FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

MIXED-USE SITE PLAN DEVELOPMENT

288 King Street, Town of Midland, Simcoe County, Ontario

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PARKER CONSULTING ENGINEERS LTD.

ParkerConsultingEngineers@Outlook.com

255 Hickling Trial, Barrie, ON, L4M 5W9, 705-796-7208

Document History

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Drawing No. STM-1: Pre-Development Storm Drainage Area Plan

Drawing No. STM-2: Post-Development Storm Drainage Area Plan

Drawing No. NT-1: Notes

1. Introduction

1.1 Appointment

Parker Consulting Engineers Ltd. [PCEL] has been retained by Ervis Balliu [Client] to complete the detailed civil-municipal engineering design in support of the mixed-use site plan development's Site Plan Control application [SPCA] at the property municipality know as 288 King Street, Town of Midland [Town], Simcoe County [County], Ontario.

The property is legally described as Part 5 (west side of King Street), Registered Plan 306, Town of Midland, County of Simcoe, and has a total area of 381.12 square meters [sq.m] with approximately [approx.] 8 metres [m] of frontage along King Street and a lot depth of 47.64m. The property location and 2025 aerial imagery taken Google Maps is illustrated on **Figure 1.1**.

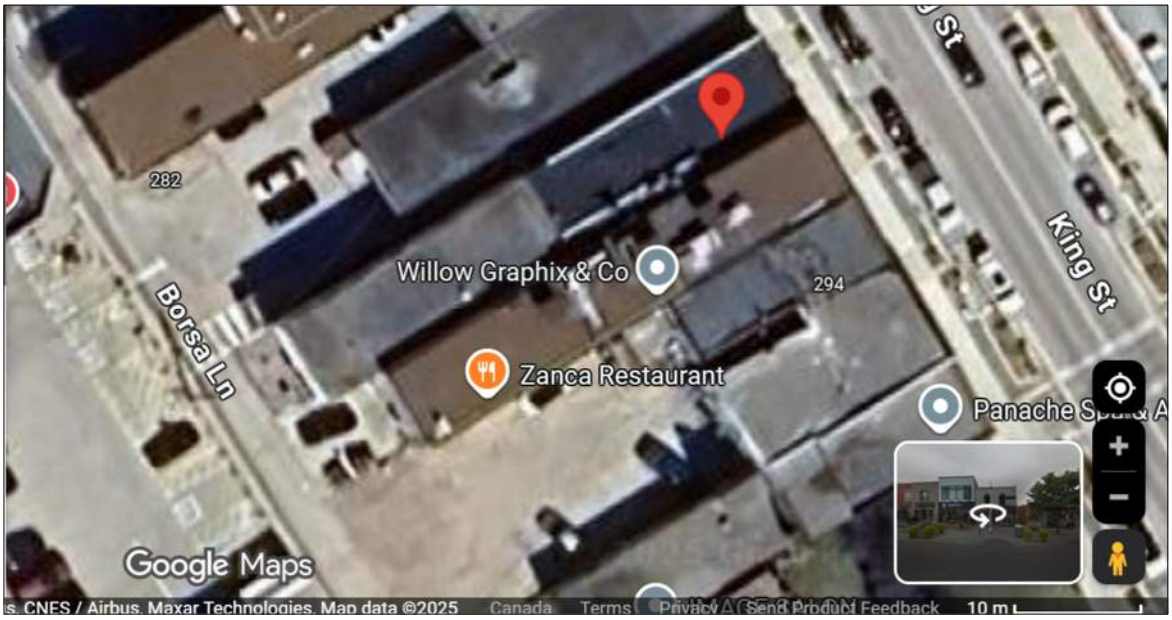


Figure 1.1: 288 King Street Site Location

This Functional Servicing and Stormwater Management Report [FSSWMR] has been prepared to illustrate that the site's water, wastewater (sanitary), and stormwater management services meet the Town, Ministry of Environment, Conservation and Parks [MECP], and the Ontario Building Code [OBC] approval criteria.

2. Property Description

2.1 Existing Site Conditions

The subject site is rectangular in shape with frontages on the west side of King Street and the east side of Borsa Lane, bounded by existing commercial developments to the north (pharmacy building) across from a public pedestrian access (interlock paver stone walkway), and attached to a commercial building to the south (joint southern wall). The site is located approx. 70 m south of the Hugle Avenue intersection and 130 m north of the Elizabeth Street intersection.

Currently the site includes a 634.6sq.m building with commercial uses on the ground and second floor, and partial residential use on the second floor. A request was made to the Town's building department for copies of the existing building permit information, but no plans, drawings, or other records were available.

The limited site area outside of the building footprint is covered with concrete and asphalt for pedestrian access to the building's entrances at the east, north, and west sides, and parking at the rear next to Borsa Lane (beneath the second-floor overhang). There are no landscaped areas currently on-site. There is a small retaining wall at the rear of the building next to the parking stalls and second floor rear access stairs.

The property frontage on King Stret is developed with municipal sidewalks, plantings, utilities and full municipal services (water, wastewater (sanitary) and storm sewers and individual property services). The Google Street View conditions from 2018 are illustrated in **Figure 2.1**.

Figure 2.1: Existing King Street Frontage Conditions (Google Street View)

The property has vehicular access from Borsa Lane. Borsa Lane spans from Hugle Avenue to Elizabeth Street, providing access to a large parking lot for the surrounding commercial developments. The Google Street View conditions from 2009 are illustrated in **Figure 2.2**.

Figure 2.2: Existing Borsa Lane Frontage Conditions (Google Street View)

Based on the *Surveyor's Real Property Report, Part 5 (west side of King Street), Registered Plan 306, Town of Midland, County of Simcoe,* completed by Delph & Jenkins North Ltd., OLS, dated October 9, 2025, elevations at the east side of the site along King Street range from 189.38m to 189.13m and 189.05m to 188.90m at the western limit at Borsa Lane. A copy of the *Surveyor's Real Property Report* has been attached in **Appendix A**.

2.2 Existing Land Use

Based on the Town's *Official Plan, Schedule 'C'* the site is zoned as "Downtown". The Town's *Official Plan Schedule 'C'* is illustrated in **Figure 2.3,** and a full copy has been attached in **Appendix A**.

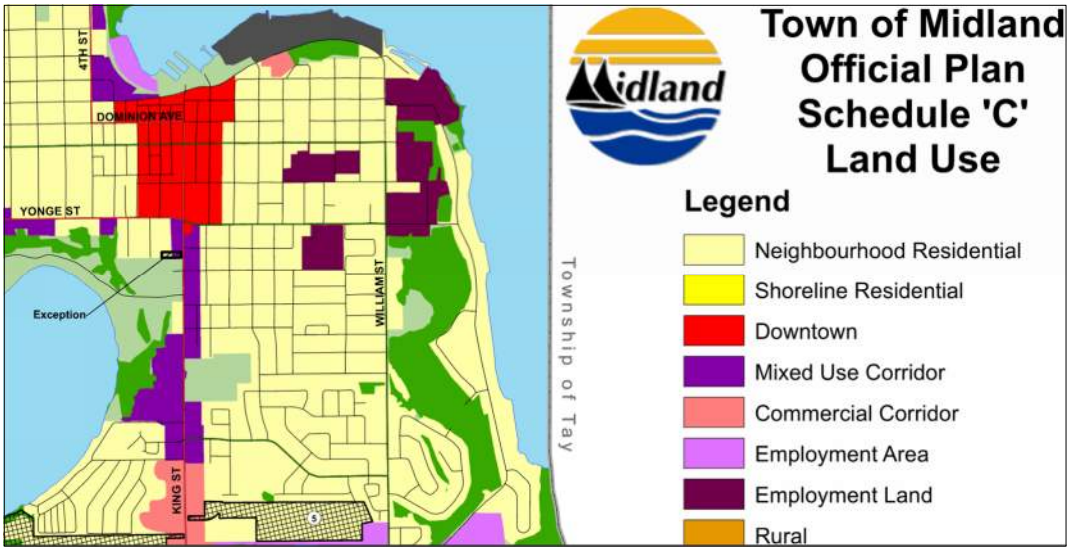


Figure 2.3: Town Official Plan Schedule 'C'

The Town's *Schedule A to Zoning By-Law 2004-90, Map 25* illustrates that the site is zoned as "Downtown Core Commercial Zone". The Town's *Zoning By-Law Schedule A* is illustrated in **Figure 2.4,** and a full copy has been attached in **Appendix A**.

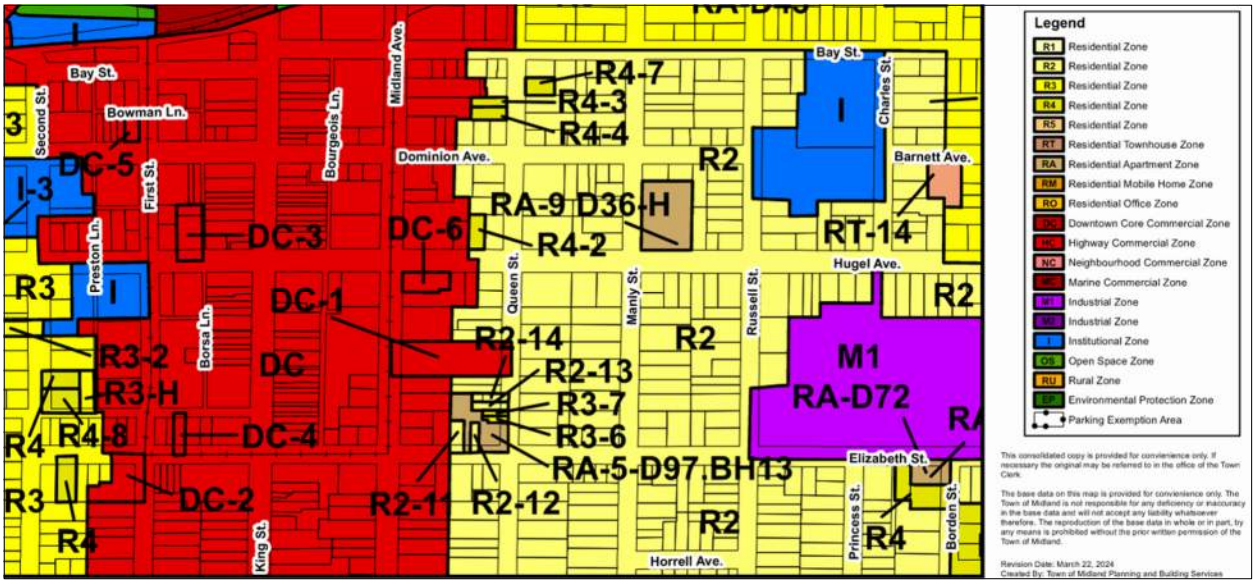


Figure 2.4: Town Zoning By-Law Schedule 'A'

2.3 Existing Soils Conditions

According to the *Soil Map of Simcoe County, Ontario, North Sheet, Soil Survey Report No. 29*, the site is comprised of Tioga sand loam (Tisl) soils. The map classifies these soils as smooth gently to irregular, steeply sloping, with good drainage. The site's soils are illustrated on **Figure 2.4**.

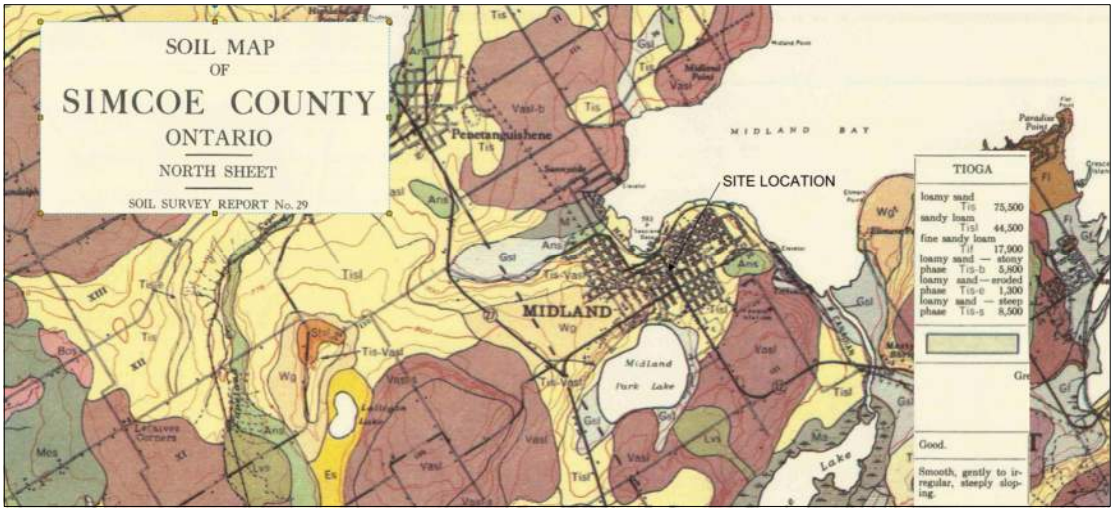


Figure 2.4: Soil Map of Simcoe County

3. Proposed Land Use

The *288 King Street 3rd Floor Addition Site Plan* (Drawing No. A110) and drawing set prepared by Julius Horvath Architect Inc. [JHA] proposes to renovate the existing two-storey mixed use building (existing commercial on first and second floor, partial residential on second floor) to include a third storey for residential use and convert the second-floor commercial into residential units. Based on the architectural plans the overall site layout will not change, and pedestrian access will be maintained to the building from King Street and Borsa Lane, and along the north walkway. The ground floor rear wall at Borsla Lane will be removed and placed at the second-floor wall limit to remove the second-floor overhang. The *Site Plan* is illustrated in **Figure 3.1** and a copy has been attached in **Appendix A**.

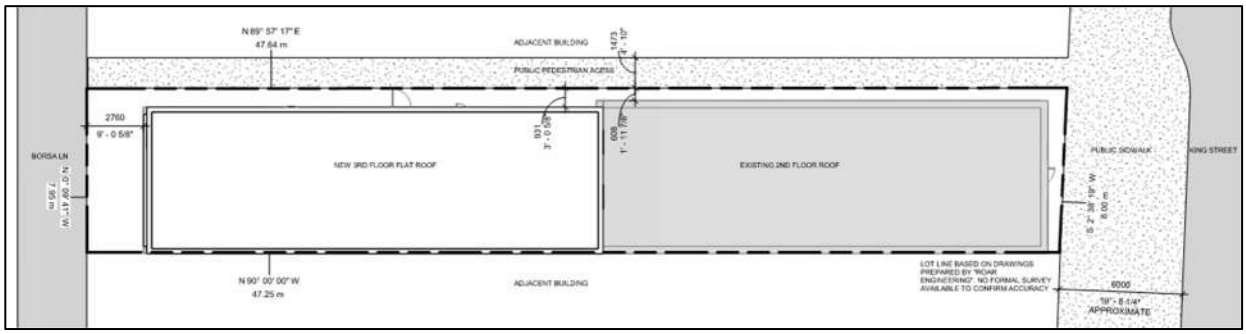


Figure 3.1: Site Plan, JHA

The site's architectural sketches illustrating the building's exterior updates is provided in **Figure 3.2**.

