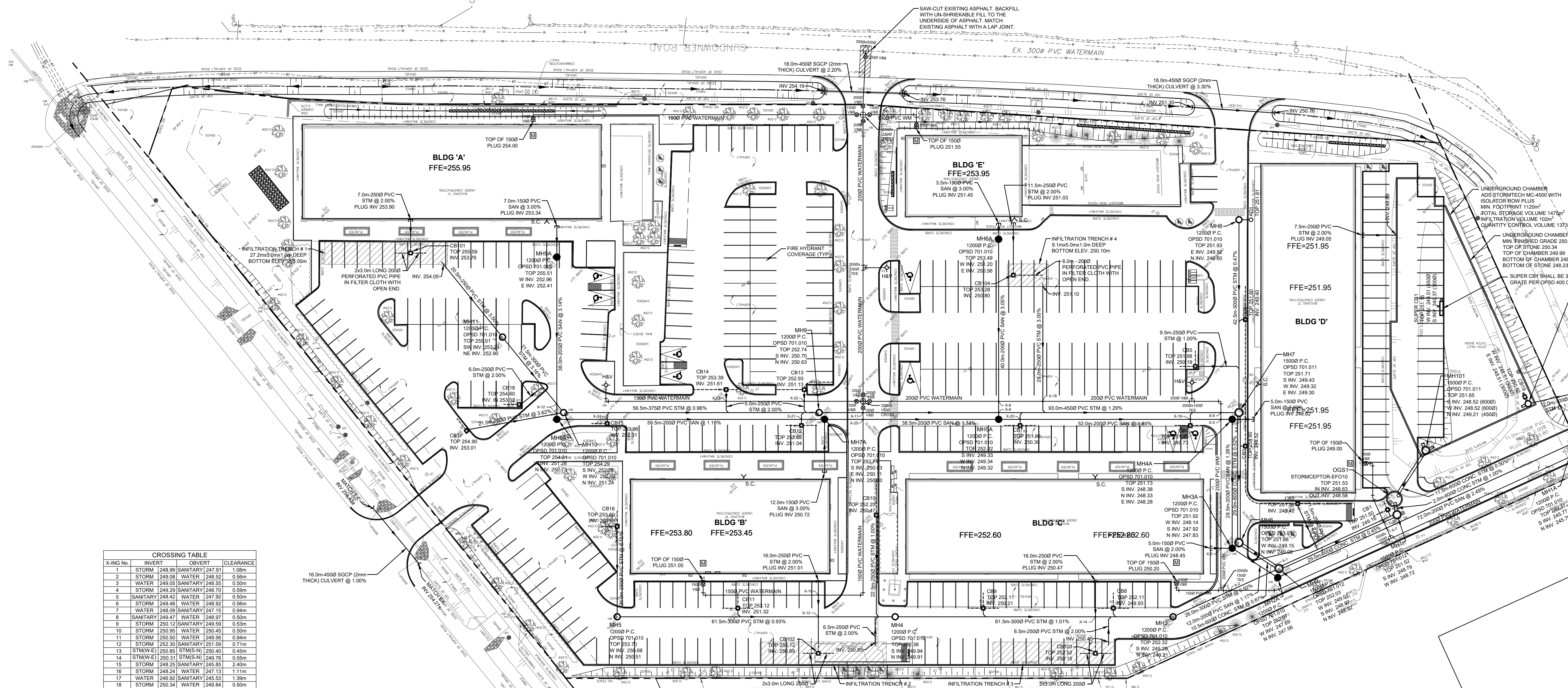
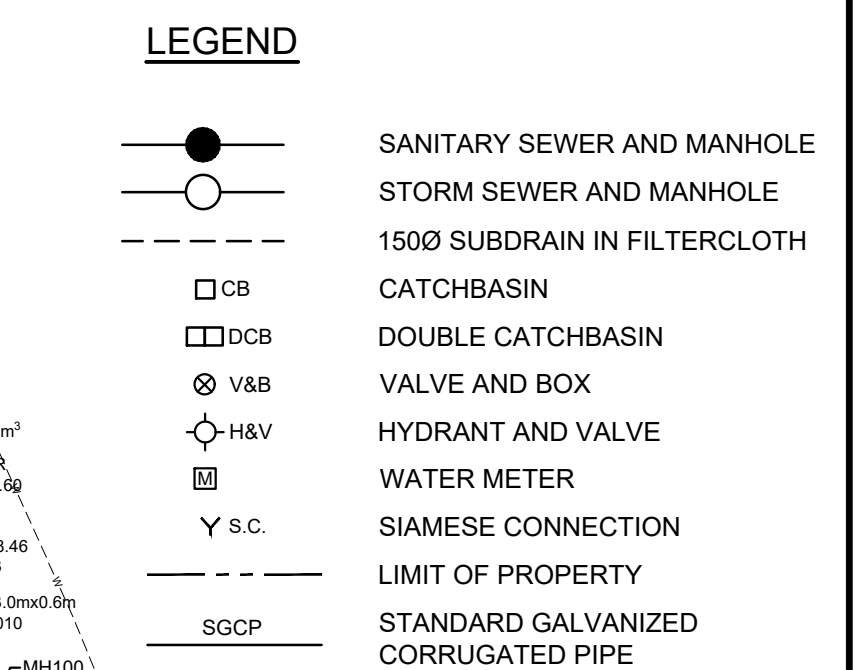
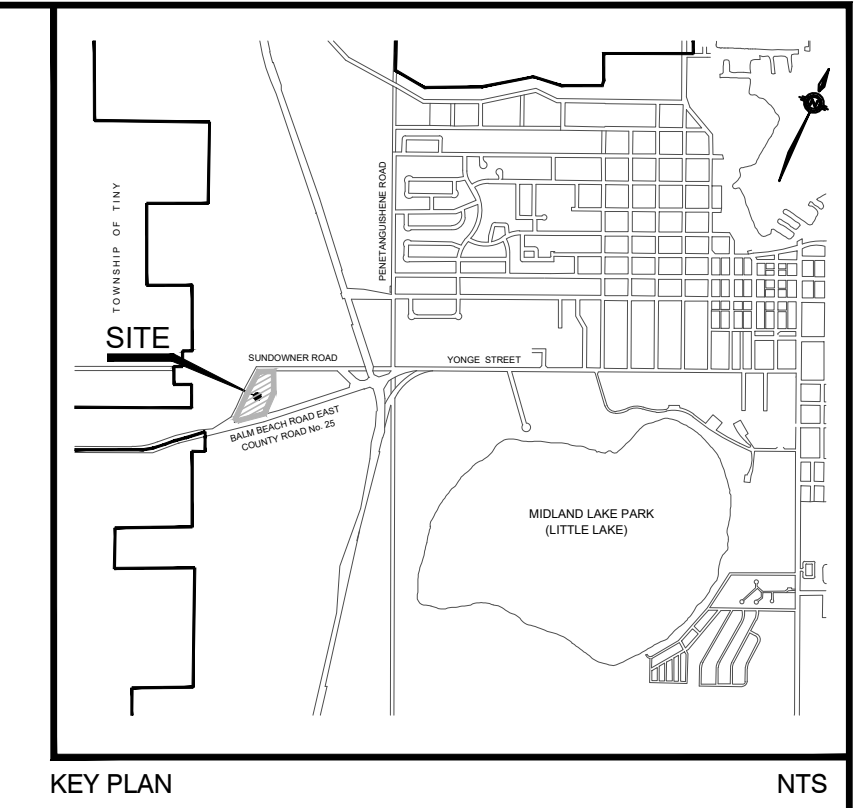
FILE NAME: \\corpshawnet.net\ca\cathl\001\eng\cas\DWG\18M-01130_Midland\Phase 2\Mun\Engineering\Draws\18M-01130_S33-S32-ESC2-D2.dwg_GRI-2 PRINTED ON: Friday, 09/19/2023

Town File No.



WHEN UTILITY CROSSING 0.5m MINIMUM VERTICAL CLEARANCE CAN NOT BE ACHIEVED PROVIDE INSULATION AS PER DETAIL-1 ON DRAWING GS1.

ALL PROPOSED CULVERTS TO BE FITTED WITH HEADWALLS PER OPSD 804.030.



X/LING No.	INVERT	OBVERT	CLEARANCE
1	STORM 248.99	SANITARY 247.91	1.08m
2	STORM 249.09	WATER 248.52	0.56m
3	WATER 249.05	SANITARY 248.55	0.50m
4	STORM 249.29	SANITARY 248.70	0.59m
5	SANITARY 248.82	WATER 247.82	0.50m
6	STORM 249.49	WATER 248.92	0.56m
7	WATER 248.09	SANITARY 247.15	0.94m
8	SANITARY 249.47	WATER 248.97	0.50m
9	STORM 250.12	SANITARY 249.59	0.53m
10	STORM 250.91	WATER 249.45	0.50m
11	STORM 250.50	WATER 249.56	0.94m
12	STORM 252.20	SANITARY 251.59	0.71m
13	STORM 250.81	STORM 250.40	0.40m
14	STORM 250.81	STORM 249.76	0.55m
15	STORM 248.25	SANITARY 245.85	2.40m
16	STORM 248.24	WATER 247.13	1.11m
17	WATER 246.92	SANITARY 245.53	1.39m
18	STORM 250.34	WATER 249.84	0.50m
19	STORM 249.71	SANITARY 248.75	0.96m
20	STORM 250.22	SANITARY 249.43	0.85m
21	STORM 251.02	SANITARY 250.29	0.73m
22	STORM 251.08	WATER 250.48	0.60m
23	STORM 251.68	WATER 250.94	0.62m
24	STORM 252.29	SANITARY 250.60	1.49m
25	SANITARY 249.85	WATER 249.35	0.50m
26	STORM 248.03	WATER 248.33	0.50m

BENCHMARK
ELEVATIONS SHOWN GEODETIC DRIVEN FROM TOWN OF MIDLAND BENCH MARK #VA14U71, ELEVATION 245.61M

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED				

CLIENT
COLAND DEVELOPMENT CORPORATION

MUNICIPALITY
Town of Midland

PROJECT TITLE
710 BALM BEACH ROAD,
1277 AND 1337 SUNDOWNER ROAD

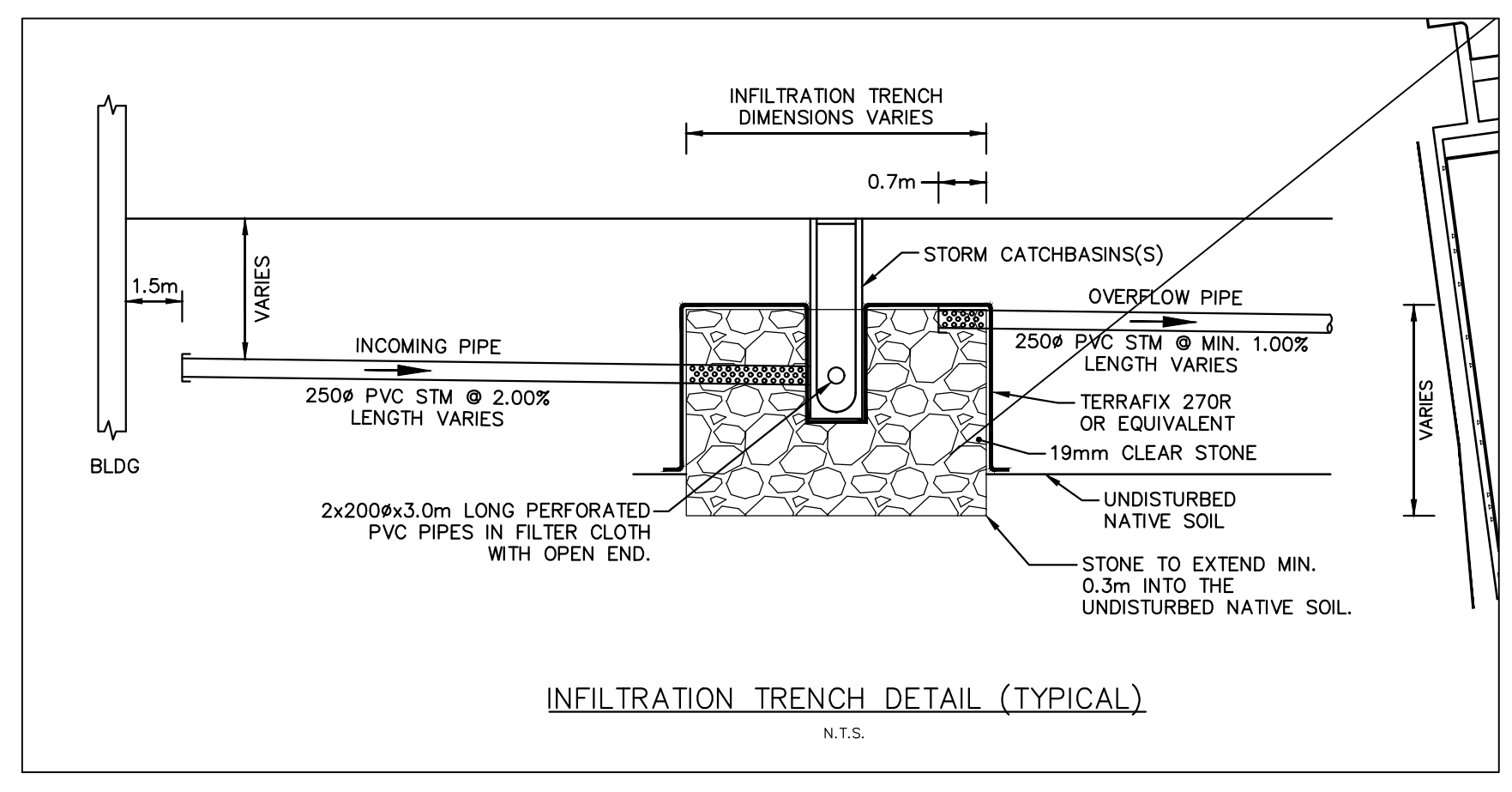
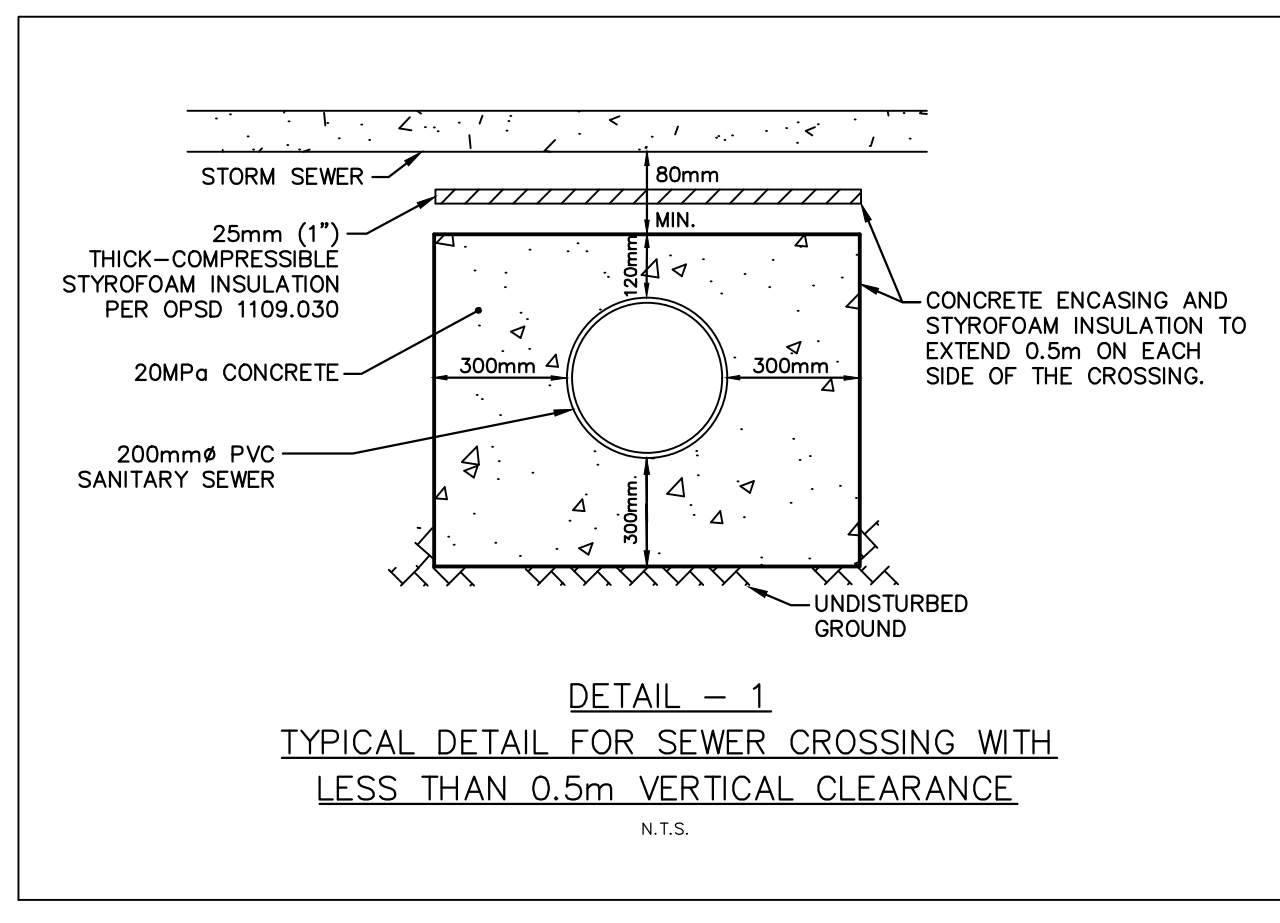
SHEET TITLE
GENERAL SERVICING PLAN