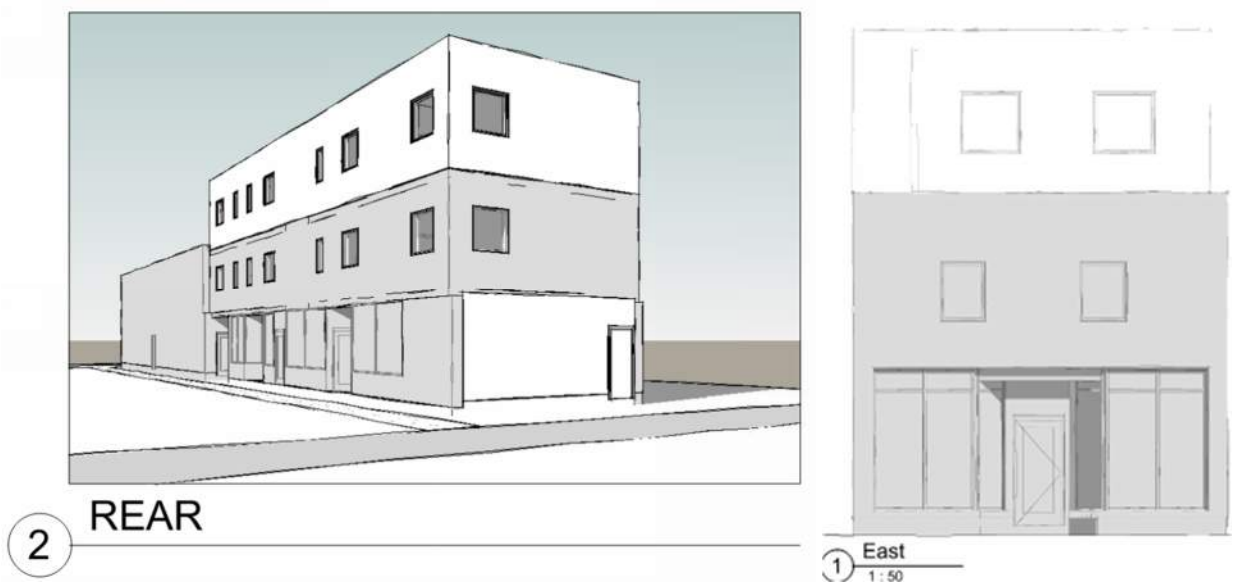


Figure 3.2: Exterior Building Updates, JHA

The proposed buillding areas and uses are summarises **Table 3.1**.

Table 3.1: Building Area Summary

ID No.	Use	Area (sq.m)	No. of Units
Ground Floor – Occupancy Group D			
1	Commercial – Existing Unit	83.5	1
2	Commercial – New Units	98.8	2
	Washrooms	12.6	3
	Hallway and Storage	120.1	
	Sub-Total	**315.0**	
Second Floor – Occupancy Group C			
3	Residential	319.6	5
Third Floor – Occupancy Group C			
4	Residential	157.9	3
	Total	**792.5**	

4. Sanitary Servicing

4.1 External Sanitary Servicing Framework

The site is located within the Town's Bayshore Drive Trunk Sewer drainage catchment area that outlets to the Wastewater Treatment Plant [WWTP] located next to the shore of Midland Bay. Based on the Town's Wastewater Master Plan *Overview of Key Wastewater Infrastructure* (Figure 1-2) the site's effluent drains north along King Street to the Bayshore Drive sewer. The *Overview of Key Wastewater Infrastructure* map is illustrated in **Figure 4.1,** and a copy is attached in **Appendix B**.

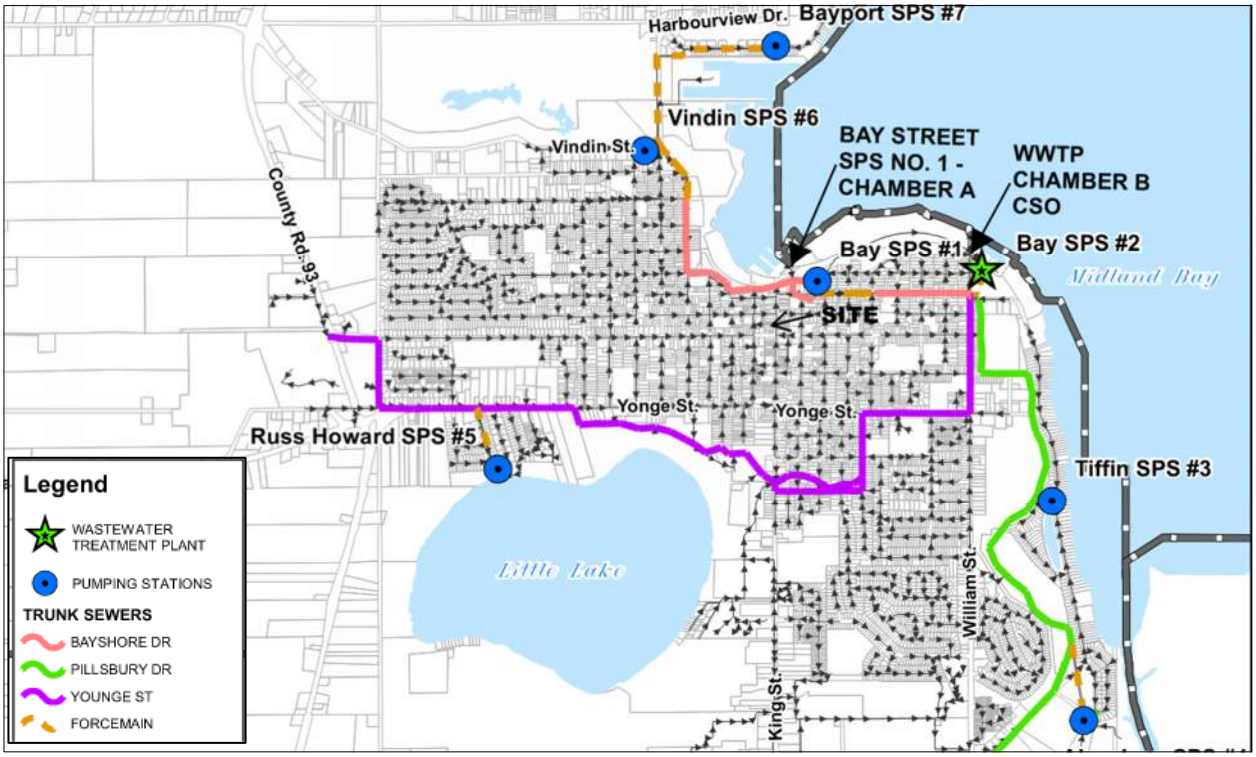


Figure 4.1: Town of Midland Overview of Key Wastewater Infrastructure Map

The Town's *King Street Rejuvenation, King Street, Plan and Profile, Sta. 1+250 to 1+390* (Dwg. PP-5, as-built dated April 2022) illustrates an existing 250mm diameter sanitary sewer at the centre of the Right-of-Way [ROW] at a depth of approx. 3.6 m draining north. The Town's *Bayshore Drive, Plan and Profile, Sta. 1+140 to 1+250* (Dwg. PP-3) illustrates the King Street sewer draining to the 1,200mm diameter trunk sewer in Bayshore Drive, which eventually reaches the WWTP. Copies of the Town's plan and profile drawings and maps are attached in **Appendix A**. The existing municipal services are illustrated on the *Site Servicing Plan* (Drawing No. SS-1) attached in **Appendix F**.

4.2 Existing Sanitary Service

The property is serviced from the existing King Street 250mm diameter sanitary sewer by a 125mm diameter service lateral connection. The sanitary service is located approx. at the centre of the property frontage and is illustrated on the Town's *288 King Street, Service Record Sheet* (File 116024, dated March 2021), provided in **Figure 4.2** and a full copy is attached in **Appendix A**.

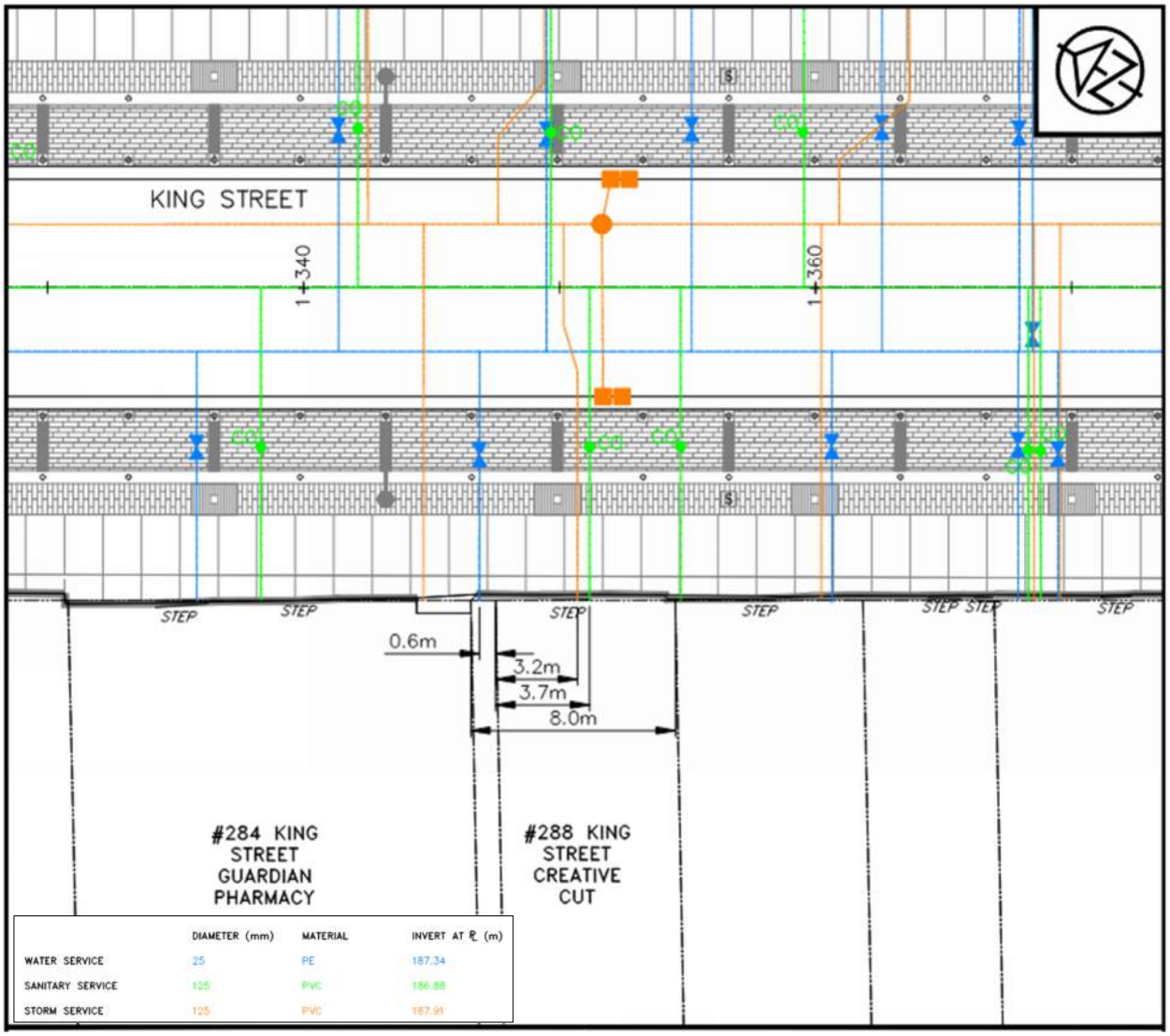


Figure 4.2: 288 King Street Service Record Sheet

4.3 Sanitary Servicing Design Criteria

The Town's *Engineering Development Design Standards* (July 2025), *Section 7 – Sanitary Drainage System*, Subsection 7.1.1 *Required Systems*, notes that sanitary drainage systems are to be designed in accordance with MECP "*Design Criteria for Sanitary Sewers, Storm Sewers, and Forecemains for*

Alterations Authorized Under Environmental Compliance Approval V1.1 July 28, 2022" in support of the Town CLI-ECA issued by the MECP. Sanitary sewers, drains and appurtenances shall also be designed and constructed in accordance with the most recent requirements of the OBC and in accordance with the appropriate municipal By-laws.

The sanitary servicing design and approval criteria applicable to the development are summarized in the following table.

Table 4.1: Sanitary Servicing Design Criteria Summary

Category	Sub-Category	Criteria
Quantity	Peak Flow	Peak flow calculations are to be based on latest Town's sanitary demands design criteria when site specific development information is not available (Town)
	Peak Flow	Peak flow calculations to be based on OBC establishment daily sewage flow rates when site specific design criteria are available (Town, OBC, MOECP)
	Design	Minimum slope shall be 2% 125mm diameter connections to be provided with a cleanout (Town)

4.3.1 Town of Midland – Sanitary Design Criteria and Demands

The Town's *Engineering Development Design Standards* (July 2025) provides theoretical design criteria for developments and their projected sanitary loading demands. Specifically, the guidelines provide design criteria for commercial and residential developments based on land use areas, design flows, and infiltration allowance. The applicable *Standards* for the site summarized table.

Table 4.2: Town Sanitary Design Criteria Summary

Standard Section	Category	Criteria
7.1.4	Commercial use	2.5 L per day per square metre of floor area
7.1.4	Residential apartment units	2 persons per apartment unit 450 L per capita per day [cpd] for residential land uses
7.1.4	Wet weather infiltration (extraneous) sewage flow rate	0.00023 cubic meter per second per hectare (0.0023 m^3/sec/ha or 0.23 L/sec/ha) shall be used for all types of lands (developable and non-developable)

A copy of the Town's sanitary sewer design criteria has been attached in **Appendix B**.

4.3.2 Ontario Building Code – Building Use Sanitary Demands

The Ontario Building Code provides detailed requirements for the design and construction of private plumbing works (*Part 7*) and sewage systems (*Part 8*). Section 8.2.1.3. *Sewage System Design Flows*, Table 8.2.1.3.A *Residential Occupancy* and 8.2.1.3.B. *Other Occupancies* provides theoretical total daily design sewage flow rates for various building uses. The applicable flow rates for the site summarized in the following table.

Table 4.3: OBC Residential Daily Sewage Flow Rates (Table 8.2.1.3.A.)

OBC Table Ref. No.	Establishment Type / Use	Total Daily Sewage Flow Rate (L/day)
1	Apartments, Condominiums, Other Multi-family Dwellings - per person	275

Table 4.4: OBC Establishment Daily Sewage Flow Rates – Other Occupancy (Table 8.2.1.3.B.)

OBC Table Ref. No.	Establishment Type / Use	Total Daily Sewage Flow Rate (L/day)
15	Office Building	
	a) Per employee per 8 hour shift	75
	b) Per each 9.3 sq.m of floor space	75
22	Stores	
	a) Per 1.0 m^2 of floor area, or	5
	b) Per water closet	1,230

Table 8.2.1.3.B. Notes (3) states that where multiple calculations of sanitary sewage volume is permitted, the calculation resulting in the highest flow shall be used in determining the design daily sanitary sewage flow.

4.4 Proposed Sanitary Demands

4.4.1 Town of Midland Sanitary Demands

Utilizing the Town's sanitary sewer design criteria the proposed building's future residential sanitary flows have been calculated using the site's design population with the Peak Domestic Sewage Flow equation and the Harmon Formula provided below.

Peak Domestic Sewage Flow Equation: $Q_p = P \times q \times M / 86.4 + I \times A$

Where: Q_p *= peak residential sanitary sewage flow, including extraneous flow (L/s), P = design population in thousands, q = average domestic flow per capita (litres/day/person), M = Peaking factor (no less than 2 and not greater than 4), I = Peak extraneous flow (litres/second/hectare), A = tributary area (hectares)*

Harmon Formula: $M = 1 + 14/(4 + P^{1/2})$

Where: *M = ratio of peak flow to average flow, P = tributary population in thousands*

Using the above equations with the site area and land use, the total peak wastewater flows and are summarized in the following table. Refer to **Appendix B** for detailed calculations.

Table 4.5: Town Design Criteria Proposed Sanitary Flow Summary

ID	Area (sq.m)	Residential Population	Peak Flow (L/s)	Extraneous Flow (L/s)	Total Peak Flow (L/s)
Site	381.12			0.007245	0.007245
Residential Use	477.5	16	0.333		0.333
Commercial Use	315		0.0182		0.0182
					0.3588

The above table illustrates that the site will generate a peak combined residential, commercial and extraneous flow of 0.3588 L/s based on the Town's design criteria.

4.4.2 Ontario Building Code – Building Use Sanitary Demands

Utilizing the OBC Section 8.2.1.3. *Sewage System Design Flows*, Table 8.2.1.3.A. and B. with the building areas the total anticipated wastewater flows and are summarized in the following table. Refer to **Appendix B** for detailed calculations.

Table 4.6: OBC Design Criteria Proposed Sanitary Flow Summary

OBC Ref. No.	Establishment Type / Use	Flow (litres/day)	Area / Unit / Persons (sq.m)	Total Daily Sewage Flow Rate (L/day)	Total Daily Sewage Flow Rate (L/s)
1	**Apartments**, Condominiums, Other Multi-family Dwellings - per person	275	16.0	4,400	0.051
15	**Office Building**				
	a) Per employee per 8 hour shift, or	75	Unknown		
	b) Per each 9.3 sq.m of floor space	75	315.0	2,540	0.029
22	**Stores**				
	a) Per 1.0 m^2 of floor area	5	315.0	1,575.0	0.018
	b) Per water closet	1,230	3	3,690.0	0.043
	Totals:			**8,090.0**	**0.094**

The above table illustrates that the site could generate a peak flow of 0.094 L/s based on the OBC design criteria.