CONSULTANT
wsp
100 Commerce Village Dr. West, Thornhill, ON, Canada L3T 5A1
1-905-882-1100 1-800-862-0295 www.wsp.com

APPROVALS
TOWN OF MIDLAND
DIRECTOR OF ENGINEERING

STAMP

DESIGNED P.Q.A. DRAWN P.Q.A. CHECKED Y.W.C.
SCALE 1:500 DATE OCTOBER 2018
PROJECT NUMBER 18M-01130 DWG. NUMBER GS1-2



SITE PLAN APPROVAL
This drawing is approved under Section 41 of the Planning Act by Council of the Corporation of the Town of Midland by Resolution No. _____ passed the ____ day of _____ or by the Director of Planning and Building Services on the ____ of _____ pursuant to By-law 2013-13.
Wesley R. Crown, MCIP, RPP

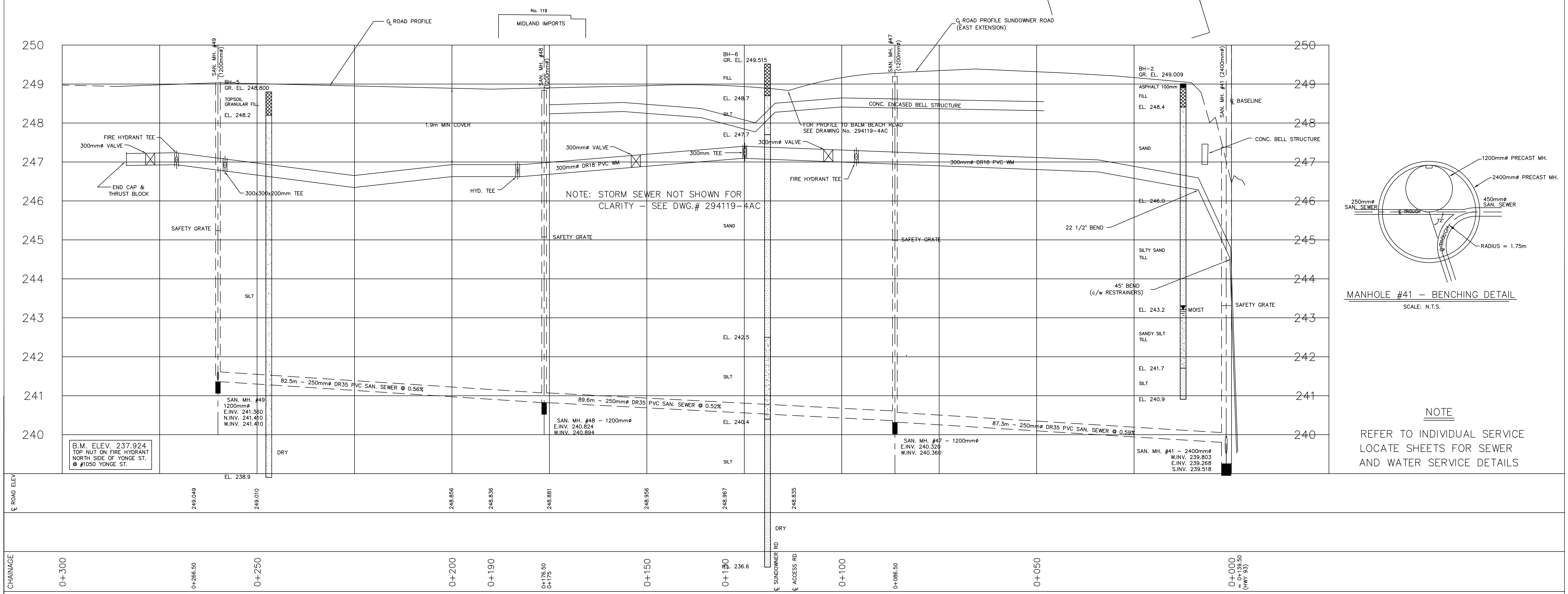
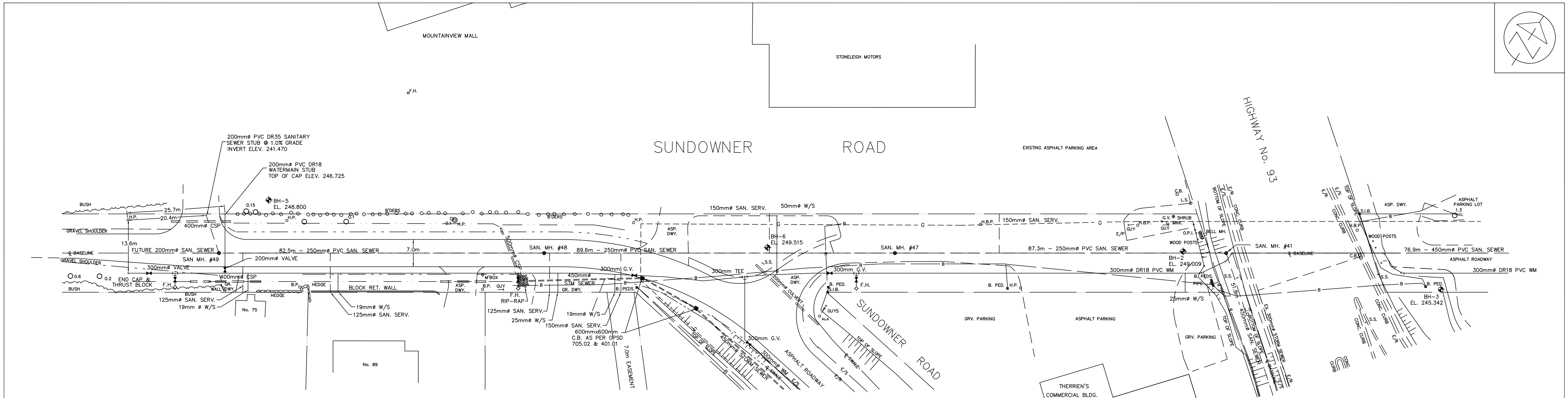
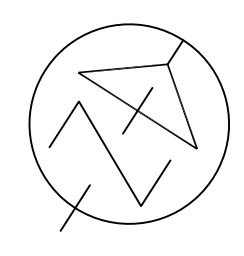
FILE NAME: \\corpshaw.com\csc\cath\100\eng\cas\18M-01130_Midland\Phase 2\Wsp\Engineering Drawings\18M-01130_SSP-SC2-02.dwg_GS1-2 PRINTED ON: Friday 09/19/2023

Town File No.

APPENDIX

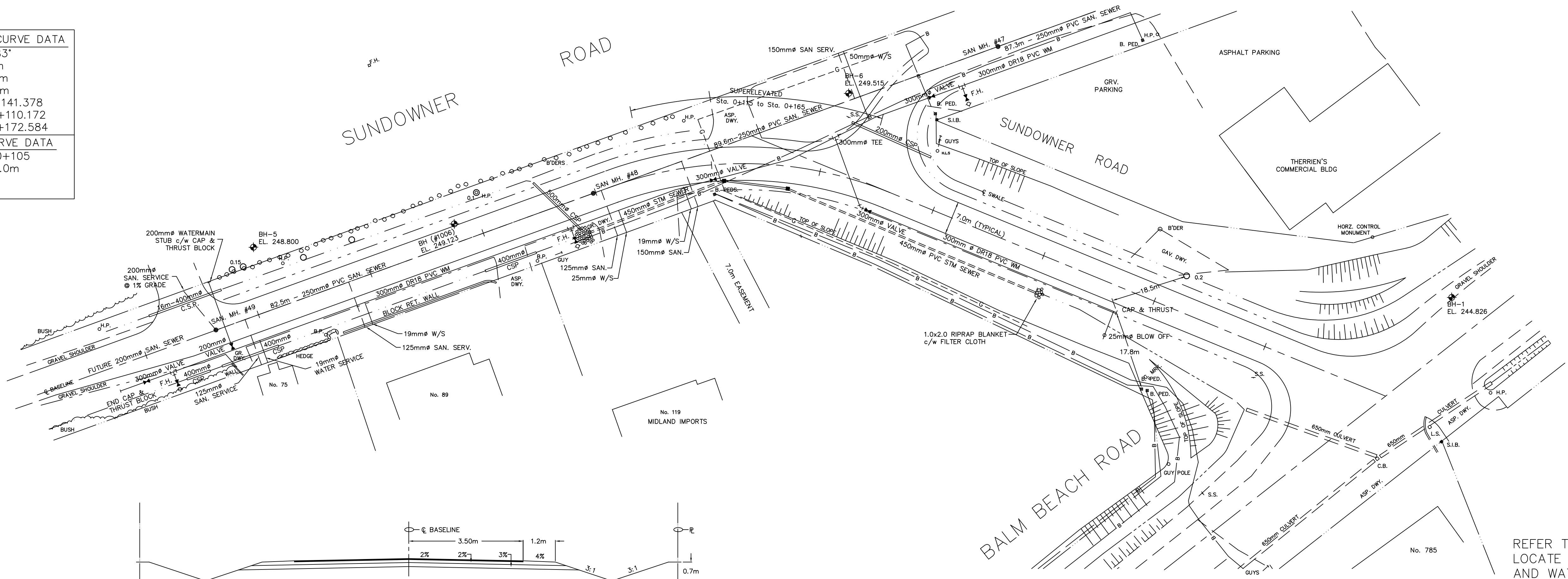
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TOWN OF MIDLAND
ARCHIVED DRAWINGS

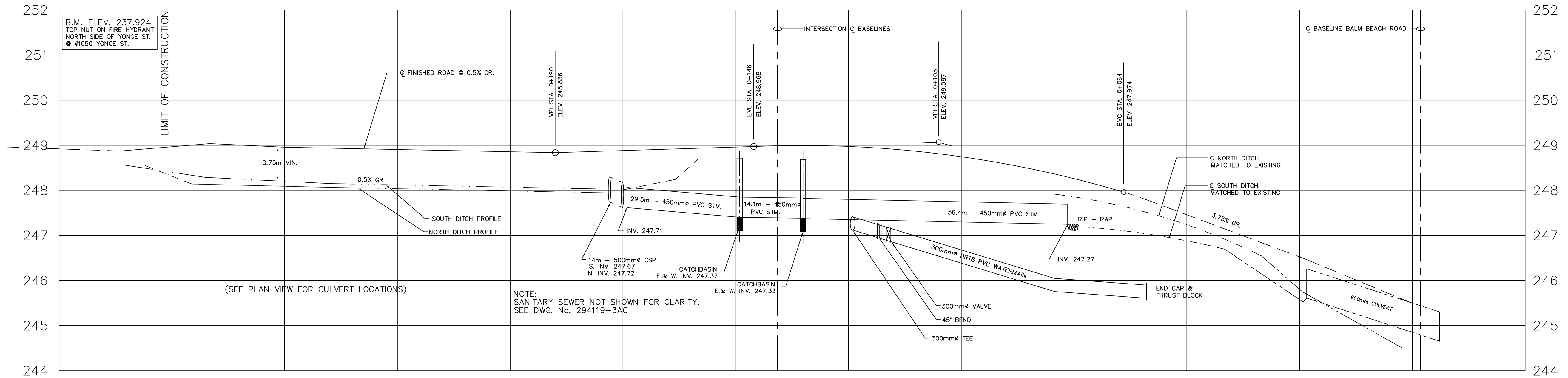


NOTES	1. ROADWAY PROTECTION: - FOR PLACEMENT OF MANHOLE #41 PROVIDE ENGINEERED SHORING AND BRACING OR SHEET PILING PROTECTION ALONG EDGE OF SHOULDER AND TEMPORARY CONCRETE BARRIER (AS PER OPSD 920.010 & 920.03) ALONG EDGE OF CURB OF HIGHWAY No. 93, ALL IN ACCORDANCE WITH OPS AND OTHER REGULATIONS. - CERTIFIED DETAIL DRAWINGS FOR SHORING PROTECTION TO BE PROVIDED TO TOWN ENGINEERING CONSULTANT AND MINISTRY OF TRANSPORTATION (ONTARIO) FOR ALL ACTIVITIES APPROVALS PRIOR TO ANY CONSTRUCTION RELATING TO MANHOLE #41 OR BORING UNDER HIGHWAY No.93. - TRAFFIC CONTROL TO BE PROVIDED IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND MINISTRY OF TRANSPORTATION REQUIREMENTS.	APPROVED		TOWN OF MIDLAND BALM BEACH ROAD TRUNK SANITARY SEWER		PREPARED BY: ANILEY & ASSOC. LTD. DESIGN: H.W.B. DRAWN: C.L.P.	SCALE: HORZ. 1:500 VERT. 1:50 CHECKED: D.G.C. DATE: DEC. 1994	DWG.No. 294119-3AC														
	2. ALL WORKS ON BALM BEACH ROAD TO BE TO THE APPROVAL AND ACCEPTANCE OF THE COUNTY ENGINEER - COUNTY OF SIMCOE, MIDHURST. 3. VEHICULAR ACCESS SHALL BE MAINTAINED AT ALL TIMES TO COMMERCIAL ESTABLISHMENTS TO THE SATISFACTION OF THE TOWN.								<table border="1"> <tr> <th>NO.</th> <th>REVISIONS</th> <th>DATE</th> <th>INITIAL</th> </tr> <tr> <td>4</td> <td>AS CONSTRUCTED</td> <td>JAN/96</td> <td></td> </tr> <tr> <td>3</td> <td>WATERMAIN EXTENDED WITH SHARED CASING</td> <td>MAY/95</td> <td></td> </tr> <tr> <td>2</td> <td>AS PER TOWN COMMENTS</td> <td>MAR/95</td> <td></td> </tr> <tr> <td>1</td> <td>CONSTRUCTION DRAWINGS</td> <td>JAN/95</td> <td></td> </tr> </table>	NO.	REVISIONS	DATE	INITIAL	4	AS CONSTRUCTED	JAN/96		3	WATERMAIN EXTENDED WITH SHARED CASING	MAY/95		2
NO.	REVISIONS	DATE	INITIAL																			
4	AS CONSTRUCTED	JAN/96																				
3	WATERMAIN EXTENDED WITH SHARED CASING	MAY/95																				
2	AS PER TOWN COMMENTS	MAR/95																				
1	CONSTRUCTION DRAWINGS	JAN/95																				

HORIZONTAL CURVE DATA	
A =	42.2583'
R =	80.75m
T =	31.206m
L =	59.559m
P.I. Sta.	0+141.378
B.C. Sta.	0+110.172
E.C. Sta.	0+172.584
VERTICAL CURVE DATA	
V.P.I. Sta.	0+105
L.V.C. =	82.0m
K =	27.3



NOTE
REFER TO INDIVIDUAL SERVICE
LOCATE SHEETS FOR SEWER
AND WATER SERVICE DETAILS



ROAD ELEV.	248.956	248.906	248.856	248.806	248.881	248.956	248.979	248.967	248.919	248.835	248.714	248.556	248.382	248.131	247.974	247.551	246.927	245.493
CHAINAGE	0+300	0+250	0+200	0+190	0+175	0+150	0+140	0+130	0+120	0+110	0+100	0+090	0+080	0+070	0+064	0+050	0+000	

NOTES

- ROADWORK PROTECTION:
 - FOR PLACEMENT OF MANHOLE #41 PROVIDE ENGINEERED SHORING AND BRACING OR SHEET PILING PROTECTION ALONG EDGE OF SHOULDER AND TEMPORARY CONCRETE BARRIER (AS PER OSPD 920.010 & 920.03) ALONG EDGE OF CURB OF HIGHWAY No. 93, ALL IN ACCORDANCE WITH OPSS AND OTHER REGULATIONS.
 - CERTIFIED DETAIL DRAWINGS FOR SHORING PROTECTION TO BE PROVIDED TO TOWN ENGINEERING CONSULTANT AND MINISTRY OF TRANSPORTATION (ONTARIO) FOR ALL ACTIVITIES APPROVALS PRIOR TO ANY CONSTRUCTION RELATING TO MANHOLE #41 OR BORING UNDER HIGHWAY No.93.
 - TRAFFIC CONTROL TO BE PROVIDED IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND MINISTRY OF TRANSPORTATION REQUIREMENTS.
- ALL WORKS ON BALM BEACH ROAD TO BE TO THE APPROVAL AND ACCEPTANCE OF THE COUNTY ENGINEER - COUNTY OF SIMCOE, MIDHURST.
- VEHICULAR ACCESS SHALL BE MAINTAINED AT ALL TIMES TO COMMERCIAL ESTABLISHMENTS TO THE SATISFACTION OF THE TOWN.

NO.	REVISIONS	DATE	INITIAL
4	AS CONSTRUCTED	JAN/96	
3	WATERMAIN EXTENDED WITH SHARED CASING	MAY/95	
2	AS PER TOWN COMMENTS	MAR/95	
1	CONSTRUCTION DRAWINGS	JAN/95	

APPROVED

D. G. CARR

TOWN OF MIDLAND
BALM BEACH ROAD
TRUNK SANITARY SEWER

SUNDOWNER ROAD

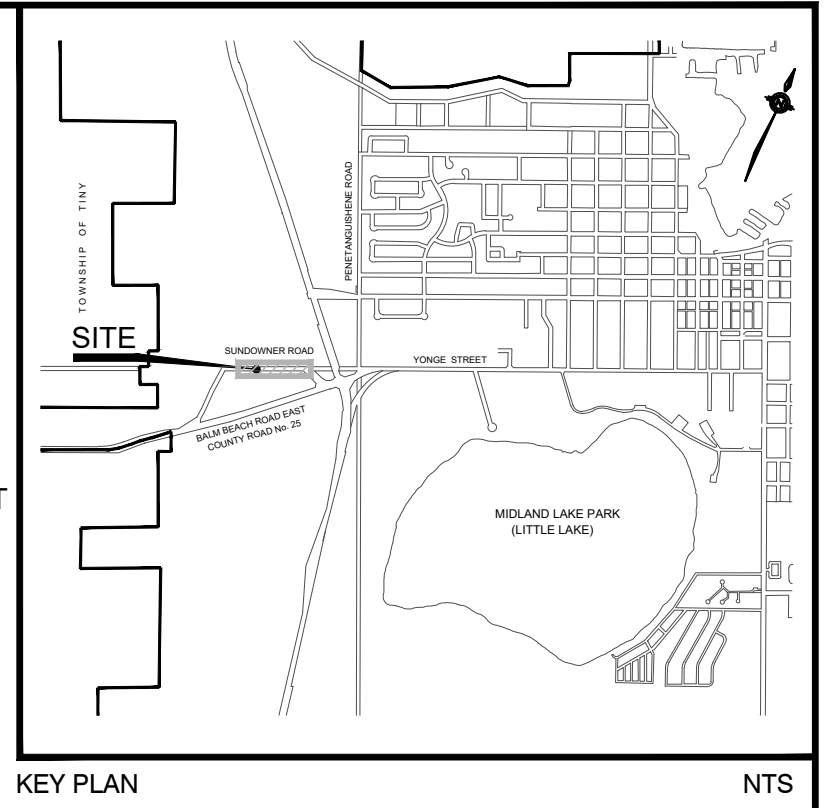
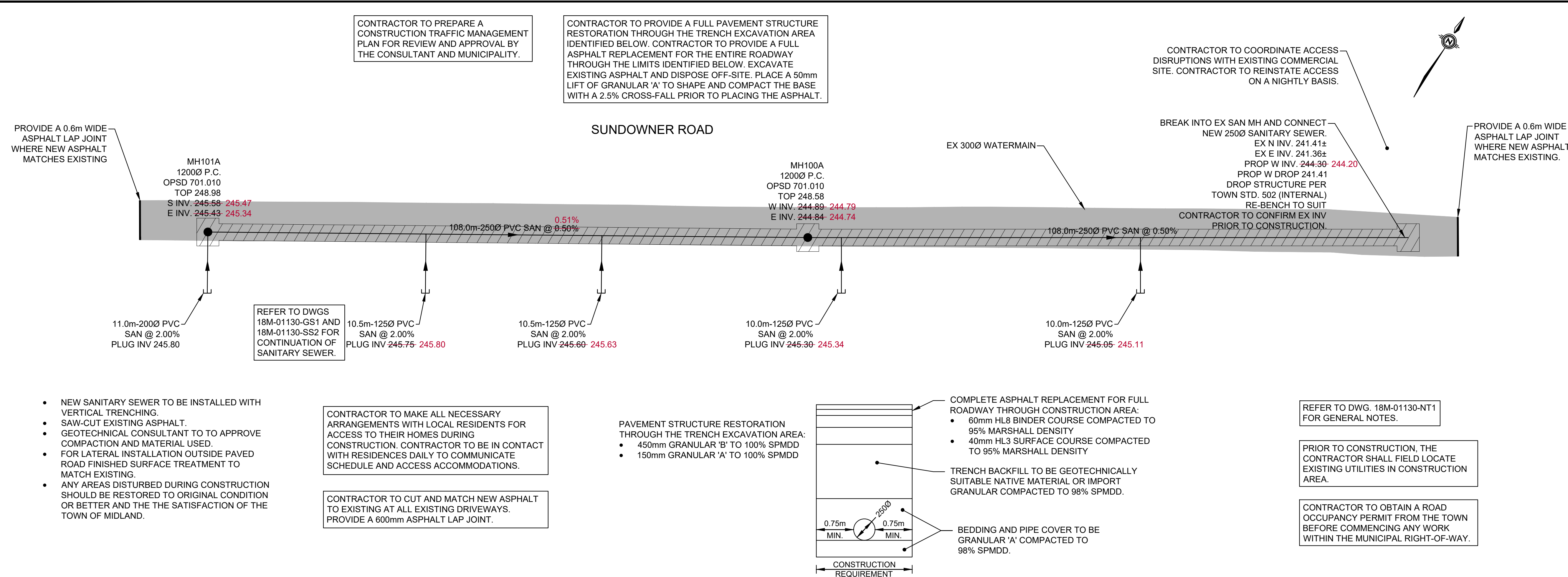
TOWN OF MIDLAND
ENGINEERING DEPARTMENT

PREPARED BY: AINLEY & ASSOC. LTD. SCALE: HORZ. 1:500 VERT. 1:50
 DESIGN: H.W.B. CHECKED: D.G.C.
 DRAWN: C.L.P. DATE: JAN. 1995 DWG.No. 294119-4AC

APPENDIX

E 250 mm SUNDOWNER ROAD SANITARY SEWER EXTENSION AS-BUILTS

FILE NAME: Z:\DIV\01\18M-01130 Midland\Mun\External Sanitary Sewer\18M-01130_P1.dwg_P1 PRINTED ON: Wednesday 09/20/2023



LEGEND

- PROP. SANITARY SEWER AND MANHOLE
- EX. SANITARY SEWER AND MANHOLE
- W- EXISTING WATERMAIN
- + 248.99 EXISTING ELEVATION
- ⊕ FH EXISTING HYDRANT AND VALVE
- STREET LINE
- ▨ AREA OF TRENCH EXCAVATION
- ▨ AREA OF ROADWAY ASPHALT REPLACEMENT

AS-BUILT INFORMATION AS PROVIDED BY BLACK STONE PAVING ON SEPTEMBER 15, 2021.

SITE PLAN APPROVAL
This drawing is approved under Section 41 of the Planning Act by Council of the Corporation of the Town of Midland by Resolution No. _____ passed the ____ day of _____, or by the Director of Planning and Building Services on the ____ of _____ pursuant to Bylaw 2013-13.
Wesley R. Crown, MCIP, RPP

BENCHMARK
ELEVATIONS SHOWN GEODETIC DRIVEN FROM TOWN OF MIDLAND BENCH MARK #VA14U71, ELEVATION 245.61M

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
3	AS-BUILT	YWC	2023-05-26	
2	RE-ISSUED FOR SPA	YWC	2019-07-26	
1	ISSUED FOR SPA	YWC	2019-03-01	

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
COLAND DEVELOPMENT CORPORATION

MUNICIPALITY
 Town of Midland

PROJECT TITLE
710 BALM BEACH ROAD,
1277 AND 1337 SUNDOWNER ROAD

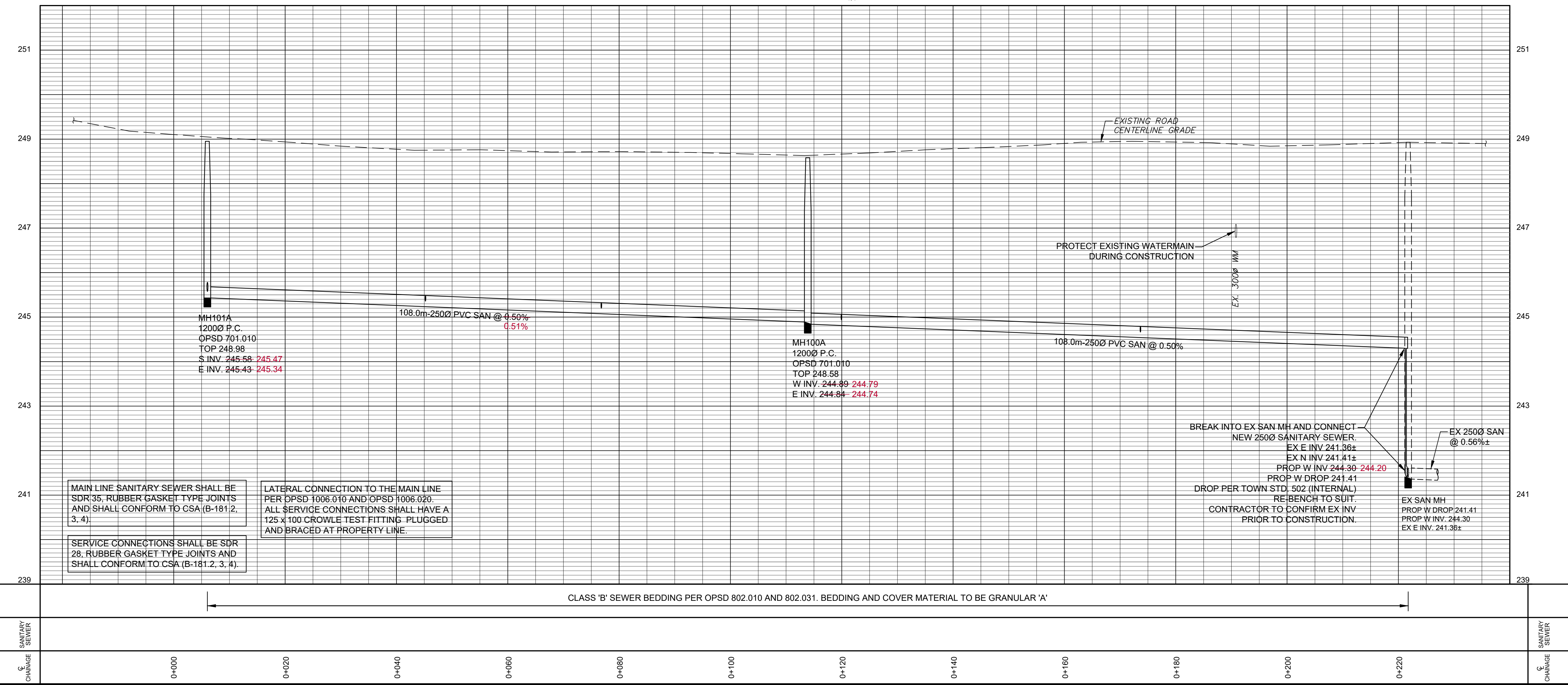
SHEET TITLE
EXTERNAL SANITARY SEWER
PLAN AND PROFILE

CONSULTANT
 WSP
100 Commerce Valley Dr. West, Thornhill, ON, Canada L3T 0A1
1 905 882 1100 1 905 882 0250 www.wsp.com

APPROVALS
TOWN OF MIDLAND: _____
DIRECTOR OF ENGINEERING: _____
STAMP: _____

DATE _____

DESIGNED	P.Q.A.	DRAWN	P.Q.A.	CHECKED	Y.W.C.
SCALE	HOR. 1:400	DATE	JANUARY 2019		
VER.	1:50	PROJECT NUMBER	18M-01130		
		DWG. NUMBER	P1		



Town File No.