4.5 Proposed Sanitary Servicing

As part of the site's previous building works a 125 mm diameter (assumed size) sanitary service lateral was extended from the King Street sewer to the building's mechanical room. Based on the Town as-built drawings the sanitary sewer service was likely constructed in accordance with the Town's engineering standards and the MECP guidelines, consisting of PVC, SDR 28 pipe with a diameter of 125mm at a minimum slope of 2%. To confirm that the proposed sanitary service lateral can convey the site's flows a sanitary sewer capacity check was completed and is summarized in the following table.

Table 4.7 Sanitary Service Lateral Flow Capacity

Location / Sewer	Slope (m/m)	Manning's n	Pipe Diam. (m)	Sewer Capacity (cu.m/s)	Sewer Capacity (L/s)
Ex. 125 mm diam. SAN Service Lateral	0.02	0.013	0.125	0.013	13

The above table confirms that the sanitary service can convey the developments future flows. Refer to the *Site Servicing Plan* (Drawing No. SS-1) attached in **Appendix F** for the sanitary servicing information and

detailed calculations attached in **Appendix B**. Based on the proposed building works being similar in size and use to the existing building and proximity to the existing 250mm diameter sewer we do not foresee any issues with the building's existing connection to the external system.

5. Water Servicing

5.1 Existing Watermain System

The site is in the Town's Reservoir / Flume Pressure Zone. This zone is serviced from the interconnected well system located throughout the Town. The Town's Water Servicing Master Plan Update Report *Summary of Issues and Potential Solutions* (Figure 8) map illustrating the pressure zones is provided in **Figure 5.1** and a copy is attached in **Appendix C**.

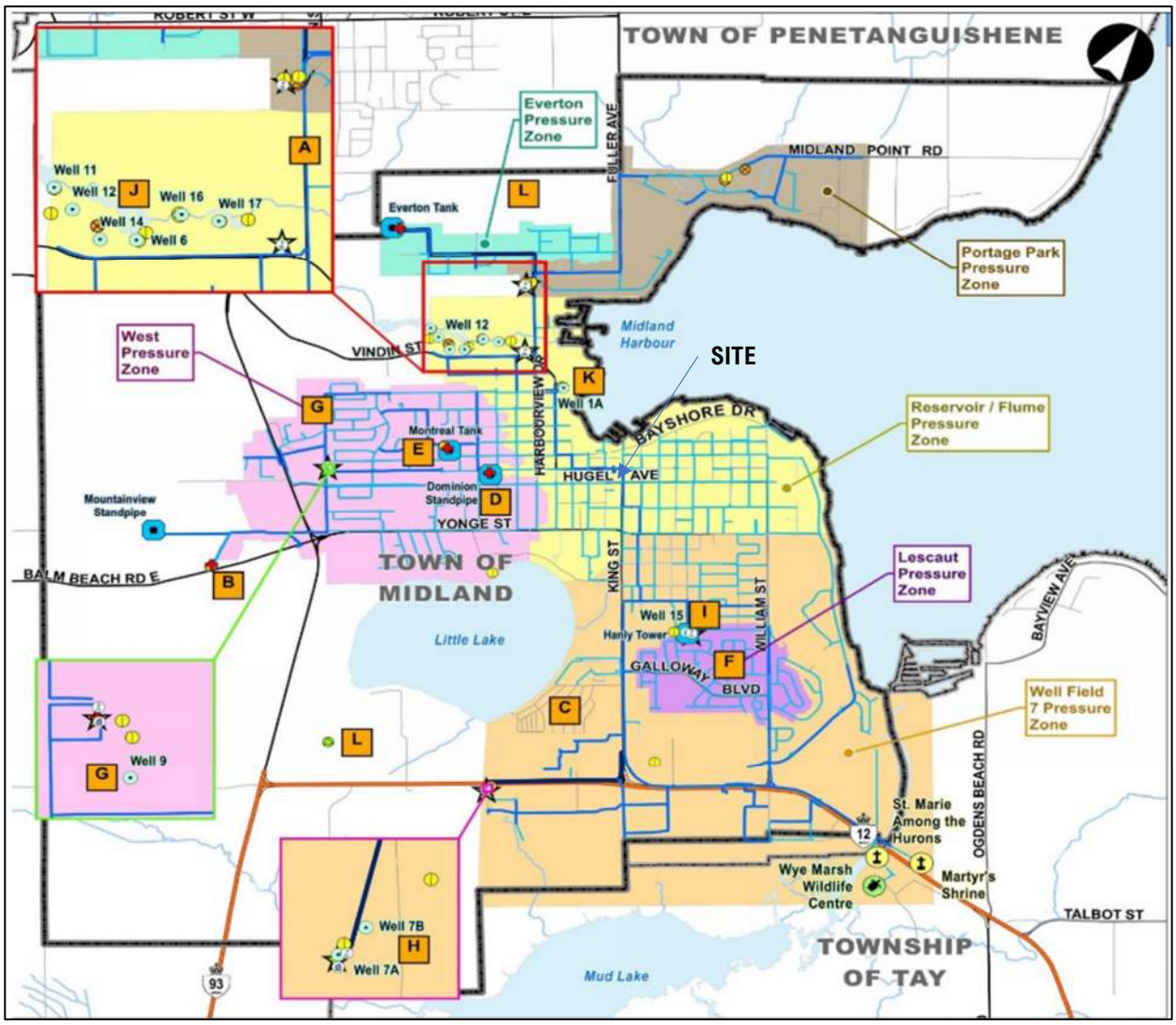


Figure 5.1: Town Water Pressure Zones Map

Town's *King Street Rejuvenation, King Street, Plan and Profile, Sta. 1+250 to 1+390* (Dwg. PP-5, as-built dated April 2022) illustrates an existing 250mm diameter watermain in the west side of the ROW at a depth of approx. 2.22m. The Town's *PP-4* illustrates the King Street main connected to the existing

250mm main in Dominion Avenue, which likely connects to the Dominion standpipe. Copies of the Town's plan and profile drawings and maps are attached in **Appendix A**. The existing municipal services are illustrated on the *Site Servicing Plan* (Drawing No. SS-1) attached in **Appendix F**.

5.2 Existing Water Service

The property is serviced from the existing King Street 250mm diameter watermain by a 25mm diameter polyethylene [PE] service lateral connection located at the northeast corner of the building. The site's water service connection is illustrated on the Town's *288 King Street, Service Record Sheet* (File 116024, dated March 2021), provided in **Figure 4.2** and a full copy is attached in **Appendix** A.

5.3 Watermain Design Criteria

The Town's *Engineering Development Design Standards* (July 2025), *Section 8 – Water System*, Subsection 8.3.3 *Design Flows*, notes that watermain systems are to be designed to carry the maximum day demand plus fire flows based on the latest publication of the Public Fire Protection Survey, or peak hour flow, whichever is greater. Watermains and appurtenances shall also be designed and constructed in accordance with the most recent requirements of the OBC and in accordance with the appropriate municipal By-laws.

The water servicing design and approval criteria applicable to the development are summarized in the following table.

Table 5.1: Water Servicing Design Criteria Summary

Category	Sub-Category	Criteria
Potable Water	Peak Flow	Peak flow calculations to be based on latest Town water design criteria when site specific development information is not available (Town)
	Peak Flow	Peak flow calculations to be based on OBC establishment flow rates when site specific design criteria are available (Town, OBC, MOECP)
	Flow and Pressure	Available flow and pressures generally restricted by commercial water service size, connected to 200 mm diameter watermain for commercial areas (Town)
Fire Protection	Peak Flow	Peak flow calculations to be based on latest Public Fire Protection Survey, Town and MOECP water design criteria (FUS, Town, MOECP)
	Fire Hydrants	Hydrant spacing at 90 m for ICI areas (Town)

	Flow and Pressure	Available flow and pressures generally restricted by commercial watermain size and fire hydrant locations typically connected to 200 mm diameter watermain for commercial areas (Town)

5.3.1 Town of Midland – Water Demands

The Town's *Engineering Development Design Standards* (July 2025) provides theoretical design criteria for future developments, and their projected water demands. Specifically, the guidelines provide design criteria for commercial and residential developments based on land use and average consumption rates. The applicable *Standards* for the site are summarized in the following table.

Table 5.2: Town Watermain Design Criteria Summary

Standard Section	Category	Criteria	Max Day Factor	Peak Hour Factor
8.3.3	Average Daily Water Demands for Developments	450 litres per cap per day (450 L/cap/day)	2.0	4.5
7.1.4	Commercial Use (sanitary)	2.5 L per day per square metre of floor area	2.0	4.5

A copy of the Town's watermain design criteria has been attached in **Appendix C**. Based on the building's total residential occupant load of 16 people and commercial floor area of 315 sq.m, the average daily potable watermain demand is estimated at 7,987.5 L/day (0.092 L/sec) (450*16 + 2.5*315).

5.3.2 Ontario Building Code – Building Use Watermain Demands

Based on the OBC sanitary flow calculations in **Section 4.4.2**, the buildings anticipated flow rate is estimated at 0.094 L/sec. This equates to the anticipated typical potable water system demand.

5.4 Proposed Water Servicing Demands

5.4.1 Potable Water

Utilizing the proposed building total occupant load and commercial area with the Town's design criteria and the OBC sanitary flow rate (water demand), the estimated max day and peak our watermain demands are summarized in the following table.

Table 5.3: Water Demand Summary

ID	Potable Demand (L/s)	Max Day (L/s)	Peak Hour (L/s)
Town Demands	0.092	0.184	0.414
OBC Demands	0.094	0.188	0.423

The above table illustrates the building's max day and peak hour potable watermain system demands with the Town and OBC design criteria.

5.4.2 Fire Protection

To meet the developments fire protection requirements, the existing 250mm diameter watermain and fire hydrants within the King Street ROW will be utilized.

The developments fire flow requirements are based on the Fire Underwriters Survey (FUS), Water Supply for Public Protection. The Fire Underwriters Survey Part 2 Guidelines Equation (FU Equation) is used to determine the required fire flow for a proposed development based on the total floor area and the following factors:

1. *Type of construction*
2. *Sprinklered versus non-sprinklered buildings*
3. *Exposure (building setbacks and proximity to the neighboring buildings)*

The following formula uses all the contributing factors to determine a development's fire flow requirements:

Fire Underwriters Equation: $F = 220 \times C \times \sqrt{A}$

Where: *F = The required fire flow (L/min), C = coefficient related to the type of construction, A = the total floor area (including all storeys, but excluding basements at least 50 percent below grade) in the building being considered (square metres)*

Notes for the Coefficient (C) related to the type of construction:

C = 1.5 for wood frame construction (structure essentially all combustible)
C = 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior)
C = 0.8 for non-combustible construction (unprotected metal structural components, masonry or metal walls)
C = 0.6 for fire-resistive construction (fully protected frame, floors, roof)

To determine the developments fire flow requirements the FU Equation was used with the proposed buildings total floor area (792.5 sq.m) which resulted in a fire flow rate of **108 L/s**. Detailed FUS calculations are attached in **Appendix C**. Based on the Town's commercial area flow design criteria and

proximity to the existing 250mm diameter watermain in the ROW, we do not foresee any issues achieving the minimum required fire flow rate and pressures.

5.5 Proposed Water Servicing

5.5.1 Potable Water

Coordination with the mechanical engineer confirmed that to meet the building's future potable water demands it is proposed to replace the existing 25mm diameter service with a new 50mm diameter water service and extending to the new building's mechanical room. The service will be routed through the building to the new fixtures. A new meter will be installed in the mechanical room. Refer to the proposed 288 King Street, *Plumbing & Drainage Layouts – Basement*, prepared by HL Engineering Ltd. (Project No. 25029, dated August 1, 2025) attached in **Appendix A** for the location of the building's internal water servicing details.

The new upsized 50mm diameter water service will be connected to the existing 250mm diameter municipal watermain by live tapping with a saddle. As per the Town's Standards Section 8.18 *Specifications for General Services, Domestic, and Fire Services,* the Town representative must complete all tappings off any existing charged watermains. The water service will have a new ball valve type curb stop generally located at the same position as the existing services curb stop. The service saddle shall be at the 9 o'clock positions as per the *Water Service, Copper 38mm & 50mm*, detail BSD-49 (BSD-49 now replaced by W503, copy attached in **Appendix C**). The excavation for the service will be repaired as per the *Trench Restoration "Roadway"*, detail R330. The new service and details are illustrated on the *Site Servicing Plan* (Drawing No. SS-1) attached in **Appendix F**.

5.5.2 Fire Protection

To meet the building's future fire water demands there is an existing fire hydrant located to the south across the street at 291 King Street's Scotia Bank (47.5m) and a second to the north at the southeast corner of the King Street and Hugel Avenue intersection (130m). Based on the Town's servicing information, the hydrant is connected to the existing 250mm diameter watermain by a 150mm diameter lead / tee.

Based on the proximity to the municipal watermain we do not foresee any issues servicing the site with the require potable water demands and fire protection flows.

6. Stormwater Servicing

6.1 Stormwater Management Overview

Stormwater Management [SWM] is intended to provide an environmentally sound approach to addressing stormwater runoff issues. The issues applicable to the subject development can be divided into four (4) categories: permanent quantity (major and minor) and quality control, water balance, and temporary erosion and sediment control.

In summary, the proposed SWM plan's post-development drainage scenario will generally match the site's pre-development conditions. Since the proposed building's external works at the ground floor level only include the removal and replacement of the ground floor rear wall at Borsla Lane to align with the second-floor wall (removing the second-floor overhang) there will not be any changes to the site's pre-to-post development runoff coefficients and the stormwater quantity and quality. The proposed elevations at the ground floor rear wall will match into the existing perimeter elevations.

The existing two-storey building (commercial on first and second floor, partial residential on second floor) renovations include a third storey for residential use and the conversion of the second-floor commercial into residential units. Pedestrian access will be maintained to the building from King Street and Borsa Lane, and along the north walkway. The existing second floor roof leader down spout connection from the building to the Borsla Lane storm maintenance hole will be maintained for the new third floor rooftop. The basement sump pump and discharge pipe to the King Street service connection will also be maintained.

Major and minor storm even runoff that reaches the existing ground (walkway along the north limit and strip of asphalt along the east limit) will continue to drain to the existing King Street and Borsla Lane sewer systems.

The site's existing and proposed conditions are illustrated on the *Pre-Development Storm Drainage Area Plan* (Drawing No. STM-1) and the *Post-Development Storm Drainage Area Plan* (STM-2) attached in **Appendix F**.

6.2 Stormwater Management Design Criteria

The site's SWM plan has been designed in accordance with the Town's *Engineering Development Design Standards* (July 2025), the Ministry of the Environment, Conservation and Parks *Stormwater Management Planning and Design Manual* (March 2003) and the Ministry of Transportation [MTO] *Drainage Management Manual* (1997). These manuals provide guiding principles and approval criteria for post-development stormwater management controls.

Town's *Engineering Development Design Standards* (July 2025), *Section 6 – Storm Drainage System,* Subsection 6.1 *General*, notes that storm drainage systems are to be designed in accordance with MECP "*Design Criteria for Sanitary Sewers, Storm Sewers, and Forecemains for Alterations Authorized Under Environmental Compliance Approval V1.1 July 28, 2022*" in support of the Town CLI-ECA issued by the MECP. Storm sewers, drains and appurtenances shall also be designed and constructed in accordance with the most recent requirements of the OBC and in accordance with the appropriate municipal By-laws.

The stormwater management design and approval criteria applicable to the development are summarized in the following table.

Table 6.1: Stormwater Management Design Criteria Summary

Category	Sub-Category	Target
Quantity Control	Peak Flow Control	Control 2 through the 100-year post-development peak flows to pre-development rates
	Peak Flow Control	Maximum parking lot ponding depth of 300 mm
	Minor-Major System Conveyance	Minor system to convey 5-year event and Major system to convey 100-year event
	Major Storm Conveyance	Convey the uncontrolled 100-year to a sufficient outlet
Quality Control	Total Suspended Soils	Provide Level 1 (Enhanced) Protection, 80% Long Term Removal per latest MOE SWMPD Manual

6.3 Pre-Development Drainage Conditions

6.3.1 288 King Street

Based on the detailed topographical survey data and aerial images all the property is covered by hard surface areas with runoff that reaches the existing ground drains to the west towards Borsla Lane.

The site has been split into three separate catchment areas [CA] to represent the pre-development conditions. CA 101 and 102 includes the buildings rooftop areas (east to west) and CA 103 covers the western asphalt limit next to Borsla Lane. The existing building (CA 102) is equipped with a 150mm diameter roof leader that is connected below grade to the existing maintenance hole within Borsla Lane, next to CA 102. The basement is equipped with a sump pump that discharges to the existing 125mm diameter storm service from King Street. Refer to the *Pre-Development Storm Drainage Area* (Drawing No. STM-1) attached in **Appendix F** for an illustration of the existing site conditions and elevations.

6.3.2 King Street Right-of-Way

King Street has an urbanized platform with an asphalt surface, curbs, sidewalks, full municipal services (storm, sanitary, watermain) and conventional utilities. The Town's *King Street Rejuvenation, King Street, Plan and Profile, Sta. 1+250 to 1+390* (Dwg. PP-5, as-built dated April 2022) illustrates an existing 750mm diameter storm sewer at the east side of the ROW at a depth of approx. 1.4 m draining north. The Town's

Bayshore Drive, Plan and Profile, Sta. 1+140 to 1+250 (Dwg. PP-2) illustrates the King Street sewer draining to a 900mm diameter sewer in Bayshore Drive. The sewer crosses through the parkland at the north-east corner of the intersection and continues north.

As part of the rejuvenation works a series of soil cells and rain gardens (Low Impact Development [LID]) measures) were installed withing the east and west boulevards. The LID's are connected by 150mm diameter PVC storm sewers and subdrains to the roadway catch basins. Refer to the Town's *King Street Rejuvenation, Soil Cell Grading and Servicing,* (Dwg. SCG-1 and SCG-2, as-built dated April 2022) for details. Copies of the Town's plan and profile drawings and maps are attached in **Appendix A**. The existing municipal services are illustrated on the *Site Servicing Plan* (Drawing No. SS-1) attached in **Appendix F**.

6.3.3 Severn Sound Environmental Association and Source Protection Information Atlas

As part of the development's Record of Pre-Submission Review Comments (dated August 14, 2025) the Town's Risk Management Official [RMA] and the Severn Sound Environmental Association [SSEA] completed a pre-submission review. The RMA comments note that the property is not located within any of the Wellhead Protection Areas associated with water quality, within the Town and therefore, neither Section 57 (Prohibition) nor Section 58 (Risk Management Plan) of the Clean Water Act, 2006 apply to the application. As such, no additional notices, letters, or requirements from the Town of Midland Risk Management Official are required as the application is currently presented.

The Severn Sound Source Protection Authority note that property is located within the Wellhead Protection Area [WPA] Q1 and Q2 which is an area where a future reduction in recharge would significantly impact that area (SPP, 2015). However, since the property is already fully impervious, policies in the South Georgian Bay Lake Simcoe Source Protection Plan (approved: January 26, 2015; amended: April 30, 2025; effective: July 1, 2015) would not apply. A copy of the WPA plan (taken form the MOECP's online Source Protection Information Atlas) is provided in **Figure 6.1**. A full copy of the Town's Record of Pre-Submission Review Comments are attached in **Appendix A**.

Figure 6.1: MOECP WHPA - Source Protection Information Atlas Map

6.4 Proposed Drainage Conditions

Since the proposed development plan has the same layout as the pre-development conditions the proposed drainage conditions will match the pre-development scenario. Since the proposed building's ground floor work only include the removal and replacement of the ground floor rear wall to remove the second-floor overhang at Borsla Lane there will not be any changes to the site's pre-to-post development runoff coefficients (no change to the rooftop limits) and the associated stormwater runoff quantity and quality.

The building's pedestrian access will be maintained from King Street and Borsa Lane, and along the north walkway. The new third floor will utilize the existing roof leader down spout connection from the building to the Borsla Lane storm maintenance hole. The basement sump pump and discharge pipe to the King Street service connection will be maintained. Due to the site's absence of green space and the walkways around the perimeter of the building, there isn't a location to discharge the sump pumps and roof leaders to a splash pad that would not create a pedestrian walkway icing hazard.

Major and minor storm even runoff that reaches the existing ground (walkway along the north limit and strip of asphalt along the east limit) will continue to drain to the existing King Street and Borsla Lane

storm drainage system (storm sewers for minor event runoff and the asphalt surface for major event overland flows). Since there is no increase in pre-to-post impervious areas no on-site quantity or quality controls are proposed.

Refer to the *Post-Development Storm Drainage Area Plan* (STM-2) and the *Site Servicing Plan* (SS-1) attached in **Appendix F** for an illustration of the proposed site conditions and elevations.

6.4.1 Stormwater Quantity Controls

6.4.1.1 Pre-Development Quantity Controls

The developments existing stormwater quantity controls include the northern walkway block's catch basin and storm sewer that drains to the Borsla Lane collection system, and the rooftop roof leader downspout connected to the Borsla Lane maintenance hole. Stormwater draining to the walkway catch basin ponds to an elevation of 188.90m before spilling west. Runoff that by-passes these features drains overland to Borsla Lane and then continues north. Runoff from the eastern side of the building (King Street boulevard) drains to the King Street storm drainage system.

6.4.1.2 Post-Development Quantity Controls

The site's stormwater management plan will maintain the pre-to-post development catchment area properties and resulting stormwater runoff flow rates for all storm return period. To confirm the site's stormwater characteristics the site's pre and post-development runoff catchment areas and coefficients have been determined.

6.4.1.2.1 Runoff Coefficients

Pre-Development Runoff Coefficients

The Town's *Engineering Development Design Standards* (July 2025), *Section 6 – Storm Drainage System*, Subsection 6.3.2 *Runoff Calculations*, Runoff Coefficient table notes that business downtown areas have a corresponding runoff coefficient [C] value of 0.0 to 0.95. Similarly, streets with asphalt and concrete have a maximum C of 0.95. It is assumed that the downstream stormwater management systems are designed to accommodate the commercial lands based on these coefficients. Based on the *Pre-Development Storm Drainage Plan*, the property's pre-development stormwater catchment area runoff coefficient information is summarized in the following table.

Table 6.2: Pre-Development Runoff Coefficients

		Runoff Coefficient "C"		
Catchment Area	**Total Area (ha) "A"**	**Asphalt or Concrete (ha)**	**Building (ha)**	**Weighted Runoff Coefficient "R"**
		0.95	**0.95**	
101	0.01608		0.016	0.950
102	0.01604	0.0003	0.016	0.950
103	0.00264	0.003		0.950
Total Area:	**0.03**	0.003	0.032	
Percentage:	100%	8.5%	91.5%	
			Weighted Runoff Coefficient:	**0.950**

The above table confirms that the site's existing weighted runoff coefficient is **0.95**.

Post-Development Runoff Coefficients

The proposed building works include expanding the ground floor rear wall to the second-floor limit and adding a third storey. Based on the *Post-Development Storm Drainage Plan* (STM-2) the property's post-development stormwater catchment area runoff coefficient information is summarized in the following table.

Table 6.3: Post-Development Runoff Coefficients

		Runoff Coefficient "C"		
Catchment Area	**Total Area (ha) "A"**	**Asphalt or Concrete (ha)**	**Building (ha)**	**Weighted Runoff Coefficient "R"**
		0.95	**0.95**	
201	0.01608		0.016	0.950
202	0.01604	0.0003	0.016	0.950
203	0.00264	0.003		0.950
Total Area:	**0.03**	0.003	0.032	
Percentage:	100%	8.5%	91.5%	
			Weighted Runoff Coefficient:	**0.950**

The above table confirms that the site's post-development weighted runoff coefficient is **0.95**. Since the proposed works have the same layout as the existing features the weighted runoff coefficient is unchanged from the pre-development scenario. As the site will be matching the pre-to-post development

runoff coefficients, post-to-pre peak flow controls are not required. Detailed calculations are attached in **Appendix D**. The site's proposed conditions are illustrated on the *Site Servicing Plan* (SS-1) and *Post-Development Storm Drainage Area Plan* (STM-2) attached in **Appendix F**.

6.4.2 Stormwater Quality Controls

As per the Town and MOECP standards, "Enhanced" quality protection is required for stormwater runoff leaving the development site area. Pollutants contained in the "Water Quality Storm" [WQS] (minor storm events) such as Total Suspended Solids [TSS] are typically correlated to pollutant concentration. Level 1 or 80% long term removal of TSS in the post-development condition is the requirement set by the above authorities.

The Town's *Engineering Development Design Standards* (July 2025), *Section 6 – Storm Drainage System*, Subsection 6.2.4 *Quality Control*, requires post-development flows from the 5-year return frequency storm generally not exceed the flows for pre-development conditions for the same storm at the outlet for the minor system unless it is demonstrated to the satisfaction of the Town Engineer that uncontrolled flows will have no adverse effects. Similarly for the major system, post-development runoff from 25 year and 100-year return frequency storm generally shall not exceed the pre-development runoff for the same storm.

6.4.2.1 Pre-Development (Existing) Stormwater Quality Controls

The site's existing building and asphalt areas drain to the Borsla Lane catch basins and storm sewer collection system. It was not confirmed if this system discharges to a stormwater treatment facility.

6.4.2.2 Post-Development Stormwater Quality Controls

Since the development is not proposing any changes the site plan layout the site's post-development runoff coefficients (and resulting flows) will match the pre-development coefficients. The resulting post-development storm flows will not be exceeding the pre-development rates for any storm events and therefore no additional on-site quality controls are required.

7. Water Balance

The primary objective of the Town water balance target is to capture and manage annual rainfall on the development site to preserve the pre-development hydrology (water balance) through a combination of infiltration, evapotranspiration, landscaping, rainwater reuse and/or other low impact development practices.

Since the development is not proposing any changes the site plan layout the site's post-development infiltration rates (and resulting water balance) will match the pre-development volumes. The resulting post-development characteristics will not be changing the pre-development features for any storm events and therefore no additional on-site water balance measures are required.

8. Temproary Erosion and Sediment Controls

During construction no natural features will be removed that would expose the underlying soils that are susceptible to erosion. The only surface works include the removal of portion of the rear asphalt to place the ground floor wall in line with the second-floor wall. Since there will not be any exposed surfaces that are susceptible to erosion, temporary erosion and sediment control are not required.

9. Utilities

As part of the project's background data collection a secondary utility information location request was submitted to Ontario One Call through the online portal. The utility information request limit included the site and neighbouring King Street and Borsla Lane right-of-way limits as illustrated in **Figure 9.1**.

Figure 9.1: Utility Information Request Limit

The following provides a summery of the existing utility provider information surrounding the site. The utility correspondence and located maps have been attached in **Appendix E**.

9.1 Newmarket-Tay Power Distribution

Newmarket-Tay Power [NT Power] confirmed that the 288 King Street site and neighbouring properties along the west side of King Street have overhead electrical services provided from the Borsla Lane utility poles.

9.2 Enbridge Gas

The Enbridge Gas map for the site and surrounding area illustrates an existing two-inch steel coated gas main within Borsla Lane at a 3.7m offset from its eastern limit. The main extends north and connects to the six-inch steel coated main within Hugel Avenue West's northern boulevard. The 288 King Street's existing gas metres are located on the building's ground floor rear wall, and it is therefore assumed that the services extend from the Borsla Lane main.

9.3 Bell Canada

Based on the Town's *King Street Rejuvenation, King Street, Plan and Profile, Sta. 1+250 to 1+390* (Dwg. PP-5, as-built dated April 2022) there is an existing Bell line within the King Street eastern boulevard. Bell Canada also confirmed that the 288 King Street site and neighbouring properties along the west side of King Street have Bell services from the Borsla Lane utility poles.

9.4 Rogers Communications Canada

Rogers Communications Canada confirmed that the 288 King Street site and neighbouring properties along the west side of King Street have buried cable and overhead fiber optic services from the Borsla Lane utility poles.

9.5 Vianet

Vianet confirmed that the site and surrounding ROW's do not contain any of their fiber optic cables.

Based on the proposed water service upgrade (at the same location as the existing water service) there will not be any conflicts with the existing utilities. Refer to the *Site Servicing Plan* (Drawing No. SS-1) attached in **Appendix F** for the location of the secondary utilities.

10. Conclusions

This Functional Servicing and Stormwater Management Report summarizes the proposed servicing strategy for the mixed-use site plan development located at 288 King Street, Town of Midland, Simcoe County, Ontario. This Report, read in conjunction with the civil engineering drawings, outlines the existing and proposed infrastructure to service the development for water, wastewater, and stormwater management.

Specifically, this Report illustrates that the developments can be adequately serviced based on the following:

- The existing 125mm diameter sanitary service lateral from King Street has adequate capacity for the renovated buildings future sanitary servicing requirements.
- The existing 25mm diameter potable water service from King Street will be replaced by a new 50mm diameter service extended to the building existing mechanical room for the potable water requirements.
- The existing municipal fire hydrants and 250mm diameter watermain within the King Street right-of-way will be utilized for the site's fire protection requirements.
- The existing Borsla Lane catch basin, storm sewers, and surface drainage system will be utilized for the collection and conveyance of the site's minor and major storm event runoff, matching the pre-development conditions.
- Based on the utility provider correspondence and the location of the existing services, we don't foresee any issues maintaining the services for the renovated building's future occupants.

It is recommended that this Report and drawings be accepted as they demonstrate a functional servicing approach that is in accordance with municipal and provincial guidelines.

All of which is respectfully submitted,

Parker Consulting Engineers Ltd.