APPENDIX

F

MARCH 31, 2019 FUNCTIONAL
SERVICING REPORT

COLAND DEVELOPMENT CORPORATION

710 BALM BEACH ROAD MIDLAND, ON FUNCTIONAL SERVICING REPORT

MARCH 01, 2019



wsp



710 BALM BEACH ROAD MIDLAND, ON FUNCTIONAL SERVICING REPORT

COLAND DEVELOPMENT CORPORATION

FUNCTIONAL SERVICING REPORT

PROJECT NO.: 18M-01130-00
DATE: MARCH 01, 2019

WSP CANADA GROUP LIMITED
100 COMMERCE VALLEY DRIVE WEST
THORNHILL, ON, CANADA L3T 0A1

WSP.COM

SIGNATURES

PREPARED BY



2019.03.01

Reem Digna, E.I.T.
Designer

REVIEWED BY



Wendy Cheung, P. Eng.
Senior Project Engineer

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TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	Site Description	1
2	WATER SUPPLY AND APPURTENANCES	4
2.1	Existing Conditions	4
2.2	Design Parameters.....	4
2.3	Domestic Water Demand	4
2.4	FIRE FLOWS AND FLOW TESTING	5
2.5	Proposed Water Services.....	5
3	SANITARY SEWAGE SYSTEM.....	6
3.1	Existing Sewer System	6
3.2	Design Parameters.....	6
3.3	EXISTING AND propsoed sewage Flows	6
3.4	Sanitary Sewer Analysis	7
3.5	Proposed Sanitary services.....	7
4	STORM DRAINAGE	8
4.1	design criteria	8
4.2	Existing Storm Sewers.....	8
4.3	Water Balance.....	8
4.4	Stormwater Quantity Controls	8
4.5	Proposed Storm Services.....	9
5	SITE GRADING	10
6	CONCLUSIONS	11
6.1	Water distribution	11
6.2	Sanitary servicing	11



6.3	Storm servicing.....	11
6.4	grading plan.....	11

FIGURES

FIGURE 1 - LOCATION PLAN.....	2
FIGURE 2 - PREDEVELOPMENT SITE CONDITION.....	3

APPENDICES

A	DOMESTIC WATER DEMAND AND FUS FIRE FLOW CALCULATIONS
B	SANITARY FLOWS CALCULATIONS
C	SITE SERVICING AND SITE GRADING PLANS
D	TOWN OF MIDLAND ARCHIVED DRAWINGS

1 INTRODUCTION

WSP has been retained by Coland Development Corporation to prepare a Functional Servicing Report to assess the servicing requirements relating to the proposed commercial Plaza development on 710 Balm Beach Road, 1277 Sundowner Road, and 337 Sundowner Road, Midland, Ontario. This report provides the conceptual framework for water distribution, sanitary sewage and storm drainage for the redevelopment of this site. A Stormwater Management Report outlining the proposed quality and quantity controls for stormwater on this site has been prepared under separate cover.

The site will be serviced by existing watermains within adjoining municipal rights-of-way. There are no existing local municipal sewers in the vicinity of the site. There is a roadside ditch in front of the site. The existing sanitary service is at a distance of 258m east of the site. Service connections will be extended into the proposed site and coordinated with the building design team.

In preparing this report, WSP staff secured and reviewed the available record drawings and hydrant flow test results from the Town of Midland; Development Design Standards of Midlands, dated December 2012; Town of Midland Official Plan Review and Update Project-Growth Management Strategy, dated May 2009; Survey drawing dated November 7, 2017 prepared by A. Aziz Surveyors Inc.; and Site plan drawing dated January 2018, prepared by Baldassarra Architect Inc.

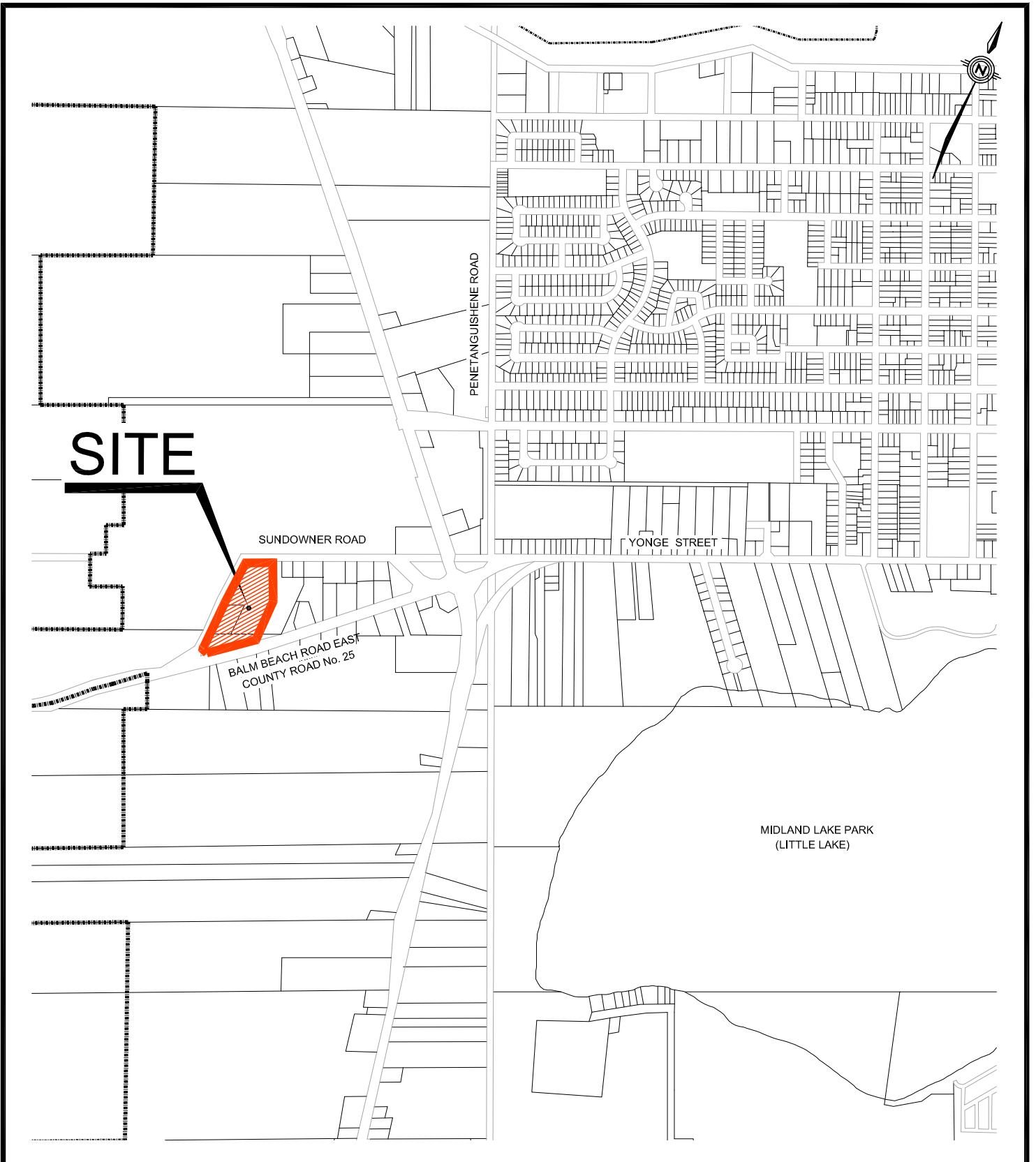
1.1 SITE DESCRIPTION

The site is a 3.09ha parcel of land currently occupied by a single 2-storey dwelling building in an area of 0.023ha. The remaining area of the site is occupied by trees and vegetation. The site is bounded by Balm Beach Road East to the south, Sundowner Road to the north and west, and commercial buildings to the east. Please refer to Figure 1 for an illustration of the site location.

Based on the topographic survey prepared by A. Aziz Surveyors Inc., the grades within the site ranges between 257.14m at the south-west corner of the site, 254.50 at the south-east corner, 250.22 at the north-west corner, and 248.96 at the north-east corner. There is drop in grade of approximately 7.0m from south to north. The site currently drains to Sundowner Road at the north-east corner of the site. Figure 2 shows the pre-development plan.

The proposed development concept involves approximately 8028.18m² GFA of one-to-two-storey commercial / office buildings, 1.08 ha landscape area, and 1.44 ha of paved area including parking. Vehicular access to the site will be from the south side at Balm Beach Road East, and north and west side at Sundowner Road. Please refer to the Site Grading Plan Dwg. No. SG1 for an illustration of the proposed development plan.


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 PLOTDATE: Jul 17, 2018 - 11:18am, RojasMa



CLIENT
COLAND DEVELOPMENT CORPORATION

TITLE
 710 BALM BEACH ROAD,
 1277 AND 1337 SUNDOWNER ROAD

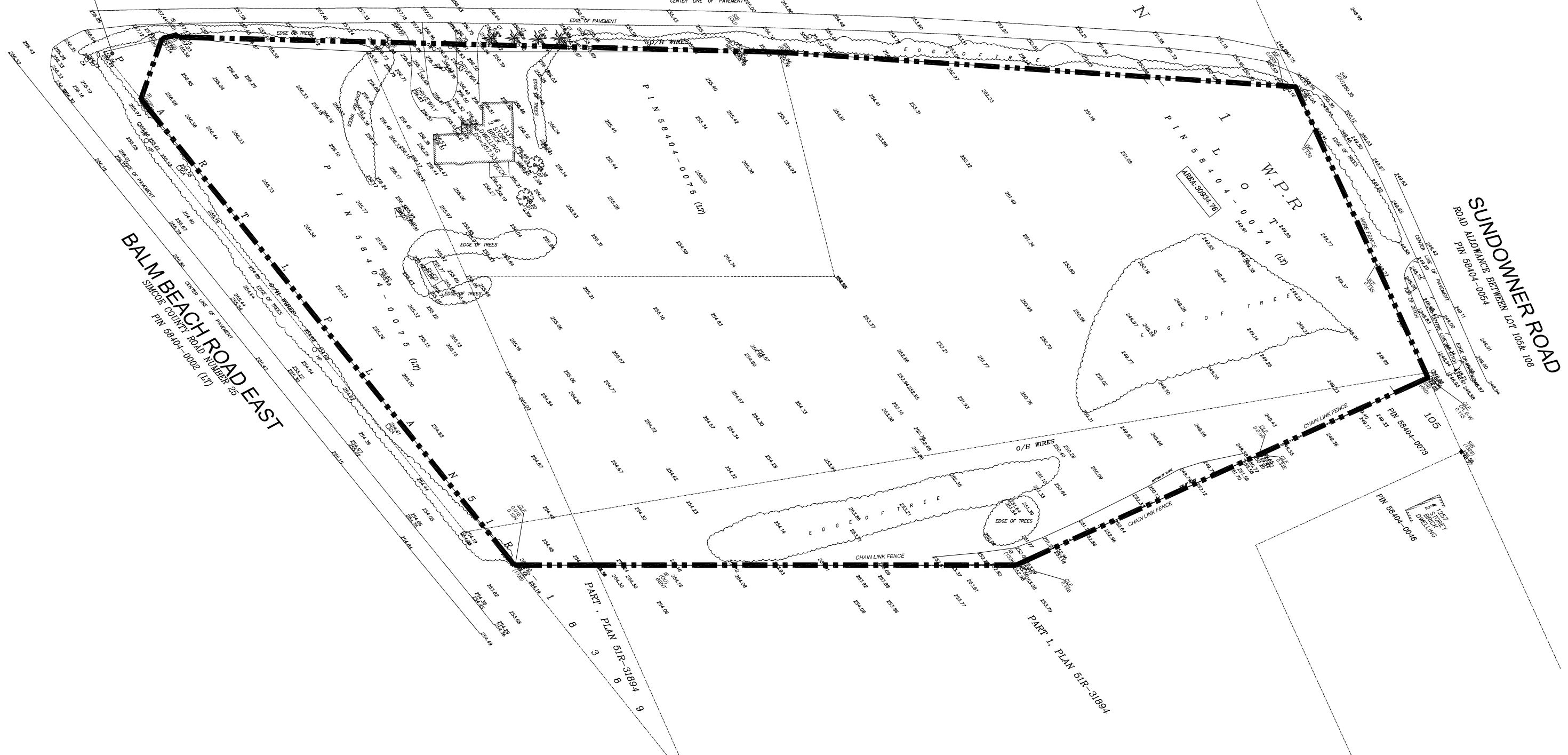
LOCATION PLAN



100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
 t: 905.882.1100 f: 905.882.0055 www.wsp.com

Checked	W.Y.C.	Drawn	10/12 Cad
Date	JULY 2018	Proj. No.	18M-01130
Scale	NTS	Figure No.	1

SUNDOWNER ROAD
 KNOWN AS SUNDOWNER ROAD
 PIN 58404-0057



LEGEND

- LIMIT OF PROPERTY
- EXISTING ELEVATION

CLIENT	COLAND DEVELOPMENT CORPORATION	
TITLE	710 BALM BEACH ROAD, 1277 AND 1337 SUNDOWNER ROAD	
PRE- DEVELOPMENT PLAN		
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1 t: 905.882.1100 f: 905.882.0055 www.wsp.com		
Checked	W.Y.C.	Drawn 10/12 Cad
Date	JULY 2018	Proj. No. 18M-01130
Scale	1: 1000	Figure No. 2

PLOTDATE: Jul 17, 2018 - 10:25am, RojasMa

2 WATER SUPPLY AND APPURTENANCES

This section provides an analysis of the existing watermain system and proposed water servicing. It will demonstrate that the proposed development can be adequately serviced meeting the domestic demand and fire flow requirements while maintaining acceptable residual pressures in the system.