Jim Parker, P.Eng.
Consulting Engineer

Appendix A

External Background Information

SURVEYOR'S REAL PROPERTY REPORT OF
PART OF LOT 5
(WEST SIDE OF KING STREET)
REGISTERED PLAN 306
TOWN OF MIDLAND
COUNTY OF SIMCOE

3 m 0 3 6 9 12 15 meters

SCALE 1 : 150

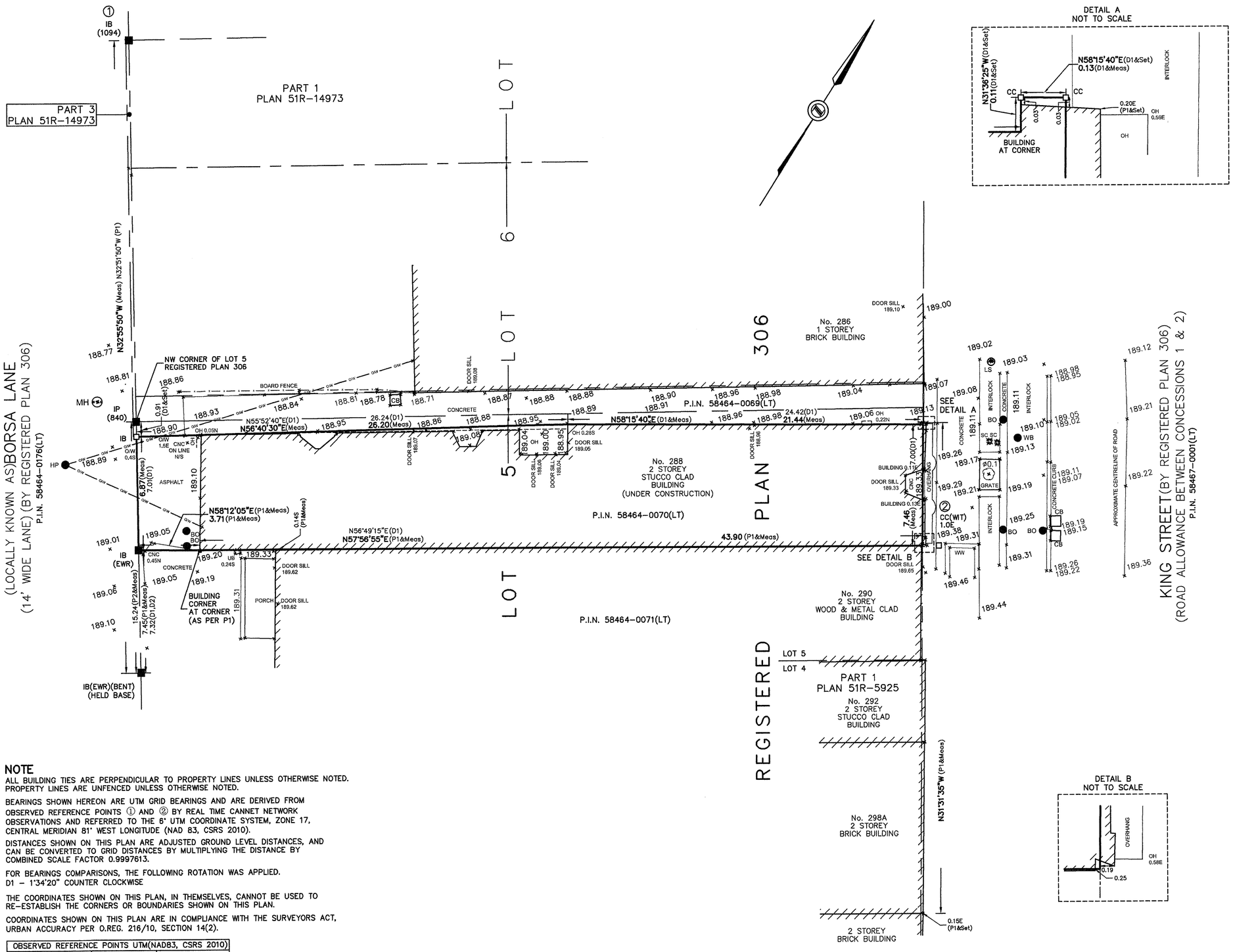
METRIC

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

SURVEYOR'S REAL PROPERTY REPORT PART 2 – REPORT SUMMARY
SURVEY PREPARED FOR
ERVIS BALLIU
DESCRIPTION OF LAND
PART OF LOT 5 (WEST SIDE OF KING STREET), REGISTERED PLAN 306 (KNOWN AS 288 KING STREET)
REGISTERED EASEMENTS AND/OR RIGHT-OF-WAYS
NONE REGISTERED ON TITLE
ENCROACHMENTS
NOTE THE LOCATION OF THE BUILDINGS, CONCRETE, OVERHANG, OVERHEAD WIRE, AND UTILITY BOX AT THE PROPERTY LIMITS
COMPLIANCE WITH MUNICIPAL ZONING BY-LAW
NOT CERTIFIED BY THIS REPORT
ADDITIONAL REMARKS
(FURTHER INFORMATION CONTAINED IN THE SURVEY REPORT TO BE READ IN CONJUNCTION WITH THIS PLAN)

LEGEND

■	DENOTES	SURVEY MONUMENT FOUND
□	DENOTES	SURVEY MONUMENT SET
CC	DENOTES	CUT CROSS
IB	DENOTES	IRON BAR
IP	DENOTES	IRON PIPE
SIB	DENOTES	STANDARD IRON BAR
OU	DENOTES	ORIGIN UNKNOWN
WIT	DENOTES	WITNESS
EWR	DENOTES	EPLETT WOROBEC RAIKES SURVEYING LTD., O.L.S.
840	DENOTES	J.M. HARVEY, O.L.S.
1094	DENOTES	J.W. NICHOLSON, O.L.S.
P1	DENOTES	SURVEYOR'S REAL PROPERTY REPORT BY EWR DATED MARCH 22, 2016
D1	DENOTES	INST. RO1299034
BO	DENOTES	BOLLARD
CB	DENOTES	CATCH BASIN
CNC	DENOTES	CONCRETE
HP	DENOTES	HYDRO POLE
LS	DENOTES	LIGHT STANDARD
MH	DENOTES	MANHOLE
OH	DENOTES	OVERHANG
SC	DENOTES	SEWER CLEANOUT
UB	DENOTES	UTILITY BOX
WB	DENOTES	WATER BOX
WW	DENOTES	WOODEN WALL
-O/W-	DENOTES	OVERHEAD WIRE
⊛	DENOTES	DECIDUOUS TREE WITH TRUNK DIAMETER



DETAIL A
NOT TO SCALE

DETAIL B
NOT TO SCALE

NOTE

ALL BUILDING TIES ARE PERPENDICULAR TO PROPERTY LINES UNLESS OTHERWISE NOTED. PROPERTY LINES ARE UNFENCED UNLESS OTHERWISE NOTED.

BEARINGS SHOWN HEREON ARE UTM GRID BEARINGS AND ARE DERIVED FROM OBSERVED REFERENCE POINTS ① AND ② BY REAL TIME CANNET NETWORK OBSERVATIONS AND REFERRED TO THE 6° UTM COORDINATE SYSTEM, ZONE 17, CENTRAL MERIDIAN 81° WEST LONGITUDE (NAD 83, CSRS 2010).

DISTANCES SHOWN ON THIS PLAN ARE ADJUSTED GROUND LEVEL DISTANCES, AND CAN BE CONVERTED TO GRID DISTANCES BY MULTIPLYING THE DISTANCE BY COMBINED SCALE FACTOR 0.9997613.

FOR BEARINGS COMPARISONS, THE FOLLOWING ROTATION WAS APPLIED.
D1 – 1°34'20" COUNTER CLOCKWISE

THE COORDINATES SHOWN ON THIS PLAN, IN THEMSELVES, CANNOT BE USED TO RE-ESTABLISH THE CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

COORDINATES SHOWN ON THIS PLAN ARE IN COMPLIANCE WITH THE SURVEYORS ACT, URBAN ACCURACY PER O.REG. 216/10, SECTION 14(2).

OBSERVED REFERENCE POINTS UTM(NAD83, CSRS 2010)		
PLAN COORDINATES	NORTHING	EASTING
1	4955711.031	588197.433
2	4955710.862	588255.427

BENCHMARK

ELEVATIONS SHOWN HEREON ARE GEODETIC AND DETERMINED BY REALTIME CAN-NET NETWORK OBSERVATIONS (CGVD 1928, 1978 ADJUSTMENT)

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. *THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT AND THE SURVEYORS ACT, AND THE REGULATIONS MADE UNDER THEM.*
2. *THE SURVEY WAS COMPLETED ON THE 29TH DAY OF SEPTEMBER, 2025.*

Oct 9, 2025
DATE

JANSKY T C LAU–ONTARIO LAND SURVEYOR

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR IN ACCORDANCE WITH REGULATION 1026, SECTION 29(3)

THIS PLAN OF SURVEY RELATES TO AOLS PLAN SUBMISSION FORM NUMBER V-98438

NOTE: *THIS PLAN CAN BE UPDATED BY THIS OFFICE, HOWEVER NO ADDITIONAL PRINTS OF THIS ORIGINAL PLAN WILL BE ISSUED, SUBSEQUENT TO THE DATE OF CERTIFICATION.*

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Delph & Jenkins North Ltd.
Ontario Land Surveyors
220 Industrial Parkway S., Unit 6, Aurora, Ontario L4G 3V6
www.djsurveyors.com info@djsurveyors.com
Tel.905-841-8526

25326-1

DRAWN : JL/JY CHECKED : JL

ACAD FILE: 25326-1.DWG DATE: October 9, 2025

Town of Penetanguishene

Town of Penetanguishene

FULLER AVE

MIDLAND POINT RD

COUNTY RD 93

GOLF LINK RD

HARBOURVIEW DR

HARBOURVIEW DR

Georgian Bay

VINDIN ST

4TH ST

DOMINION AVE

HUGEL AVE

YONGE ST

BALM BEACH RD E

COUNTY RD 25

Exception

WILLIAM ST

Little Lake

COUNTY RD 93

KING ST

Township of Tay

ANGELA SCHMIDT FOSTER RD

HIGHWAY 12

HIGHWAY 93

Township of Tay

Township of Tiny

Township of Tiny

0 500 1,000 1,500 Metres

Town of Midland Official Plan Schedule 'C' Land Use

Legend

- Neighbourhood Residential
- Shoreline Residential
- Downtown
- Mixed Use Corridor
- Commercial Corridor
- Employment Area
- Employment Land
- Rural
- Natural Heritage
- Open Space
- Aggregate Extraction Area
- Schedule 'C1'
- Existing Development Approvals

Note: Specific policies pertaining to existing development approvals are outlined in Section 4.5.4

DRAFT FOR DISCUSSION

North American Datum 1983
Zone 17 North
Copyright Queens Printer 2018

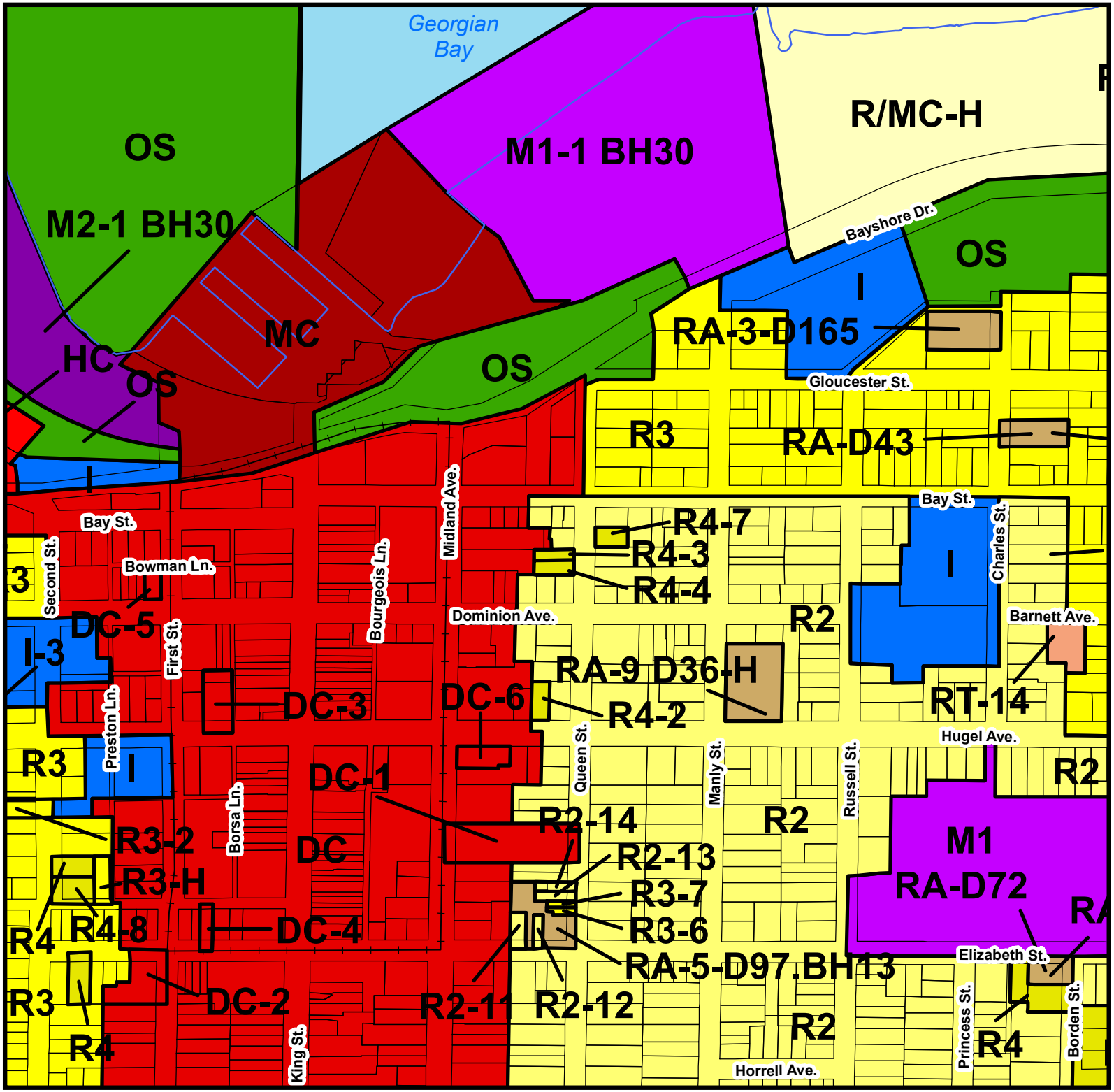
June 17, 2025

Plan-It Geographical

MUNICIPAL PLANNING SERVICES EST 2012

PLAN B Natural Heritage

The Planning Partnership



Town of Midland

Schedule A
Zoning By-law 2004-90, as amended
Map 25

100 50 0 100
m

1:5,000

Legend

- R1 Residential Zone
- R2 Residential Zone
- R3 Residential Zone
- R4 Residential Zone
- R5 Residential Zone
- RT Residential Townhouse Zone
- RA Residential Apartment Zone
- RM Residential Mobile Home Zone
- RO Residential Office Zone
- DC Downtown Core Commercial Zone
- HC Highway Commercial Zone
- NC Neighbourhood Commercial Zone
- MC Marine Commercial Zone
- M1 Industrial Zone
- M2 Industrial Zone
- I Institutional Zone
- OS Open Space Zone
- RU Rural Zone
- EP Environmental Protection Zone
- Parking Exemption Area

This consolidated copy is provided for convienience only. If necessary the original may be referred to in the office of the Town Clerk.

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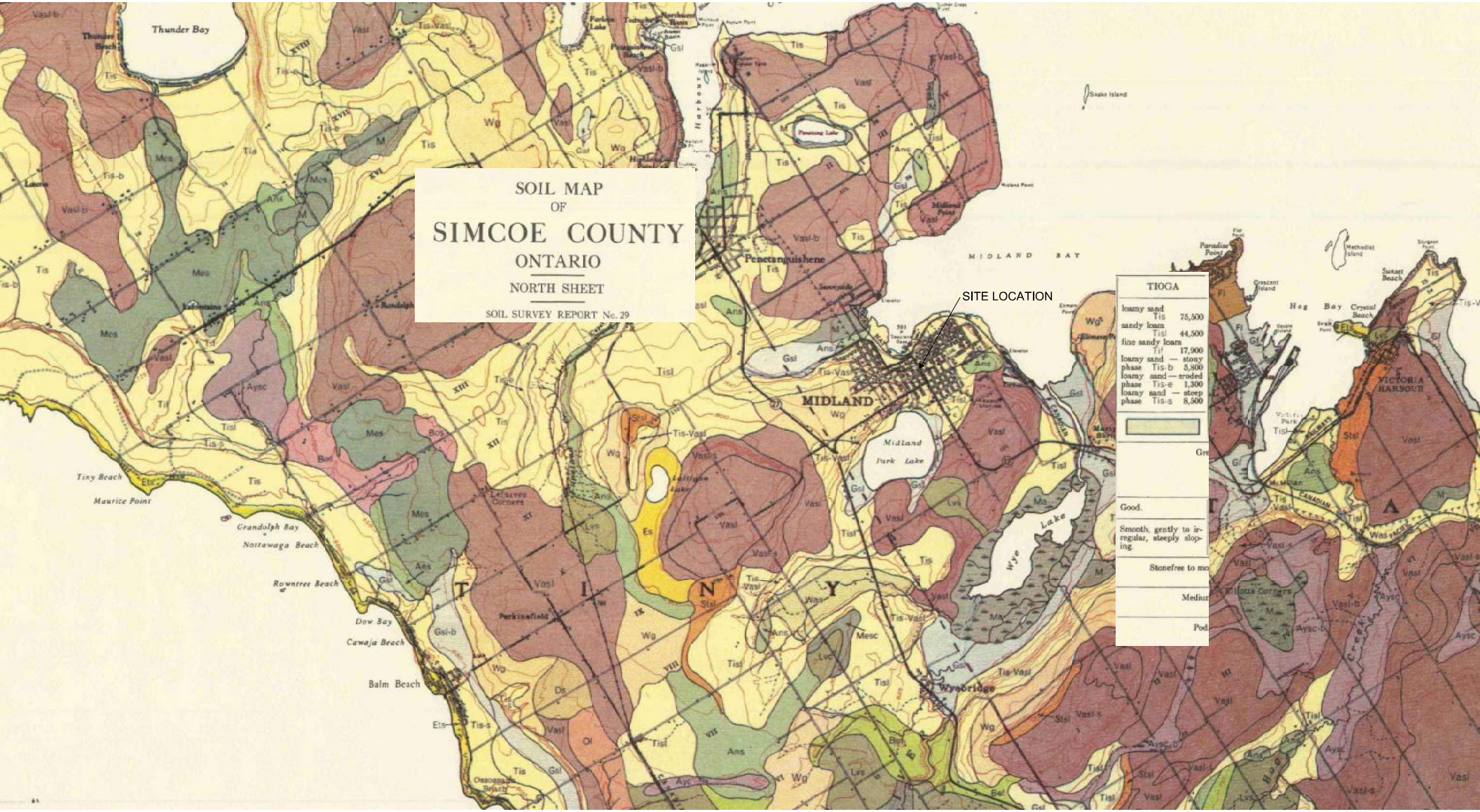
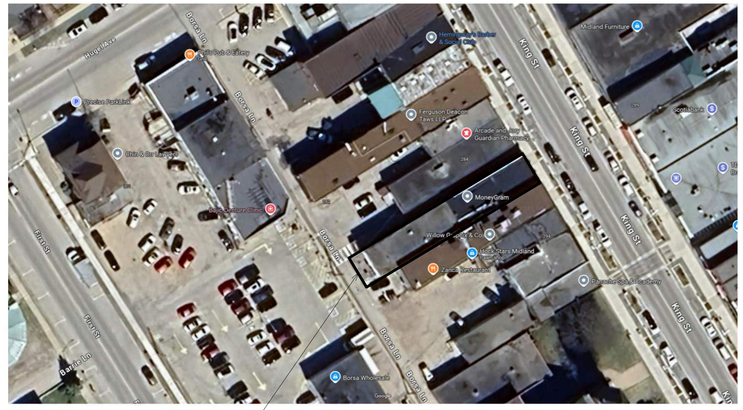
Revision Date: March 22, 2024
Created By: Town of Midland Planning and Building Services