2.1 EXISTING CONDITIONS

The existing municipal watermains that are adjacent to the property are as follows:

- 300mm diameter along Sundowner Road at the north of the property.
- 300mm diameter along Sundowner Road at the west of the property
- 150mm diameter along Sundowner Road at the west of the property

There are also three (3) fire hydrants located near the site on the west along Sundowner Road. Please refer to the Site Servicing Plan in Appendix C for an illustration of the existing water servicing.

2.2 DESIGN PARAMETERS

The following design criteria have been taken from Town of Midland “Engineering Development Design Standards” Section 11.2.:

- ▶ Water demand rate of 450 l/person/day for commercial developments;
 - ▶ Population density of 30 person/ha for commercial developments;
 - ▶ Population density of 3.0 person per Single Family Dwelling for the existing development;
 - ▶ Maximum daily demand factor = 2.0; and
 - ▶ Peak hourly demand factor = 4.5
-

2.3 DOMESTIC WATER DEMAND

The domestic water demands for the proposed development are calculated using the criteria of the Town of Midland outlined in section 2.2 above. The resulting domestic demands for the proposed development are shown in **Appendix-A** and summarized in Table 2.1 below.

TABLE 2.1 – PROJECTED DOMESTIC WATER DEMAND

Proposed Building	Population	Average day flow (L/s)	Peak Hour flow (L/s)	Maximum day flow (L/s)
Total	93	0.48	2.18	0.97

The average day water demand for the entire site is estimated as e 0.48 l/s, while the peak water demand is 2.18 l/s. Based on the projected domestic demands, it is expected that the existing 300mm dia. watermain on Sundowner Road will be sufficient to meet the commercial domestic servicing requirements of this development.

2.4 FIRE FLOWS AND FLOW TESTING

The required fire flow for the site is based on the Fire Underwriters Survey(FUS) requirements. Detailed fire flow calculations have been prepared using the recommendations of the FUS. The fire flow calculation for all buildings indicated that Buildings “A”, “B” and “C” have the highest fire flow requirement of 1057 US GPM (67 L/s). The results of these calculations are included in Appendix A.

A flow test was conducted in July 2018 by the Town of Midland at 1378 Sundowner Road (H728). The results of this flow test and location of the tested hydrants have been included for reference in Appendix A. The available projected fire flow at 20 psi is recorded at approximately 7086 USGPM (447 L/s), which is greater than the required total domestic maximum day flow and fire water flow of 1077.3 USGPM (67.97 L/s (0.97 L/s + 67L/s)) shown above. Therefore, the watermain adjacent to the site is adequate to support the domestic and fire water demand of the proposed development.

2.5 PROPOSED WATER SERVICES

The site is proposed to be serviced by the existing municipal 300mm watermain in Sundowner Road. The proposed mechanical room will be located within the buildings and accessible by the Town and provide remote read-out locations for the Town’s use in reading the meters.

New Hydrants will be required within the development spaced per City requirements to provide adequate fire protection coverage. Building Code requirements stipulate that each building be serviced by a fire hydrant which is located no more than 45m away from the building’s siamese connection. If the siamese connections for the proposed building is situated such that it is not within 45m of an existing fire hydrant, a new fire hydrant will be installed.

Please refer to the Site Servicing Plan Drawing, No. SS1 in Appendix C for an illustration of the proposed water servicing.

3 SANITARY SEWAGE SYSTEM

This section provides an analysis of the existing sanitary sewer system and proposed sanitary servicing strategy. It will demonstrate that the proposed development can be adequately serviced and identifies required external system improvements.

3.1 EXISTING SEWER SYSTEM

Based on the Town of Midland engineering drawing for the services along Sundowner Road, the existing sanitary service in the vicinity of the site is a 250mm diameter (0.56% slope) sanitary sewer at a distance of 258m east of the site. This sewer flows eastward to the 450mm diameter sanitary sewer along Yonge Street. Please refer to the Town of Midland engineering drawing in Appendix D for existing sanitary services.

3.2 DESIGN PARAMETERS

The following sanitary design criteria have been taken from Town of Midland Engineering Development Design Standards 2012 (Section 6.1.4); and Town of Midland Official Plan Review and Update Project-Growth Management Strategy May 2009 (Page 21):

- ▶ 450 L/cap/day average daily domestic flow generation rate;
 - ▶ Population density of 30 person/ha for Commercial/ Industrial Employment;
 - ▶ Population density of 3.0 person per Single Family Dwelling for the existing development;
 - ▶ 2.5 L/day/m² of Gross Floor Area(GFA) average day flow generation rate for commercial land use;
 - ▶ Peaking Factor = Harmon Formula; Harmon Peaking Factor = $1+14/(4+p)^{0.5}$, where p = population in thousands;
 - ▶ Infiltration rate = 0.23 L/ha/s.
-

3.3 EXISTING AND PROPOSED SEWAGE FLOWS

Using the design criteria noted in Section 3.2, the pre- and post-development sanitary flows calculations are included in Appendix B and summarised in Table 3.1 below. The site is currently occupied by a single 2-storey dwelling building in an area of 0.023ha, for which the population is estimated at 3 persons. The theoretical peak sanitary flow from the existing building is approximately 0.08 L/s. The approximate total sanitary flow for the new development is 0.94 L/s including infiltration, without taking into consideration the quantity of groundwater discharge. The sanitary flows of proposed development condition are estimated based on Gross Floor Area (2.5L/s/m² of GFA), in lieu of population (30 person/ha for Commercial Employment), which makes our estimate for post-development sanitary flows more conservative. Consequently, the approximate increase in peak sanitary design flow resulting from this development is 0.87 L/s.

TABLE 3.1 – SANITARY DESIGN FLOWS

Condition	Population	Average day flow (L/s)	Peak Flow (Incl. infiltration) (L/s)
Existing	3	0.02	0.08
Proposed	93	0.23	0.94
Difference	90	0.21	0.86

3.4 SANITARY SEWER ANALYSIS

The full flow capacity of the existing sanitary sewer proposed to connect with is estimated at 44.5 L/s, using Manning formula and given Manning coefficient ($n = 0.013$), sewer diameter 250mm, and slope 0.56%. The increase of sanitary flow from site development represents 2% of the existing sewer capacity. The invert elevation of the existing municipal sanitary sewer at the connection point is 241.41m. Extending a new 216m length sewer to the site at a 0.5% gradient would result in an invert elevation of 244.27m at the property. This elevation is sufficient to service the proposed development.

3.5 PROPOSED SANITARY SERVICES

As mentioned above, the existing 250mm diameter sanitary sewer at Sundowner Road is at a distance of 258m east of the site. A new 200mm diameter sanitary sewer will need to be extended from the existing sanitary sewer to service the proposed site. The sanitary sewer and service connection to the site within the existing municipal road allowance will be designed to Town of Midland Standards. The exact location and size of the services within the site will be coordinated with the mechanical consultant during detailed design. A sanitary control manhole will be provided on private property close to the property line and will be accessible by the Town.

The proposed sanitary servicing system is shown on Site General Servicing Plan Dwg. No. GS1 and P1 in Appendix C.

4 STORM DRAINAGE

A Stormwater Management Report for this development has been prepared under a separate cover. The Report is in compliance with the Town's development design criteria, and identifies the stormwater quantity and quality controls under which this site will operate.

Described below is the existing storm sewer system based on the information provided by the Town to date.

4.1 DESIGN CRITERIA

The stormwater management (SWM) criteria applicable to this project are set out in Town of Midland Engineering Development Design Standards 2012, Section 5, Official Plan for the Town of Midland 2014, and the 2003 MOE Stormwater Management Planning and Design manual. A summary of the applicable requirements is provided below.

- **Water Balance** – Requirements to retain stormwater on-site, to the extent practicable, to match predevelopment conditions;
 - **Water Quality** – the site is required to provide a quality control measures and ensure water discharged to the municipal storm sewers is in compliance with all Town By-Laws pertaining to water quality, MOE and Ministry of Natural Resources. We would anticipate at a minimum an oil grit separator would be required.
 - **Water Quantity Control** – all runoff peak flows (up to and including the 100-year storm) shall be controlled to pre-development levels. Likewise, it must be demonstrated that there will be no negative impacts downstream from post-development peak flows during major events up to the 100-year event.
-

4.2 EXISTING STORM SEWERS

The existing stormwater conveyance system in front of the site along Sundowner Road are roadside ditches and culverts at the north-east side. The ditch in front of the site is 27m in length, 15-30% side slope, and 2% longitudinal slope. The ditch ultimately drains into an existing 450mm diameter storm sewer running on Sundowner approximately 324m east of the north-east corner of the site.

4.3 STORMWATER QUANTITY CONTROLS

The pre-development condition of the site is mostly grassed area. The proposed development incorporates buildings, asphalt driveways, at-grade parking and landscaped areas; which will result in lower average perviousness in comparison to the existing condition.

The on-site quantity control measures will be provided in accordance with the Town's design guidelines and MOE. The post-development peak flow rates of the site generated from 2-year up to (including) 100-year storm can not exceed the pre-development runoff of the same return period. Due to the fact that the stormwater outlet for this site is a road side

ditch, the options for on-site control will be limited. A storm sewer outlet cannot be achieved, so a surface outlet is needed. To accommodate a surface outlet, a surface detention pond is proposed. It is anticipated that this would be a dry pond facility located at the north of the site. The pond would only detain water during major storm events. Please refer to the Site General Servicing and Section Plans Dwg. No. GS1 and SEC1 in Appendix C for details of the proposed stormwater pond.

4.4 PROPOSED STORM SERVICES

Minor and major drainage system will be required within the site. The on-site minor storm drainage system will be designed to convey the 1- in 5-year storm event, in accordance with the Town design guidelines. The major storm drainage system will be designed to convey flows in excess of the minor system flows by means of overland flow. The major flow direction of post-development condition will be maintained to match the pre-development condition, towards the north-east side of the property. The site grading will be designed such that all storm flows under and including the 100-year frequency will be captured and retained within the site. On-site stormwater quantity controls such as a dry pond, infiltration trench, and permeable surfaces will be implemented to meet stormwater management criteria. For storm events exceeding the 100-year storm, an overland flow route will be designed to direct excess flows to the public roads.

Please refer to the Site General Servicing Plan Dwg. No. GS1 in Appendix C for the proposed storm services.

5 SITE GRADING

The site currently drains from south to north to Sundowner Road at the north-east corner of the site. The proposed grades around the site will be set to match into the existing grades at the limit of property. The grading design of the proposed development will be completed to direct minor storm drainage to the on-site collection points so that this drainage is self-contained. The major storm drainage will be directed away from the proposed structures to approved outlet points. The proposed dry ponding area required for stormwater control will have to be approximately 1.5m lower than the development features adjacent to this area.

Site grading will also take into consideration the following:

- Existing grades along all boundaries are to match existing so that there is no impact to adjacent properties;
- Minimize disruption to existing municipal rights-of-way containing existing utilities and services;
- Promote drainage into the minor storm sewer system;
- Building floor level will be set to avoid building / property damage during all design storms;
- Entrance ramps to loading areas will be protected from major storm flows; and
- Walkways shall be graded to avoid crossing drainage paths.

Please refer to Appendix C for the Site General Grading Plan Dwg. No. GR1.

6 CONCLUSIONS

6.1 WATER DISTRIBUTION

The site will be serviced by the existing 300 mm diameter watermain on Sundowner Road. The domestic and fire systems within the site will be designed in accordance with Town of Midland Engineering Development Design Standards to provide water servicing and fire protection. The results from the hydrant flow test shows that there is sufficient flow and pressure to service the proposed development.

6.2 SANITARY SERVICING

The site will be serviced by the extending a new 200 mm diameter sanitary sewer from the existing 250mm diameter sanitary sewer on Sundowner Road. The sanitary sewer and services within the site will be designed in accordance with Town of Midland Engineering Development Design Standards. Extending a new 208m length sewer to the site at a 0.5% gradient would result in an invert elevation of 244.27m at the boundary of the property. This elevation is sufficient to service the proposed development.

6.3 STORM SERVICING

The on-site minor storm drainage system will be designed to convey the 1- in 5-year storm event, in accordance with the Town design guidelines. The major storm drainage system will be designed to convey flows in excess of the minor system flows by means of overland flow. The major flow direction of post-development condition will be maintained to match the pre-development condition, towards the north-east side of the property.

Due to the fact that the stormwater outlet for this site is a road side ditch, a surface outlet is needed. A surface detention dry pond is proposed to accommodate the surface outlet and would only detain water during major storm events.

6.4 GRADING PLAN

The proposed grades around the site will be set to match into the existing grades at the limit of property. The grading design will be completed to direct minor storm drainage to the on-site collection points so that this drainage is self-contained. The major storm drainage will be directed away from the proposed structures to approved outlet points. The proposed dry ponding area required for stormwater control will have to be approximately 1.5m lower than the development features adjacent to this area.