SOIL MAP
OF
SIMCOE COUNTY
ONTARIO
NORTH SHEET
SOIL SURVEY REPORT No. 29
SITE LOCATION
TIOGA
loamy sand
Tis 75,500
sandy loam
Tisl 44,500
fine sandy loam
Tif 17,900
loamy sand — stony phase Tis-b 5,800
loamy sand — eroded phase Tis-e 1,300
loamy sand — steep phase Tis-s 8,500
Good.
Smooth, gently to irregular, steeply sloping.
Thunder Bay
Penetanguishene
MIDLAND
MIDLAND BAY
Midland Park Lake
Wye Lake
Wyebridge
Perkinsfield
Tiny Beach
Maurice Point
Grandolph Bay
Nottawaga Beach
Rowntree Beach
Dow Bay
Cawaja Beach
Balm Beach
Victoria Harbour
Hog Bay
Snake Island

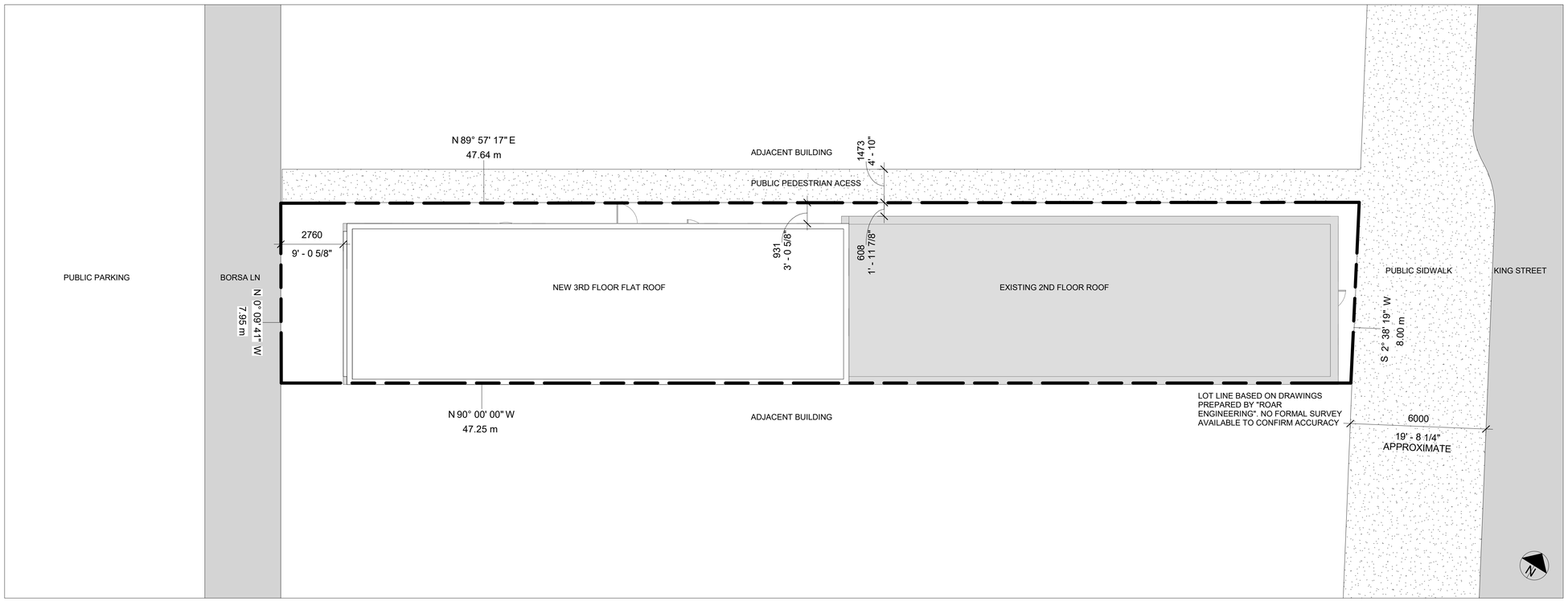
Zoning Requirements:

- Zoned DC Downtown Core Commercial Zone – Section 6 of by law
- Section 6.1.3.6. allows for multi-residential use to be above main floor commercial.
- Per Section 3.26 FSI (floor space index) max is 1 hence a maximum GFA same as main floor for each floor level above the main floor allowed.
- Building height allowed between 7 to 13 meters, so a 3rd floor is allowed if building remains under the maximum height.
- Setbacks per section 6.1.3.3. Front lot line 0 to 1 meters, 0 meters for sides and rear. Building can extend to rear lot line for all floor levels.
- Parking per section 4.1.2. says no minimum parking required within the street boundaries within which this lot falls into. No parking is required for the units within the lot.
- Per section 4.1.10 loading zone not required for DC zones

2 REAR



PROJECT LOCATION



1 Site
1 : 100

JULIUS HORVATH ARCHITECT INC.
25 Bonny Meadows Dr,
Aurora, Ontario, ON, L4G 6M9
C: 289-380-0407
E: julius@jhorvatharchitect.com
www.jhorvatharchitect.com

ONTARIO ASSOCIATION OF ARCHITECTS
JULIUS J. HORVATH
LICENCE
6896

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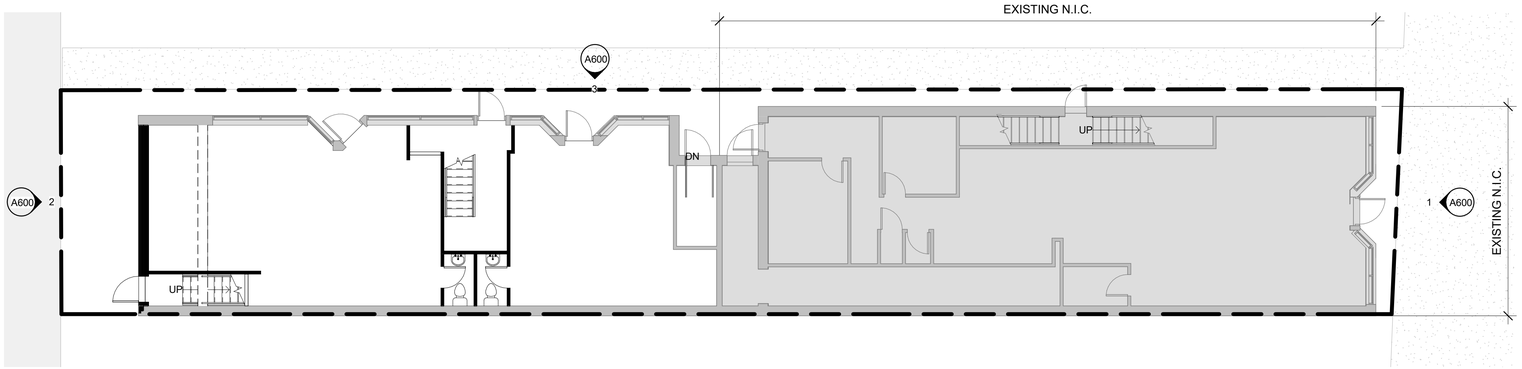
No.	Description	Date
1	CLIENT REVIEW	2025-07-06
2	PRESUBMISSION APP	2025-07-08

-
288 KING STREET,
MIDLAND, ONTARIO
3RD FLOOR ADDITION

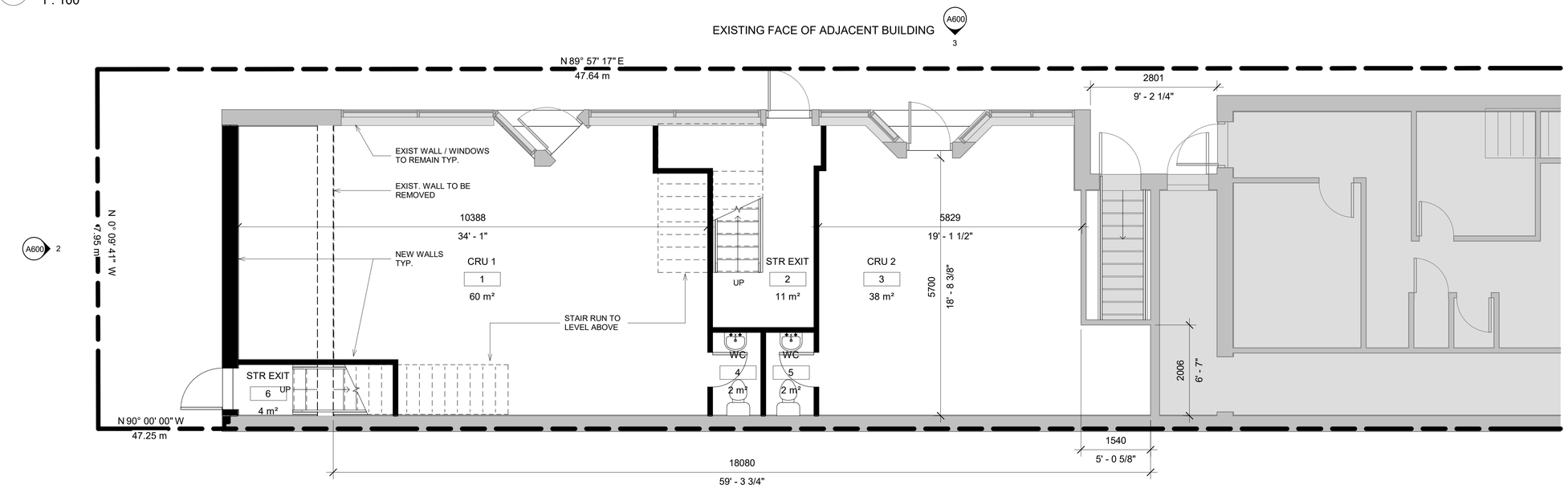
SITE PLAN

Project number	202505
Date	JULY 7, 2025
Drawn by	JHA INC
Checked by	JHA INC
	A110
Scale	1 : 100