APPENDIX

A DOMESTIC WATER DEMAND, FUS FIRE FLOW CALCULATIONS AND HYDRANT FLOW TEST RESULT

APPENDIX A-1
Tripair - Midland Ontario
Proposed Water Demand

Project: 710 Balm Beach RD, 1277 & 1337 Sundowner RD

Job No.: 18M-01130

February 28, 2019

Commercial		
Average Daily Demand (L/capita/day)	450	Town of Midland Engineering Development Design Standards Section 11.2.3 Page 74
Commercial/Industrial Employment Density (person/ha)	30	Town of Midland Official Plan Review and Update Project - Growth Management Strategy May 2009, Page 21
Proposed Site Area (ha)	3.09	
Population	93	
Max. Day demand Factor	2	
Peak Factor	4.5	
PROPOSED WATER DEMAND		
Average Daily (L/s)	0.48	
Maximum Day (L/s)	0.97	
Peak Hour (L/s)	2.18	

APPENDIX A-2

Calculation of FUS Fire Flow for Tripar, Midland Proposed 2-Storey Building 'A' Office

Step 1 FUS Fire Flow calculation will consider gross floor area for preliminary design purposes

Proposed building will be constructed with fire resistive construction

Area, A = **2,787.09 m²** (Total floor area in the building being considered)

C = 0.60 Assume fire resistive Construction

$$\begin{aligned}
 F &= 220 \times C \times A^{0.5} \\
 &= \\
 &= 6969 \text{ litres/min} \\
 &= 7000 \text{ litres/min (Required fire flow to nearest 1000 L/min)}
 \end{aligned}$$

Step 2

For low fire hazard occupancy, 25% percentage reduction

$$\begin{aligned}
 F &= 7000 \text{ litres/min (from Step 1)} \\
 &- \frac{1750 \text{ litres/min (25\% decrease)}}{5250 \text{ litres/min}} \\
 &= 5250 \text{ litres/min}
 \end{aligned}$$

Step 3

Decrease due to Sprinkler System

30% reduction for NFPA Sprinkler System¹

$$\begin{aligned}
 F &= 5250 \text{ litres/min (from Step 2)} \\
 &- \frac{1575 \text{ litres/min (30\% decrease)}}{3675 \text{ litres/min}}
 \end{aligned}$$

Step 4

Separations Charge

Face	Distance(m)	Charge
West	>45	0%
East	>45	0%
North	>45	0%
South	>45	0%
Total Exposures		0%

$$\begin{aligned}
 F &= 5250 \text{ litres/min (from Step 2)} \\
 &+ \frac{0 \text{ litres/min (20\% increase)}}{3675 \text{ litres/min}}
 \end{aligned}$$

FUS Fire Flow

$$\begin{aligned}
 F &= \text{Step 2-Step 3 + Step 4} \\
 &= 5250 - 1575 + 0 = 3675 \text{ L/min} \\
 &\text{Rounded off to the nearest 1,000 L/min} = 4000 \text{ L/min} \\
 &= 67 \text{ L/s} \\
 &= 1057 \text{ USGPM}
 \end{aligned}$$

Note

1. GFA based on Concept Site Plan prepared by Baldassara dated Jan. 2019.
2. Assumed to have sprinkler protection.
3. The new development building is the fire resistive building

APPENDIX A-2

Calculation of FUS Fire Flow for Tripar, Midland Proposed 2-Storey Building 'B' Office/Medical

Step 1 FUS Fire Flow calculation will consider gross floor area for preliminary design purposes

Proposed building will be constructed with fire resistive construction

Area, A = **1,858.08 m²** (Total floor area in the building being considered)

C = 0.60 Assume fire resistive Construction

$$\begin{aligned}
 F &= 220 \times C \times A^{0.5} \\
 &= 5690 \text{ litres/min} \\
 &= 6000 \text{ litres/min (Required fire flow to nearest 1000 L/min)}
 \end{aligned}$$

Step 2

For low fire hazard occupancy, 25% percentage reduction

$$\begin{aligned}
 F &= 6000 \text{ litres/min (from Step 1)} \\
 &- \frac{1500 \text{ litres/min (25\% decrease)}}{4500 \text{ litres/min}}
 \end{aligned}$$

Step 3

Decrease due to Sprinkler System

30% reduction for NFPA Sprinkler System¹

$$\begin{aligned}
 F &= 4500 \text{ litres/min (from Step 2)} \\
 &- \frac{1350 \text{ litres/min (30\% decrease)}}{3150 \text{ litres/min}}
 \end{aligned}$$

Step 4

Separations Charge

Face	Distance(m)	Charge
West	>45	0%
East	>45	0%
North	16.8	15%
South	>45	0%
Total Exposures		15%

$$\begin{aligned}
 F &= 3150 \text{ litres/min (from Step 3)} \\
 &+ \frac{675 \text{ litres/min (20\% increase)}}{3825 \text{ litres/min}}
 \end{aligned}$$

FUS Fire Flow

$$\begin{aligned}
 F &= \text{Step 2-Step 3 + Step 4} \\
 &= 4500 - 1350 + 675 = 3825 \text{ L/min} \\
 &\text{Rounded off to the nearest 1,000 L/min} = 4000 \text{ L/min} \\
 &= 67 \text{ L/s} \\
 &= 1057 \text{ USGPM}
 \end{aligned}$$

Note

1. GFA based on Concept Site Plan prepared by Baldassara dated Jan. 2019.
2. Assumed to have sprinkler protection.
3. The new development building is the fire resistive building

APPENDIX A-2

Calculation of FUS Fire Flow for Tripar, Midland Proposed 1-Storey Building 'C' Retail

Project: 710 Balm Beach RD, 1277 & 1337 Sundowner RD
Job No.: 18M-01130

Step 1 FUS Fire Flow calculation will consider gross floor area for preliminary design purposes

Proposed building will be constructed with fire resistive construction

Area, A = 1,386.00 m² (Total floor area in the building being considered)

C = 0.60 Assume fire resistive Construction

$$\begin{aligned} F &= 220 \times C \times A^{0.5} \\ &= \\ &= 4914 \text{ litres/min} \\ &= 5000 \text{ litres/min (Required fire flow to nearest 1000 L/min)} \end{aligned}$$

Step 2

For low fire hazard occupancy, 25% percentage reduction

$$\begin{aligned} F &= 5000 \text{ litres/min (from Step 1)} \\ &- \frac{1250 \text{ litres/min (25\% decrease)}}{1} \\ &= 3750 \text{ litres/min} \end{aligned}$$

Step 3

Decrease due to Sprinkler System

30% reduction for NFPA Sprinkler System¹

$$\begin{aligned} F &= 3750 \text{ litres/min (from Step 2)} \\ &- \frac{1125 \text{ litres/min (30\% decrease)}}{1} \end{aligned}$$

Step 4

Separations Charge

Face	Distance(m)	Charge
West	>45	0%
East	>45	0%
North	12.7	15%
South	16.8	15%
Total Exposures		30%

$$\begin{aligned} F &= 3750 \text{ litres/min (from Step 2)} \\ &+ \frac{1125 \text{ litres/min (20\% increase)}}{1} \end{aligned}$$

FUS Fire Flow

$$\begin{aligned} F &= \text{Step 2-Step 3 + Step 4} \\ &= 3750 - 1125 + 1125 = 3750 \text{ L/min} \\ &\text{Rounded off to the nearest 1,000 L/min} = 4000 \text{ L/min} \\ &= 67 \text{ L/s} \\ &= 1057 \text{ USGPM} \end{aligned}$$

Note

1. GFA based on Concept Site Plan prepared by Baldassara dated Jan. 2019.
2. Assumed to have sprinkler protection.
3. The new development building is the fire resistive building.

APPENDIX A-2

Calculation of FUS Fire Flow for Tripar, Midland Proposed 1-Storey Building 'D' Retail

Step 1 FUS Fire Flow calculation will consider gross floor area for preliminary design purposes

Proposed building will be constructed with fire resistive construction

Area, A = 1,533.00 m² (Total floor area in the building being considered)

C = 0.60 Assume fire resistive Construction

$$\begin{aligned}
 F &= 220 \times C \times A^{0.5} \\
 &= 5168 \text{ litres/min} \\
 &= 5000 \text{ litres/min (Required fire flow to nearest 1000 L/min)}
 \end{aligned}$$

Step 2

For low fire hazard occupancy, 25% percentage reduction

$$\begin{aligned}
 F &= 5000 \text{ litres/min (from Step 1)} \\
 &- 1250 \text{ litres/min (25\% decrease)} \\
 &= 3750 \text{ litres/min}
 \end{aligned}$$

Step 3

Decrease due to Sprinkler System

30% reduction for NFPA Sprinkler System¹

$$\begin{aligned}
 F &= 3750 \text{ litres/min (from Step 2)} \\
 &- 1125 \text{ litres/min (30\% decrease)}
 \end{aligned}$$

Step 4

Separations Charge

Face	Distance(m)	Charge
West	>45	0%
East	>45	0%
North	>45	0%
South	12.7	15%
Total Exposures		15%

$$\begin{aligned}
 F &= 3750 \text{ litres/min (from Step 2)} \\
 &+ 563 \text{ litres/min (20\% increase)}
 \end{aligned}$$

FUS Fire Flow

$$\begin{aligned}
 F &= \text{Step 2-Step 3 + Step 4} \\
 &= 3750 - 1125 + 563 = 3188 \text{ L/min} \\
 &\text{Rounded off to the nearest 1,000 L/min} = 3000 \text{ L/min} \\
 &= 50 \text{ L/s} \\
 &= 793 \text{ USGPM}
 \end{aligned}$$

Note

1. GFA based on Concept Site Plan prepared by Baldassara dated Jan. 2019.
2. Assumed to have sprinkler protection.
3. The new development building is the fire resistive building.

APPENDIX A-2

Calculation of FUS Fire Flow for Tripar, Midland Proposed 1-Storey Building 'E' Child Care Centre

Step 1 FUS Fire Flow calculation will consider gross floor area for preliminary design purposes

Proposed building will be constructed with fire resistive construction

Area, A = **464.40 m²** (Total floor area in the building being considered)

C = 0.60 Assume fire resistive Construction

$$\begin{aligned} F &= 220 \times C \times A^{0.5} \\ &= 2845 \text{ litres/min} \\ &= 3000 \text{ litres/min (Required fire flow to nearest 1000 L/min)} \end{aligned}$$

Step 2

For low fire hazard occupancy, 25% percentage reduction

$$\begin{aligned} F &= 3000 \text{ litres/min (from Step 1)} \\ &- 750 \text{ litres/min (25\% decrease)} \\ &= 2250 \text{ litres/min} \end{aligned}$$

Step 3

Decrease due to Sprinkler System

30% reduction for NFPA Sprinkler System¹

$$\begin{aligned} F &= 2250 \text{ litres/min (from Step 2)} \\ &- 675 \text{ litres/min (30\% decrease)} \end{aligned}$$

Step 4

Separations Charge

Face	Distance(m)	Charge
West	>45	0%
East	>45	0%
North	>45	0%
South	>45	0%
Total Exposures		0%

$$\begin{aligned} F &= 2250 \text{ litres/min (from Step 2)} \\ &+ 0 \text{ litres/min (20\% increase)} \end{aligned}$$

FUS Fire Flow

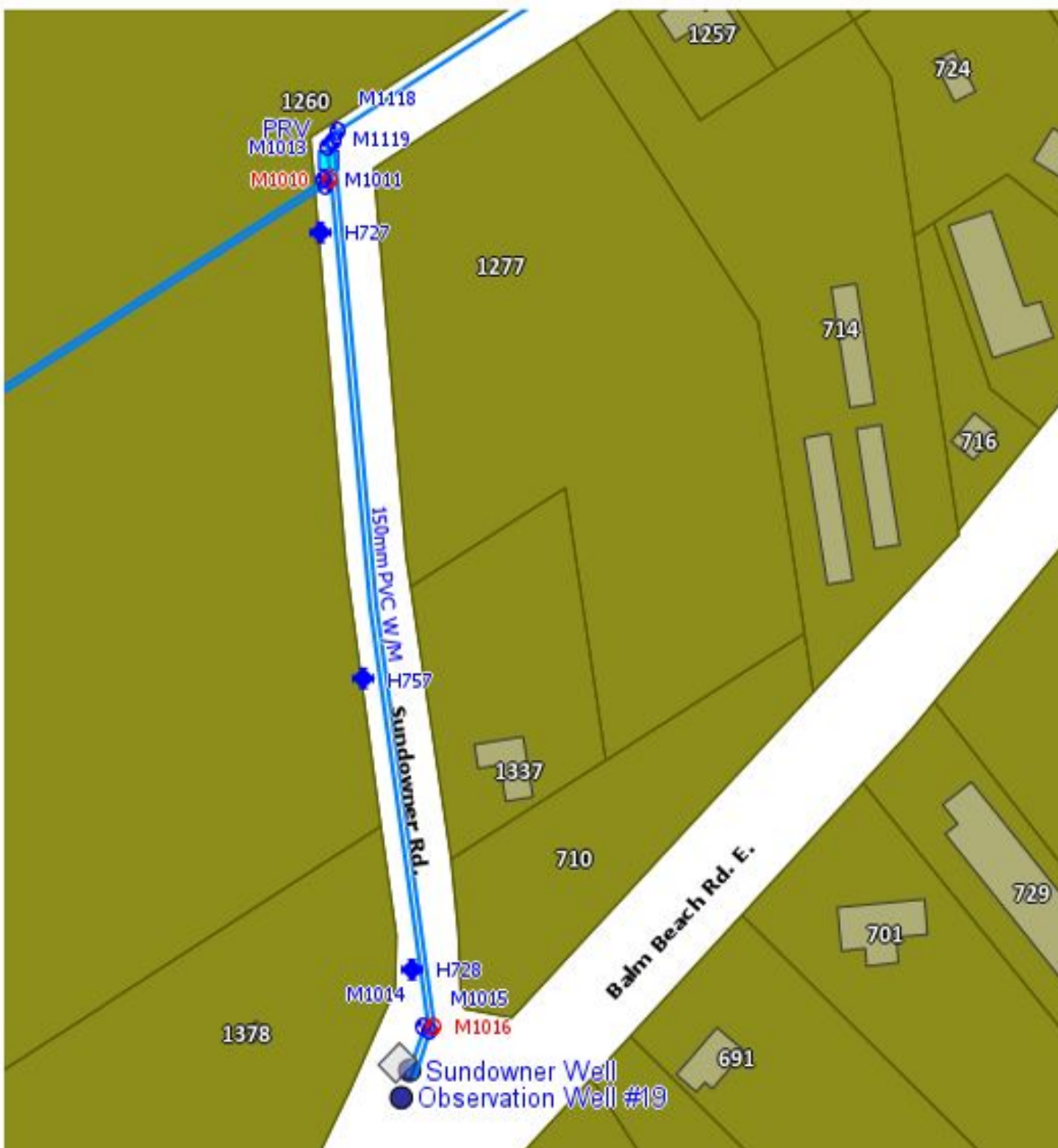
$$\begin{aligned} F &= \text{Step 2-Step 3 + Step 4} \\ &2250 - 675 + 0 = 1575 \text{ L/min} \\ \text{Rounded off to the nearest 1,000 L/min} &= 2000 \text{ L/min} \\ &= 33 \text{ L/s} \\ &= 528 \text{ USGPM} \end{aligned}$$

Note

1. GFA based on Concept Site Plan prepared by Baldassara dated Jan. 2019.
2. Assumed to have sprinkler protection.
3. The new development building is the fire resistive building.

Pitot: 25psi
One (1) 2.5" outlet.
Flow at time of test: 839 gpm
Projected available hydrant flow: 7086 gpm

Note: Flows are estimates.



APPENDIX

B SANITARY FLOWS CALCULATIONS

APPENDIX B

Tripar - Midland Ontario

Sanitary Flows

Project: 710 Balm Beach RD, 1277 & 1337 Sundowner RD
 Job No.: 18M-01130

Existing Site Conditions

Single 2-Storey Dwelling Building		230.00	m ²
¹ Use Population density of 3 person/Single Family Dwelling			
¹ Use Average Flow: 450 L/day/capita			
Infiltration Rate: 20,000L/hectare/day = 0.23 L/s/ha			
Average daily domestic flow generation rate		450	L/cap/day
Design average daily flow	=	1,350	L/day
		0.02	L/sec
Harmon Peaking Factor	=	4.45	
Infiltration flow	=	0.01	L/sec
Total Peak Design Flow for Existing Development		=	0.075 L/sec

Proposed Site Conditions

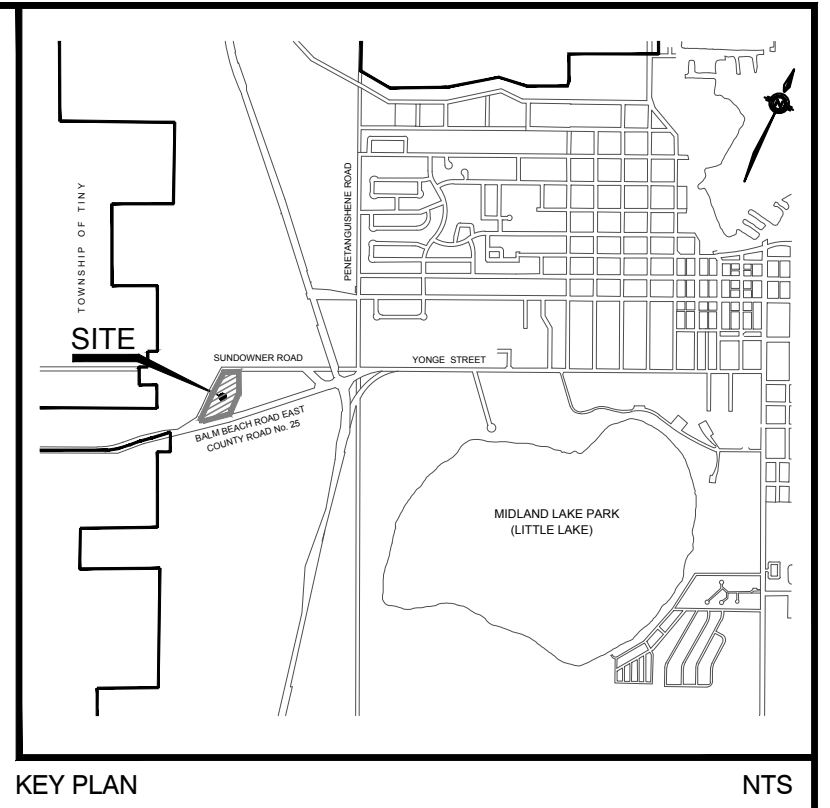
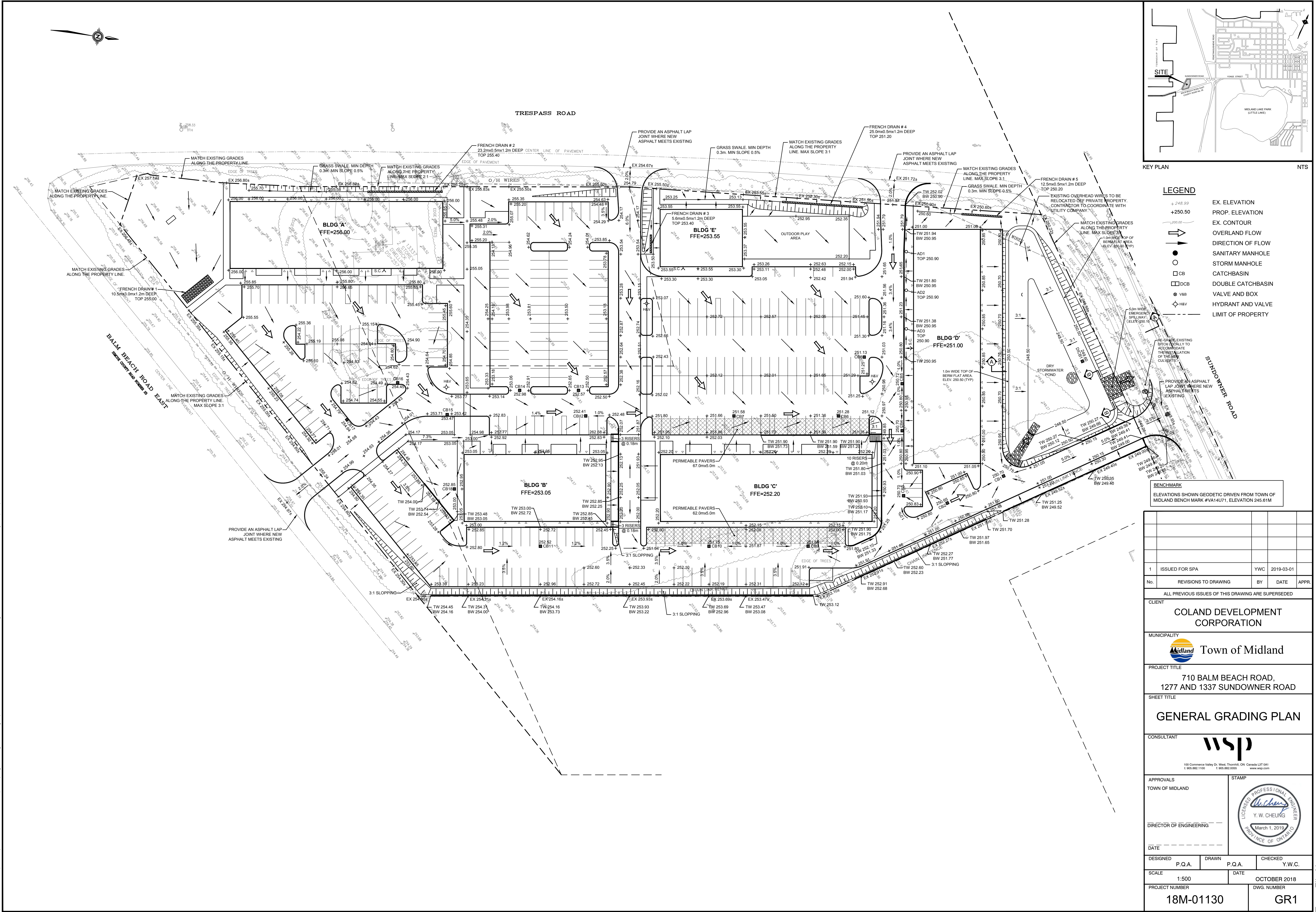
Proposed Site Area =	30,934.76	m ²	or	3.09	hectares
Proposed Building Gross Floor Area G.F.A.=	8,028.18	m ²	or	8,028.18	m ²
¹ Use Average Flow: 2.5L/day/m ² of floor area					
Infiltration Rate: 20,000L/hectare/day = 0.23 L/s/ha					
Average daily domestic flow generation rate		2.5		L/day/m ²	GFA
Design average daily flow	=	20,070		L/day	
		0.23		L/sec	
Infiltration flow	=	0.71		L/sec	
Total Peak Design Flow for Proposed Development		=		0.94	L/sec

¹ Based on Town of Midland "Engineering Development Design Standards" Section 6.1.4 "Design Flows" Page 53.

APPENDIX

C SITE SERVICING AND SITE GRADING PLANS

FILE NAME: X:\DIV\01\18M-01130_Midland\Man\Engineering Drawings\18M-01130_SSI-SG1-ESC1-D1_dwg_GRI PRINTED ON: Tuesday, 02/26/2019



LEGEND

- EX ELEVATION
- PROP. ELEVATION
- EX. CONTOUR
- OVERLAND FLOW
- DIRECTION OF FLOW
- SANITARY MANHOLE
- STORM MANHOLE
- CATCHBASIN
- DOUBLE CATCHBASIN
- VALVE AND BOX
- HYDRANT AND VALVE
- LIMIT OF PROPERTY

BENCHMARK
ELEVATIONS SHOWN GEODETIC DRIVEN FROM TOWN OF MIDLAND BENCH MARK #VA14U71, ELEVATION 245.61M

1	ISSUED FOR SPA	YWC	2019-03-01	
No.	REVISIONS TO DRAWING	BY	DATE	APPR.
ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED				

CLIENT
COLAND DEVELOPMENT CORPORATION

MUNICIPALITY
Town of Midland

PROJECT TITLE
710 BALM BEACH ROAD,
1277 AND 1337 SUNDOWNER ROAD

SHEET TITLE
GENERAL GRADING PLAN

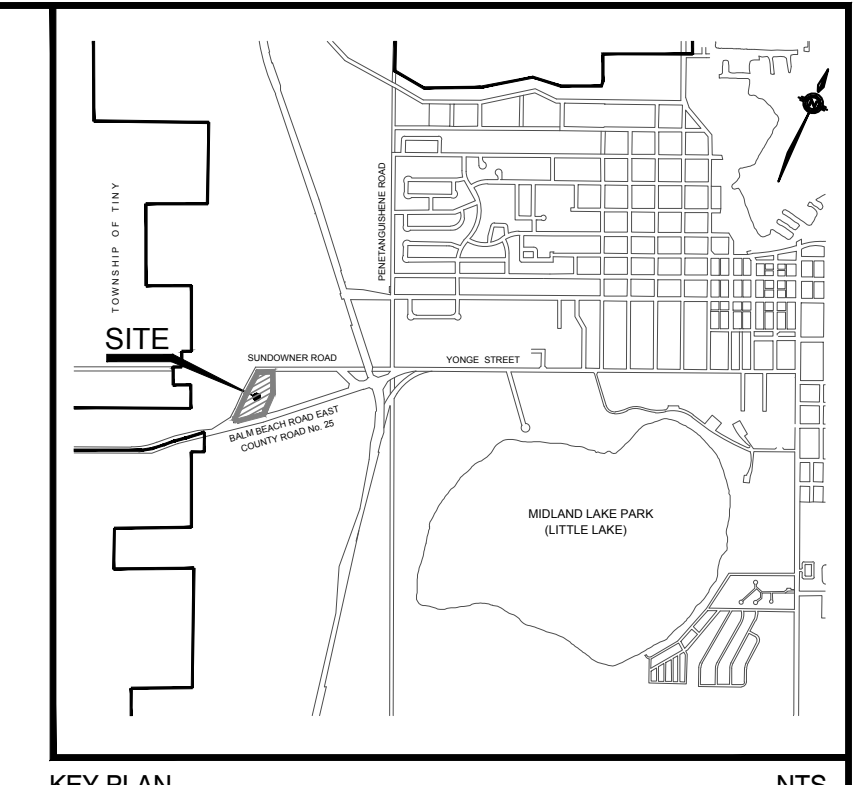
CONSULTANT
wsp
100 Commerce Valley Dr. West, Thornhill, ON, Canada L3T 0A1
t: 905.882.1100 f: 905.882.2055 www.wsp.com

APPROVALS
TOWN OF MIDLAND
DIRECTOR OF ENGINEERING
DATE

STAMP
LICENSED PROFESSIONAL ENGINEER
Y. W. CHEUNG
March 1, 2019
PROVINCE OF ONTARIO

DESIGNED	P.Q.A.	DRAWN	P.Q.A.	CHECKED	Y.W.C.
SCALE	1:500	DATE	OCTOBER 2018		
PROJECT NUMBER	18M-01130		DWG. NUMBER	GR1	

Town File No.



KEY PLAN NTS

LEGEND

- SANITARY SEWER AND MANHOLE
- STORM SEWER AND MANHOLE
- - - 1500 SUBDRAIN IN FILTERCLOTH
- CB CATCHBASIN
- DCB DOUBLE CATCHBASIN
- ⊗ V&B VALVE AND BOX
- ⊕ H&V HYDRANT AND VALVE
- - - LIMIT OF PROPERTY

X-ING No.	INVERT	OBVERT	CLEARANCE
1	STORM 248.92	SANITARY 247.28	1.64m
2	STORM 248.92	WATER 248.45	0.50m
3	WATER 248.90	SANITARY 248.39	0.51m
4	STORM 249.21	SANITARY 248.91	0.30m
5	SANITARY 248.61	WATER 248.11	0.50m
6	STORM 249.42	WATER 248.92	0.50m
7	STORM 249.26	WATER 248.76	0.50m
8	SANITARY 249.67	WATER 249.17	0.50m
9	STORM 250.06	SANITARY 249.89	0.20m
10	SANITARY 250.01	WATER 249.79	0.50m
11	STORM 250.67	WATER 249.79	0.88m
12	STORM 252.30	SANITARY 252.00	0.30m
13	STORM 250.71	STIM(N) 250.30	0.30m
14	STIM(W) 250.31	STIM(S) 249.70	0.61m
15	STORM 248.25	SANITARY 244.67	3.58m
16	STORM 248.24	WATER 247.29	0.95m
17	WATER 246.92	SANITARY 244.41	2.51m
18	STORM 250.31	WATER 249.84	0.50m

BENCHMARK
ELEVATIONS SHOWN GEODETIC DRIVEN FROM TOWN OF MIDLAND BENCH MARK #V414U71, ELEVATION 245.61M

No.	REVISIONS TO DRAWING	BY	DATE	APPR.
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ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT
COLAND DEVELOPMENT CORPORATION

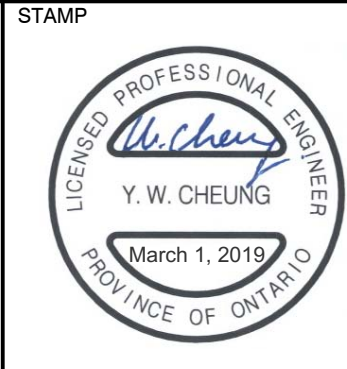
MUNICIPALITY
Town of Midland

PROJECT TITLE
710 BALM BEACH ROAD, 1277 AND 1337 SUNDOWNER ROAD

SHEET TITLE
GENERAL SERVICING PLAN

CONSULTANT
wsp
100 Commerce Valley Dr. West, Thornhill, ON, Canada L3T 0A1
t: 905.882.1100 f: 905.882.2000 www.wsp.com