2025-07-08 10:30:44 AM



2 GROUND FLOOR OVERALL
1 : 100



1 GRND SUB-FLOOR
1 : 50

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-
288 KING STREET,
MIDLAND, ONTARIO
3RD FLOOR ADDITION

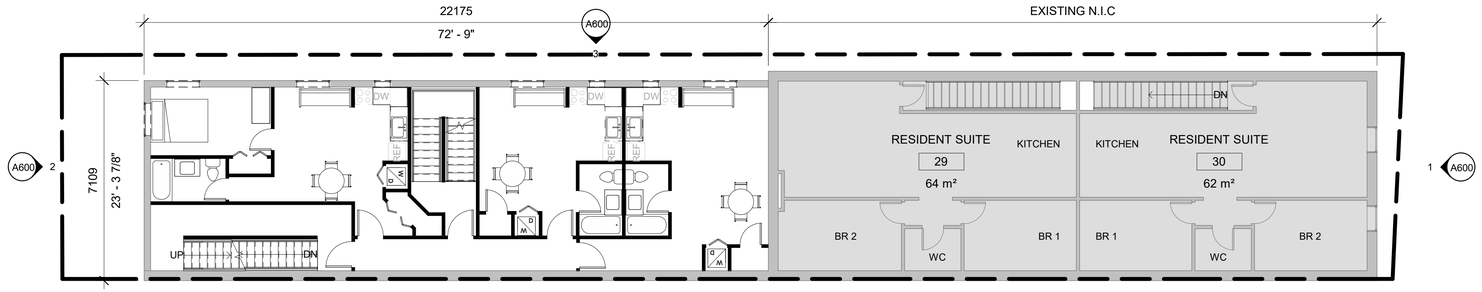
FLOOR PLAN GROUND

Project number	202505
Date	JULY 7, 2025
Drawn by	JHA INC
Checked by	JHA INC

A210

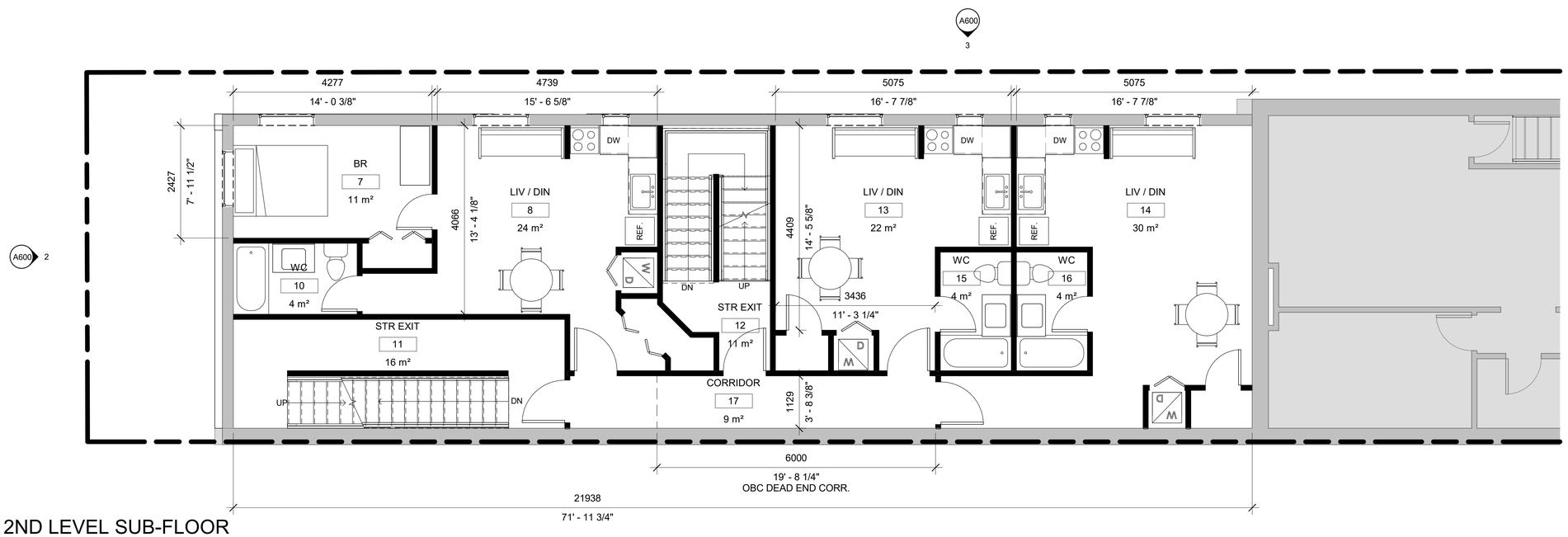
Scale: As indicated

2025-07-08 10:30:44 AM



2 2ND LEVEL OVERALL

1 : 100



1 2ND LEVEL SUB-FLOOR

1 : 50

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-
288 KING STREET,
MIDLAND, ONTARIO
3RD FLOOR ADDITION

FLOOR PLAN 2ND LEVEL

Project number	202505
Date	JULY 7, 2025
Drawn by	JHA INC
Checked by	JHA INC

A220

Scale: As indicated

2025-07-08 10:30:45 AM

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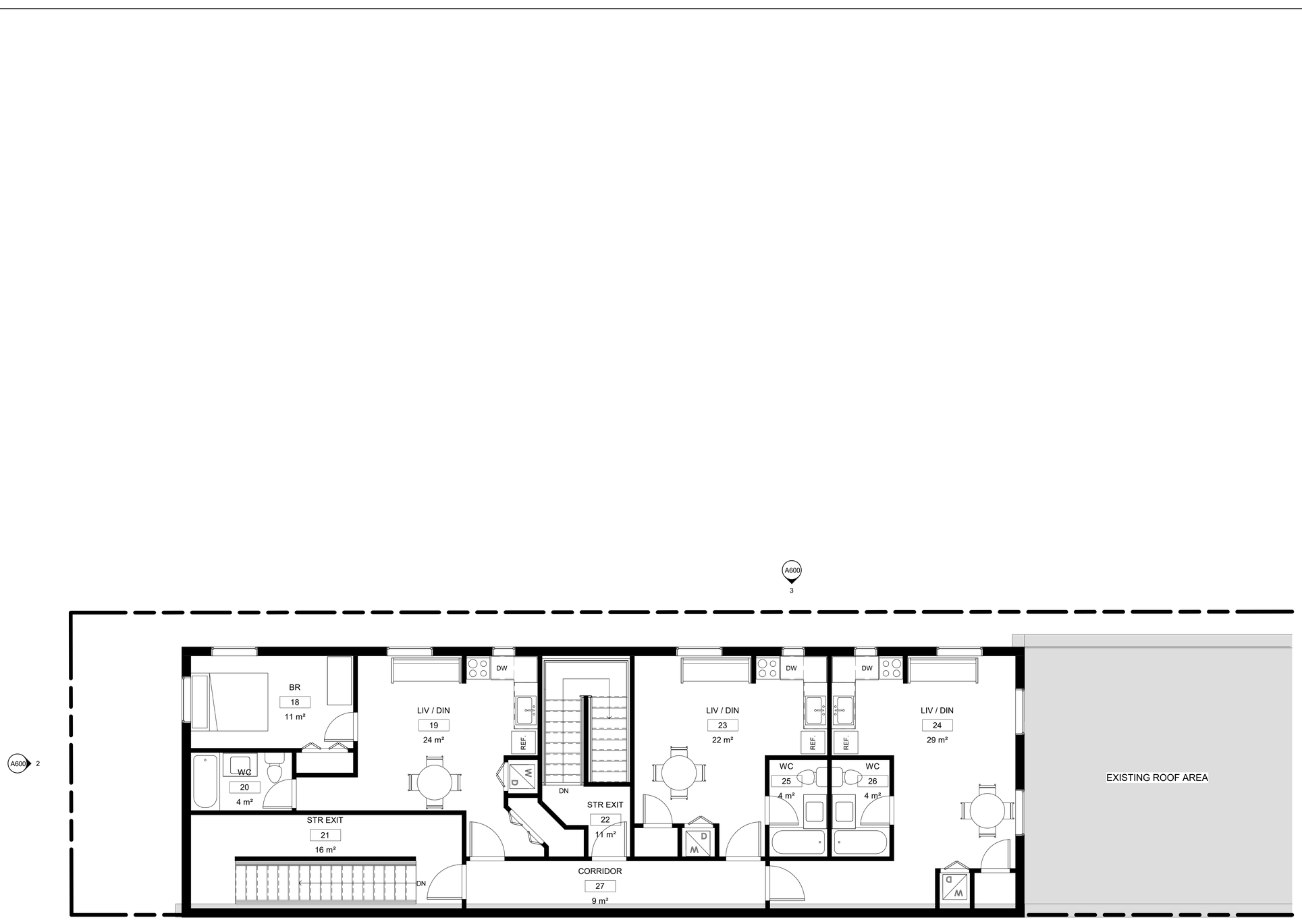

1 3RD LEVEL SUB-FLOOR
1 : 50

-
288 KING STREET,
MIDLAND, ONTARIO
3RD FLOOR ADDITION

FLOOR PLAN 3RD LEVEL

Project number	202505
Date	JULY 7, 2025
Drawn by	JHA INC
Checked by	JHA INC

A230

Scale 1 : 50

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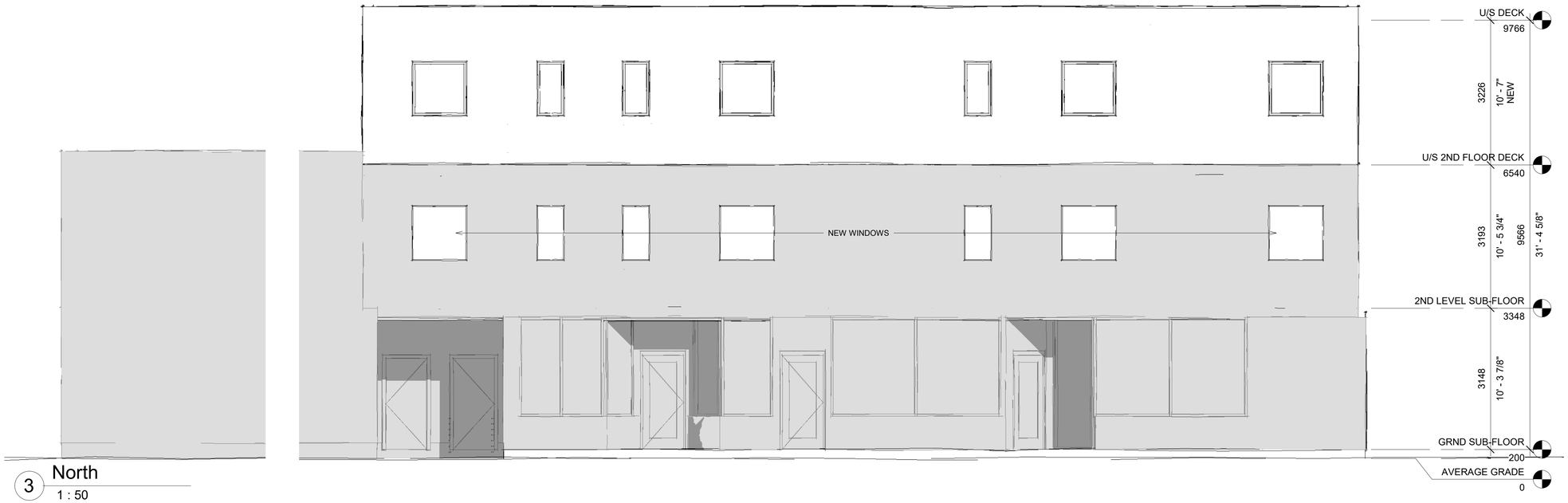
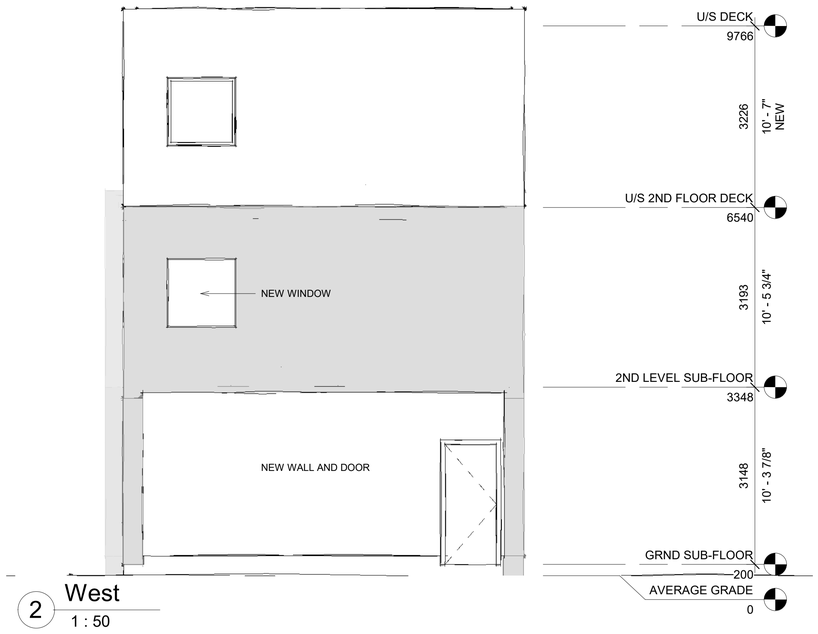


3 North
1 : 50

1 East
1 : 50



2 West
1 : 50

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2	PRESUBMISSION APP	2025-07-08

-
288 KING STREET,
MIDLAND, ONTARIO
3RD FLOOR ADDITION

ELEVATIONS EXTERIOR

Project number	202505
Date	JULY 7, 2025
Drawn by	JHA INC
Checked by	JHA INC
Scale	1 : 50

A600

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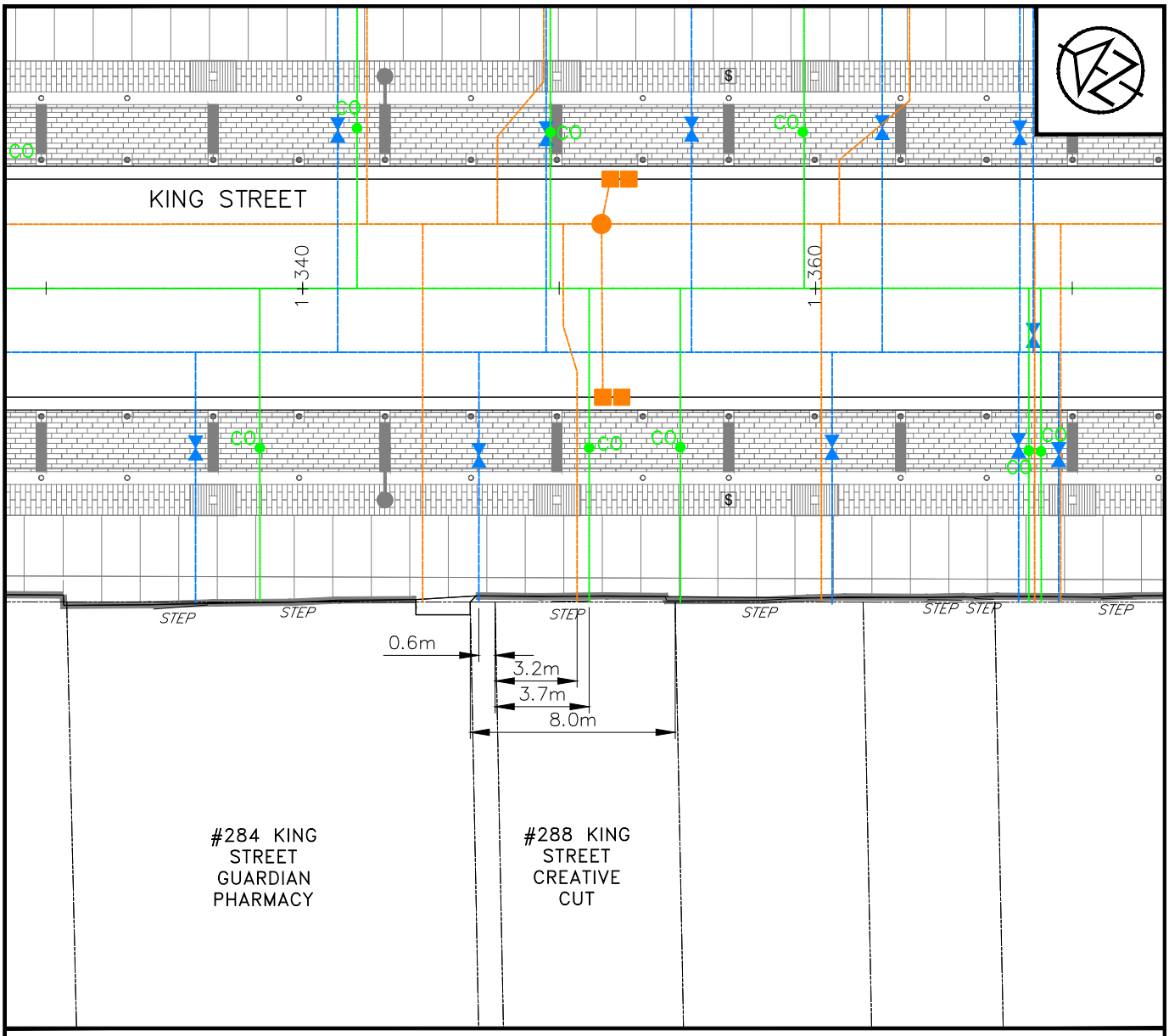

	DIAMETER (mm)	MATERIAL	INVERT AT ℄ (m)
WATER SERVICE	25	PE	187.34
SANITARY SERVICE	125	PVC	186.88
STORM SERVICE	125	PVC	187.91

ADDITIONAL COMMENTS:

1. N/A

TATHAM ENGINEERING

288 KING STREET
TOWN OF MIDLAND

SERVICE RECORD SHEET

SCALE: 1:250	DATE: MAR/21	FILE: 116024

Drawing Name: 116024-SRS – West Side 2.dwg, Plotted: Apr 21, 2022

TOWN OF MIDLAND

KING STREET REJUVENATION

AS-BUILT INFORMATION

APRIL 2022

KEY PLAN

TATHAM ENGINEERING

ENVISIONTATHAM

INDEX

DRAWING	DESCRIPTION
116024–TP–1	TITLE PAGE
116024–IN–1	DRAWING INDEX AND LEGEND
116024–PP–2	PLAN AND PROFILE – BAYSHORE DRIVE – STA. 1+140 TO STA. 1+250
116024–PP–3	PLAN AND PROFILE – KING STREET – STA. 0+970 TO STA. 1+110
116024–PP–4	PLAN AND PROFILE – KING STREET – STA. 1+110 TO STA. 1+250
116024–PP–5	PLAN AND PROFILE – KING STREET – STA. 1+250 TO STA. 1+390
116024–PP–6	PLAN AND PROFILE – KING STREET – STA. 1+390 TO STA. 1+530
116024–PP–7	PLAN AND PROFILE – KING STREET – STA. 1+530 TO STA. 1+670
116024–PP–8	PLAN AND PROFILE – BAY STREET WEST – STA. 2+020 TO STA. 2+140
116024–SCG–1	SOIL CELL GRADING AND SERVICING – STA. 1+070 TO STA. 1+365
116024–SCG–2	SOIL CELL GRADING AND SERVICING – STA. 1+365 TO STA. 1+645
116024–DE–1	DETAILS AND NOTES
116024–DE–2	TYPICAL ROAD SECTIONS
116024–DE–3	GRADING AND SERVICING DETAILS