APPROVALS
TOWN OF MIDLAND
DIRECTOR OF ENGINEERING



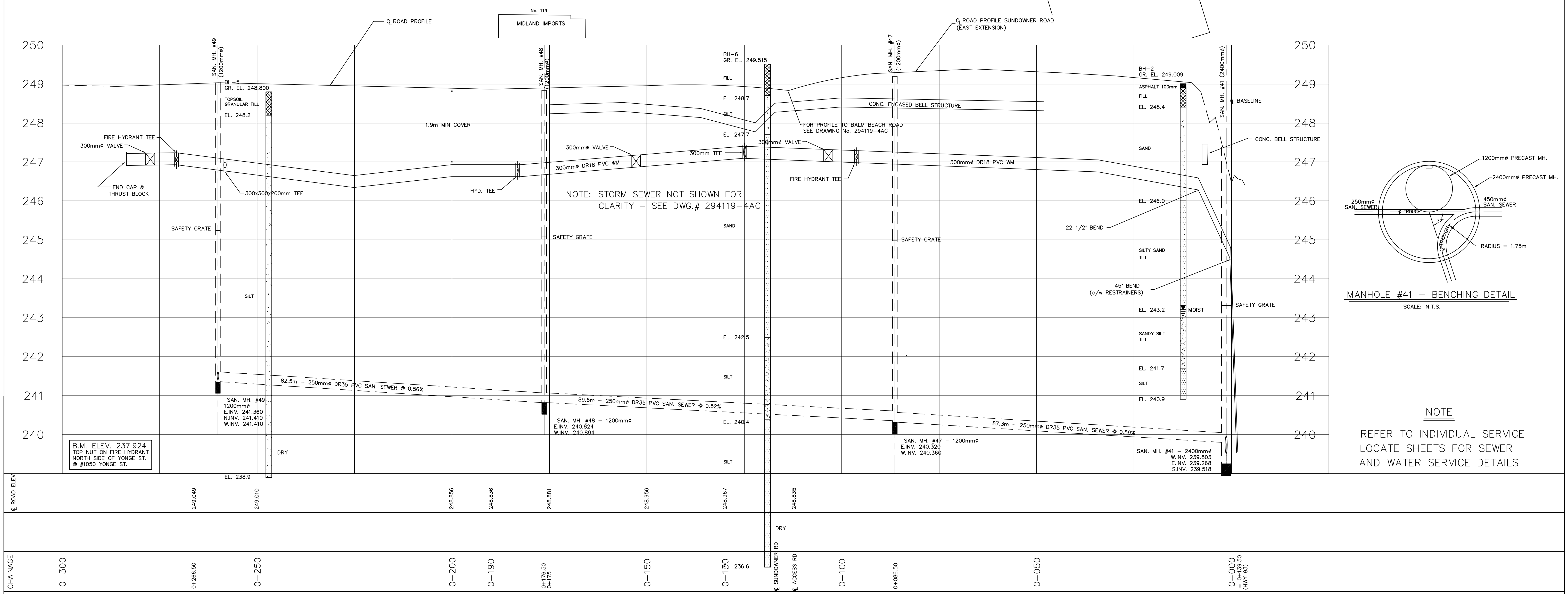
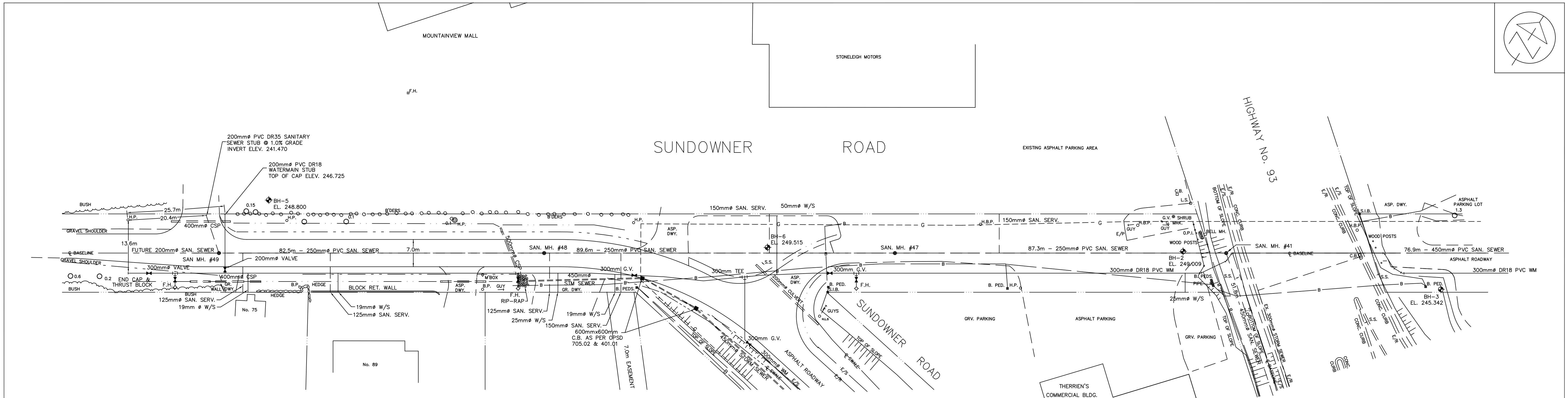
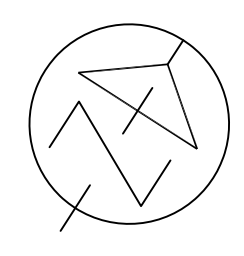
DESIGNED	P.Q.A.	DRAWN	P.Q.A.	CHECKED	Y.W.C.
SCALE	1:500	DATE	OCTOBER 2018		
PROJECT NUMBER	18M-01130	DWG. NUMBER	GS1		

Town File No.

FILE NAME: X:\DIV\01\18M-01130_Midland\Man\Engineering Drawings\18M-01130_SSI-SG1-ESC1-D1.dwg_GS1 PRINTED ON: Tuesday, 02/26/2019

APPENDIX

D TOWN OF MIDLAND ARCHIVED DRAWINGS



NOTES

- ROADWAY PROTECTION:
 - FOR PLACEMENT OF MANHOLE #41 PROVIDE ENGINEERED SHORING AND BRACING OR SHEET PILING PROTECTION ALONG EDGE OF SHOULDER AND TEMPORARY CONCRETE BARRIER (AS PER OPSD 920.010 & 920.03) ALONG EDGE OF CURB OF HIGHWAY No. 93, ALL IN ACCORDANCE WITH OPS AND OTHER REGULATIONS.
 - CERTIFIED DETAIL DRAWINGS FOR SHORING PROTECTION TO BE PROVIDED TO TOWN ENGINEERING CONSULTANT AND MINISTRY OF TRANSPORTATION (ONTARIO) FOR ALL ACTIVITIES APPROVALS PRIOR TO ANY CONSTRUCTION RELATING TO MANHOLE #41 OR BORING UNDER HIGHWAY No.93.
 - TRAFFIC CONTROL TO BE PROVIDED IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND MINISTRY OF TRANSPORTATION REQUIREMENTS.
- ALL WORKS ON BALM BEACH ROAD TO BE TO THE APPROVAL AND ACCEPTANCE OF THE COUNTY ENGINEER - COUNTY OF SIMCOE, MIDHURST.
- VEHICULAR ACCESS SHALL BE MAINTAINED AT ALL TIMES TO COMMERCIAL ESTABLISHMENTS TO THE SATISFACTION OF THE TOWN.

NO.	REVISIONS	DATE	INITIAL
4	AS CONSTRUCTED	JAN/96	
3	WATERMAIN EXTENDED WITH SHARED CASING	MAY/95	
2	AS PER TOWN COMMENTS	MAR/95	
1	CONSTRUCTION DRAWINGS	JAN/95	

APPROVED

D. G. CARR
LICENSED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

TOWN OF MIDLAND
BALM BEACH ROAD
TRUNK SANITARY SEWER

SUNDOWNER ROAD
270m WEST OF HIGHWAY No.93

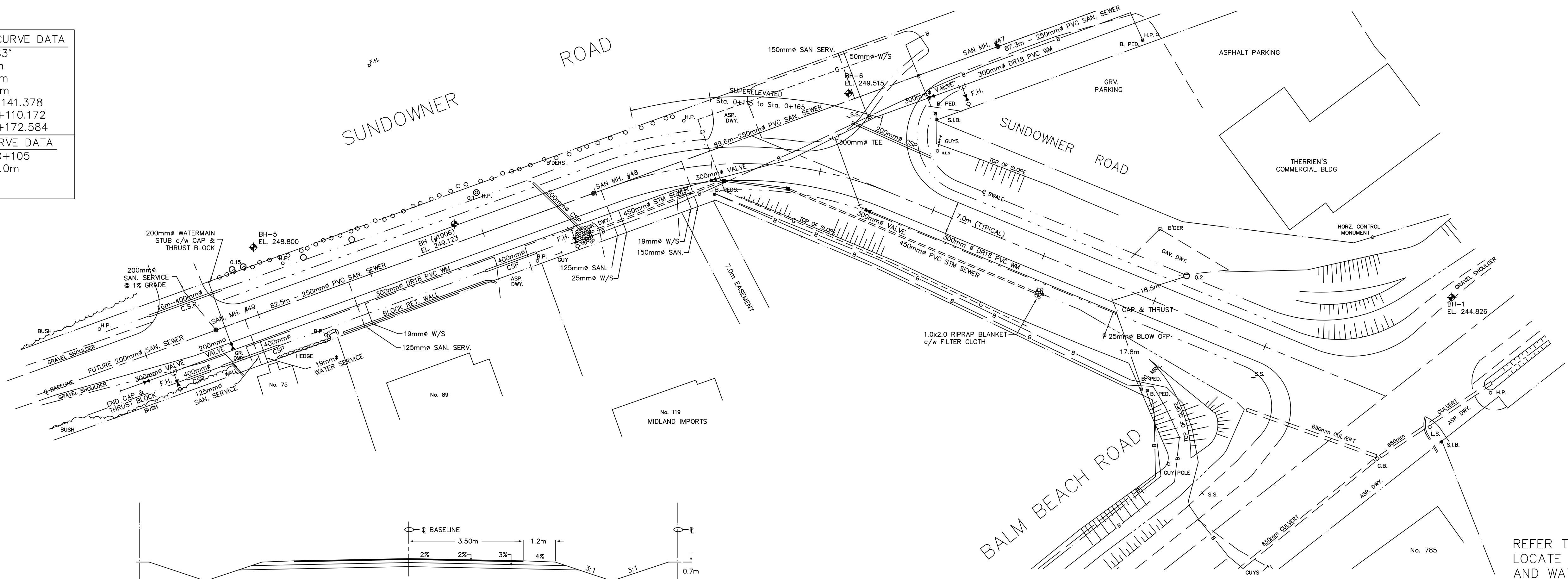
TOWN OF MIDLAND
ENGINEERING DEPARTMENT

PREPARED BY: ANILEY & ASSOC. LTD.
DESIGN: H.W.B.
DRAWN: C.L.P.

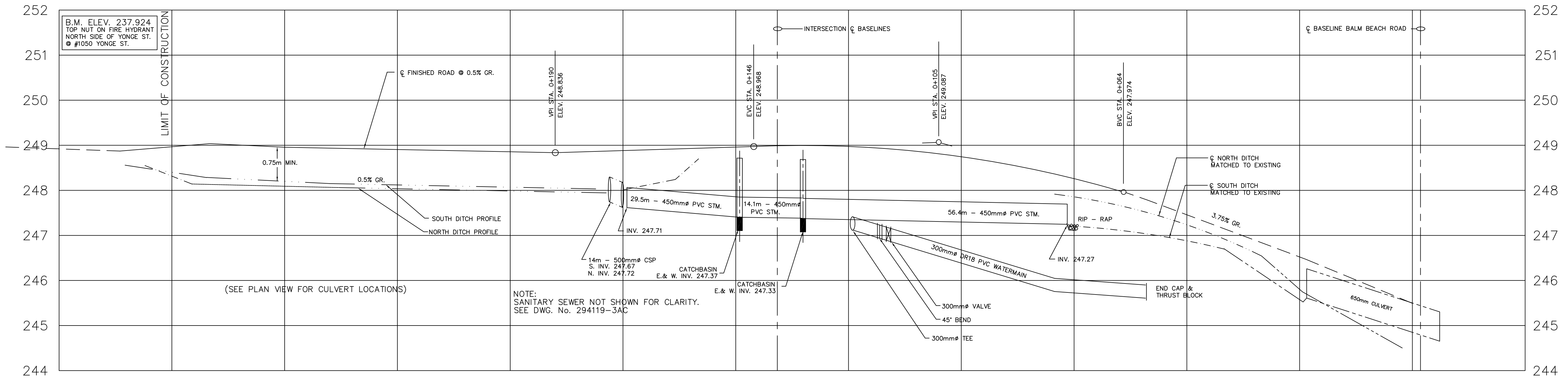
CHECKED: D.G.C.
DATE: DEC. 1994

SCALE: HORZ. 1:500 VERT. 1:50
DWG.No. 294119-3AC

HORIZONTAL CURVE DATA	
A =	42.2583'
R =	80.75m
T =	31.206m
L =	59.559m
P.I. Sta.	0+141.378
B.C. Sta.	0+110.172
E.C. Sta.	0+172.584
VERTICAL CURVE DATA	
V.P.I. Sta.	0+105
L.V.C. =	82.0m
K =	27.3



NOTE
REFER TO INDIVIDUAL SERVICE
LOCATE SHEETS FOR SEWER
AND WATER SERVICE DETAILS



ROAD ELEV.	248.956	248.906	248.856	248.806	248.881	248.956	248.979	248.967	248.919	248.835	248.714	248.556	248.382	248.131	247.974	247.551	246.927	245.493
CHAINAGE	0+300	0+250	0+200	0+190	0+175	0+150	0+140	0+130	0+120	0+110	0+100	0+090	0+080	0+070	0+064	0+050	0+000	

NOTES

- ROADWAY PROTECTION:
 - FOR PLACEMENT OF MANHOLE #41 PROVIDE ENGINEERED SHORING AND BRACING OR SHEET PILING PROTECTION ALONG EDGE OF SHOULDER AND TEMPORARY CONCRETE BARRIER (AS PER OSPD 920.010 & 920.03) ALONG EDGE OF CURB OF HIGHWAY No. 93, ALL IN ACCORDANCE WITH OPSS AND OTHER REGULATIONS.
 - CERTIFIED DETAIL DRAWINGS FOR SHORING PROTECTION TO BE PROVIDED TO TOWN ENGINEERING CONSULTANT AND MINISTRY OF TRANSPORTATION (ONTARIO) FOR ALL ACTIVITIES APPROVALS PRIOR TO ANY CONSTRUCTION RELATING TO MANHOLE #41 OR BORING UNDER HIGHWAY No.93.
 - TRAFFIC CONTROL TO BE PROVIDED IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND MINISTRY OF TRANSPORTATION REQUIREMENTS.
- ALL WORKS ON BALM BEACH ROAD TO BE TO THE APPROVAL AND ACCEPTANCE OF THE COUNTY ENGINEER - COUNTY OF SIMCOE, MIDHURST.
- VEHICULAR ACCESS SHALL BE MAINTAINED AT ALL TIMES TO COMMERCIAL ESTABLISHMENTS TO THE SATISFACTION OF THE TOWN.

NO.	REVISIONS	DATE	INITIAL
4	AS CONSTRUCTED	JAN/96	
3	WATERMAIN EXTENDED WITH SHARED CASING	MAY/95	
2	AS PER TOWN COMMENTS	MAR/95	
1	CONSTRUCTION DRAWINGS	JAN/95	

APPROVED

D. G. CARR

TOWN OF MIDLAND
BALM BEACH ROAD
TRUNK SANITARY SEWER

SUNDOWNER ROAD

TOWN OF MIDLAND
ENGINEERING DEPARTMENT

PREPARED BY: AINLEY & ASSOC. LTD. SCALE: HORZ. 1:500 VERT. 1:50
 DESIGN: H.W.B. CHECKED: D.G.C.
 DRAWN: C.L.P. DATE: JAN. 1995 DWG.No. 294119-4AC