LEGEND

PROPERTY LINE
EXISTING CENTERLINE
PROPOSED CENTRELINE
EXISTING EDGE OF ASPHALT
EXISTING CURB
PROPOSED EDGE OF ASPHALT
PROPOSED CURB
PROPOSED CURB DROP (BARRIER TO MOUNTABLE)
EXISTING DITCH/DIRECTION OF FLOW
PROPOSED DITCH/DIRECTION OF FLOW
EXISTING SANITARY SEWER/SIZE/DIRECTION OF FLOW — 200ø SAN
PROPOSED SANITARY SEWER/SIZE/DIRECTION OF FLOW — 200ø SAN
EXISTING SANITARY SERVICE
PROPOSED SANITARY SERVICE
EXISTING SANITARY FORCEMAIN/SIZE/DIRECTION OF FLOW — 200ø SAN. F/M
EXISTING WATERMAIN/SIZE — 150ø W/M
PROPOSED WATERMAIN/SIZE — 150ø W/M
EXISTING WATER SERVICE
PROPOSED WATER SERVICE
EXISTING STORM SEWER/SIZE/DIRECTION OF FLOW — 375ø STM
PROPOSED STORM SEWER/SIZE/DIRECTION OF FLOW — 375ø STM
EXISTING CULVERT
EXISTING BURIED BELL — BELL
EXISTING BURIED HYDRO — HYDRO
EXISTING GAS MAIN — GAS
POTENTIAL ABANDONED STORM PIPE
EXISITNG FENCELINE
PROPOSED FENCELINE
EXISTING BUSHLINE
EXISTING CONTOUR — 179.00
EXISTING SPOT ELEVATION — × 179.00
PROPOSED SPOT ELEVATION — × 179.00
EXISTING GRADING DIRECTION
PROPOSED GRADING DIRECTION
PROPOSED SWALE LOCATION
EXISTING TEMPORARY BENCHMARK — TBM
EXISTING STANDARD IRON BAR — SIB
EXISTING BOREHOLE — BH9
EXISTING GAS VALVE — GAS
EXISTING HYDRO TRANSFORMER
EXISTING CABLE PEDESTAL
EXISTING BELL PEDESTAL
EXISTING BELL MAINTENANCE HOLE — BELL MH
EXISTING BELL POLE — BP
EXISTING HYDRO POLE — HP
EXISTING HYDRO GUY WIRE
PROPOSED LIGHT STANDARD — LS
EXISTING TRAFFIC SIGN — TS
PROPOSED TRAFFIC SIGN — TS
PROPOSED STOP SIGN — STOP SIGN
PROPOSED STREET NAME SIGN — STREET NAME SIGN
PROPOSED SIGN (MISCELLANEOUS) — SIGN
EXISTING DECIDUOUS TREE
EXISTING CONIFEROUS TREE
EXISTING SANITARY MAINTENANCE HOLE — SAN MH20
PROPOSED SANITARY MAINTENANCE HOLE — SAN MH17
EXISTING BUSH
EXISTING HYDRANT AND VALVE — HYD & WV
PROPOSED HYDRANT AND VALVE — HYD & WV
EXISTING WATER VALVE — WV
PROPOSED WATER VALVE — WV
PROPOSED CURB STOP VALVE — CSV
EXISTING WATERMAIN PLUG AND THRUST BLOCK
PROPOSED WATERMAIN PLUG AND THRUST BLOCK
EXISTING STORM MAINTENANCE HOLE — STM MH20
PROPOSED STORM MAINTENANCE HOLE — STM MH9
EXISTING CATCH BASIN — CBMH 18
PROPOSED CATCH BASIN — CB
PROPOSED CATCH BASIN MAINTENANCE HOLE — CBMH12
PROPOSED DOUBLE CATCH BASIN MAINTENANCE HOLE — DCBMH4
PROPOSED DOUBLE CATCH BASIN — DCB
PROPOSED DITCH INLET CATCH BASIN — DICB
PROPOSED TACTILE WALKING SURFACE INDICATOR

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COMPILED BY: KP	DATE: 11/09/20
CHECKED BY: AT	DATE: 12/07/20
DRAWN BY: AJO	DATE: 12/09/21
CHECKED BY: AT	DATE: 03/15/22

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BENCHMARKS

TBM 1 – 181.266: NAIL & WASHER IN EAST FACE OF HYDRO POLE LOCATED ON WEST SIDE OF ROAD BETWEEN #208 AND #212 KING STREET.
TBM 4 – 193.579: TOP BOLT OF LIGHT STANDARD AT SOUTHWEST CORNER OF ELIZABETH STREET AND KING STREET
TBM 5 – 202.589: NAIL & WASHER IN EAST FACE OF HYDRO POLE LOCATED ON NORTHWEST CORNER OF KING STREET AND YONGE STREET.
TBM 8 – 187.973: TOP BOLT OF LIGHT STANDARD AT SOUTHEAST CORNER OF HUGEL AVENUE AND KING STREET.

NOTES

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TOPOGRAPHIC SURVEY INFORMATION COMPILED BY TATHAM ENGINEERING, APRIL 26, 2016.

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR TENDER	NOV/18
2.	REVISED BY ADDENDUM #1	DEC/18
3.	ISSUED FOR CONSTRUCTION	MAR/20
4.	REVISED TO INCLUDE UPDATED STORM INFORMATION	APR/20
5.	AS–BUILT INFORMATION	APR/22

ENGINEER STAMP

ORIGINAL STAMPED BY
A. E. BROWNRIDGE
03/10/20

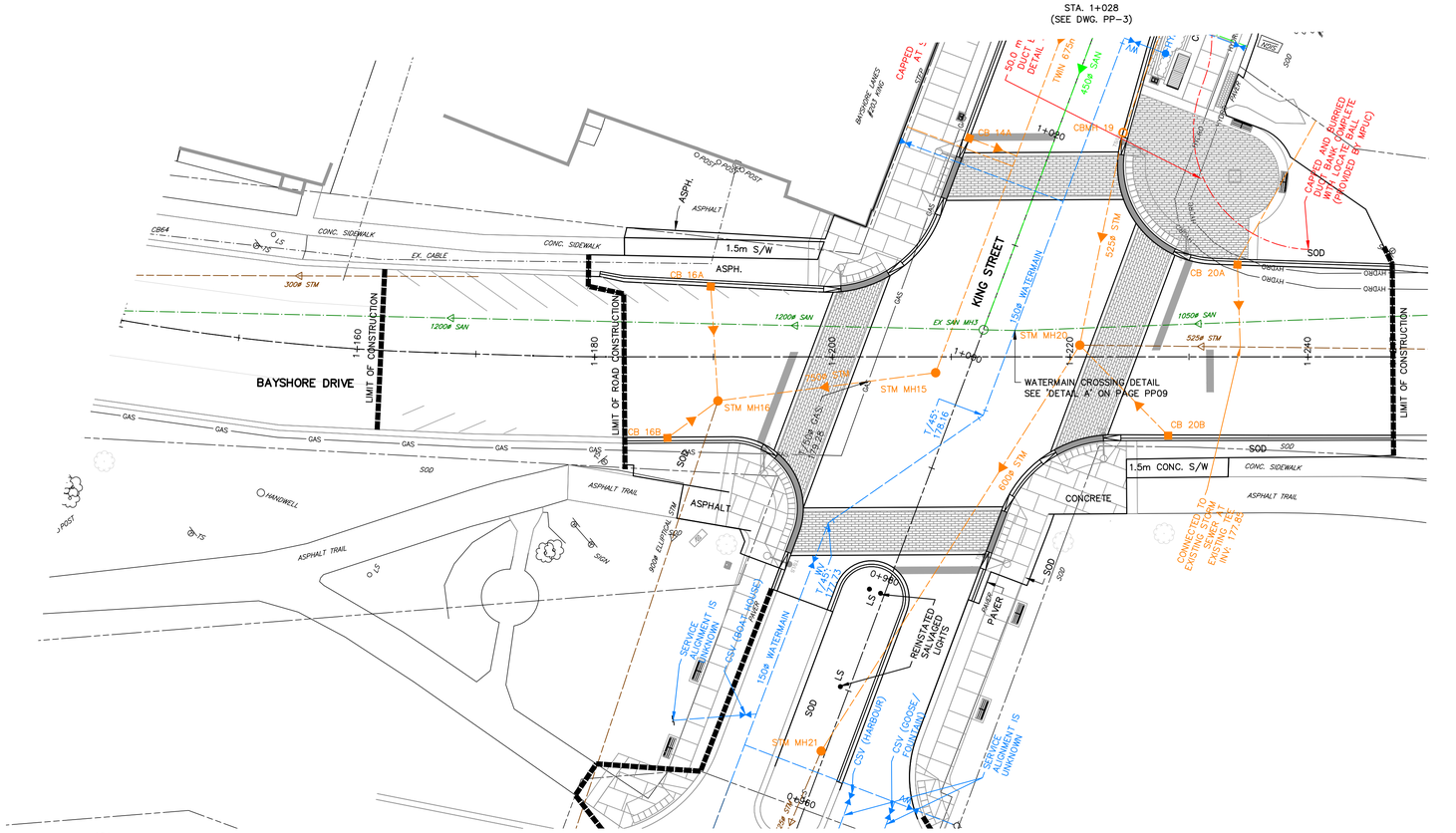
KING STREET REJUVENATION
TOWN OF MIDLAND

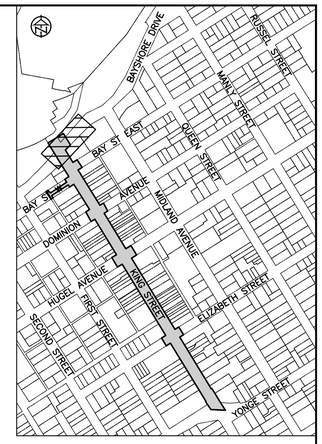
DRAWING INDEX AND LEGEND

TATHAM ENGINEERING

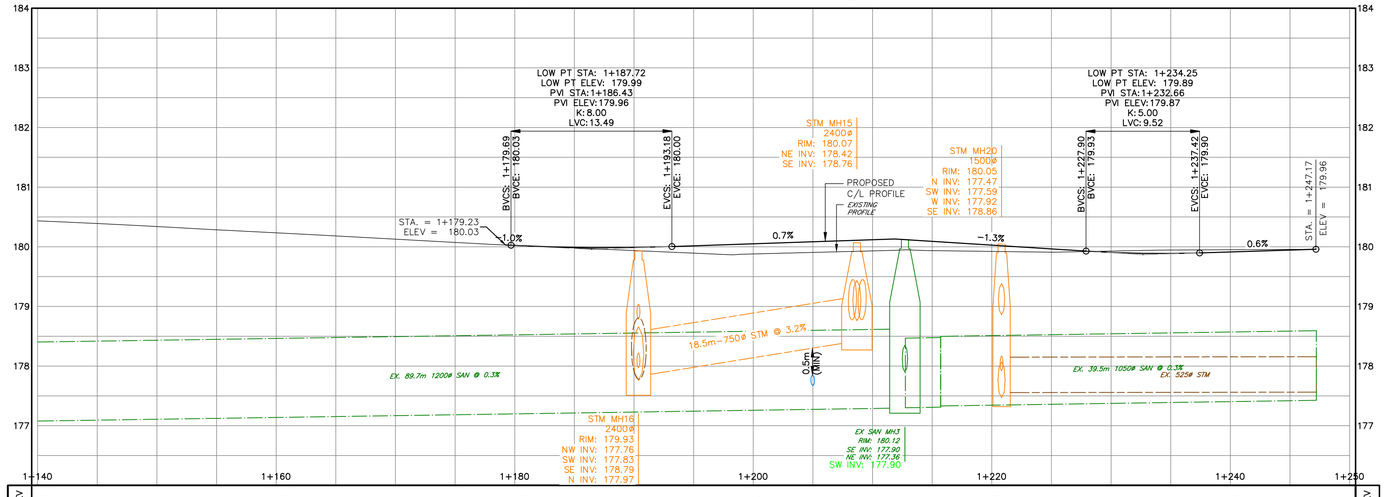
DESIGN: APR	FILE: 116024	DWG:	IN-1
DRAWN: APR	DATE: APR/16		
CHECK: AEB	SCALE: NTS		

Drawing Name: 116024–TP01.dwg, Plotted: Apr 05, 2022





KEY PLAN



NOTES:

1. REFER TO STREETSCAPE PLANS FOR BOULEVARD REINSTATEMENT DETAILS.
2. REFER TO DRAWINGS SF-1 TO SF-4 FOR CURB RADII, ADDITIONAL GRADING INFORMATION, ROAD WIDTH AND LINE PAINTING & SIGNAGE DETAILS.
3. REFER TO ELECTRICAL PLANS FOR STREETLIGHT, TRAFFIC SIGNAL AND POWER SUPPLY DESIGN
4. REFER TO DRAWINGS XS-1 TO XS-8 FOR BOULEVARD GRADING DETAILS AND DE-2 FOR TYPICAL CROSS SECTIONS.
5. REFER TO DRAWINGS SCG-1 AND SCG-2 FOR SOIL CELL AND RAIN GARDEN SERVICING AND GRADING DETAILS.
6. REFER TO DRAWINGS DE-1 TO DE-3 FOR TYPICAL CROSS-SECTIONS, DETAILS AND SPECIFICATIONS.

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COMPILED BY: KP	DATE: 11/09/20
CHECKED BY: AT	DATE: 12/07/20
DRAWN BY: AJO	DATE: 12/09/21
CHECKED BY: AT	DATE: 03/15/22

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3.	ISSUED FOR CONSTRUCTION	MAR/20
4.	REVISED TO INCLUDE UPDATED STORM INFORMATION	APR/20
5.	AS-BUILT INFORMATION	APR/22

ENGINEER STAMP

ORIGINAL STAMPED BY
A. E. BROWNRIDGE
03/10/20

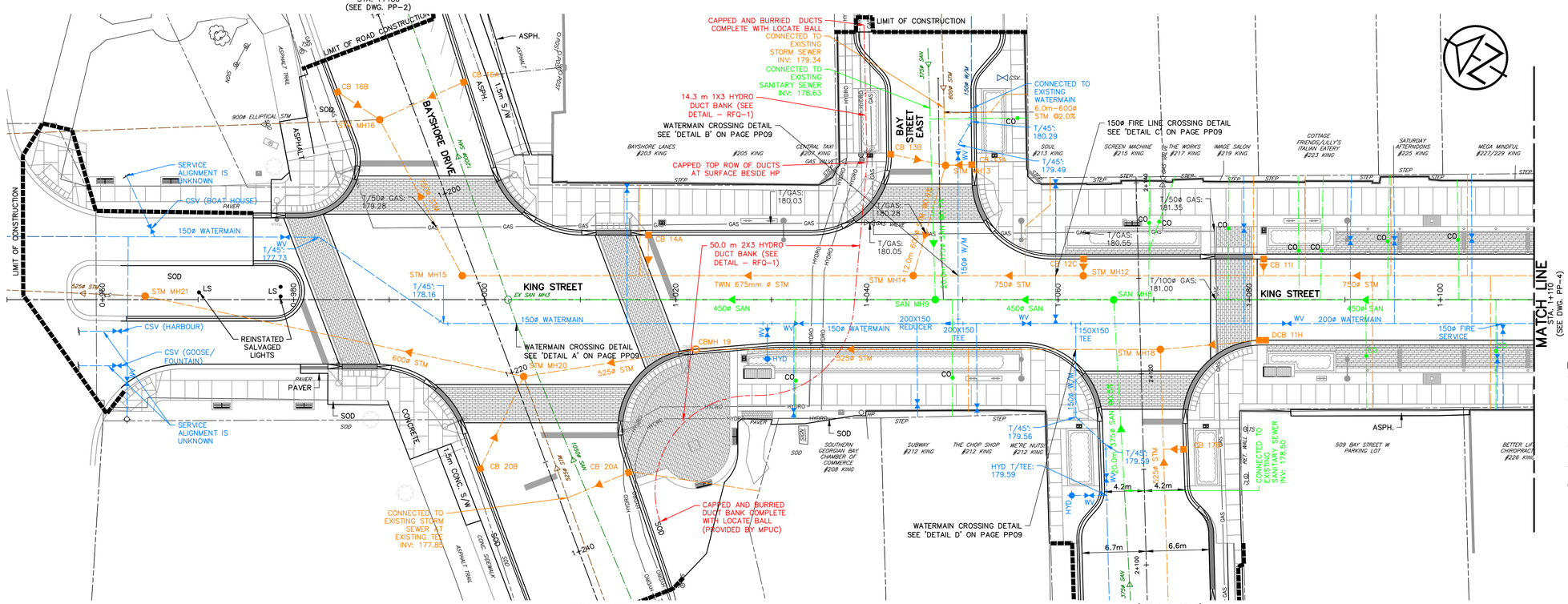
KING STREET REJUVENATION
TOWN OF MIDLAND

PLAN AND PROFILE
BAYSHORE DRIVE
STA. 1+140 TO 1+250

TATHAM ENGINEERING

DESIGN: APR	FILE: 116024	DWG:	PP-2
DRAWN: APR	DATE: APR/16		
CHECK: AEB	SCALE: HORIZ. 1:250 VERT 1:50		

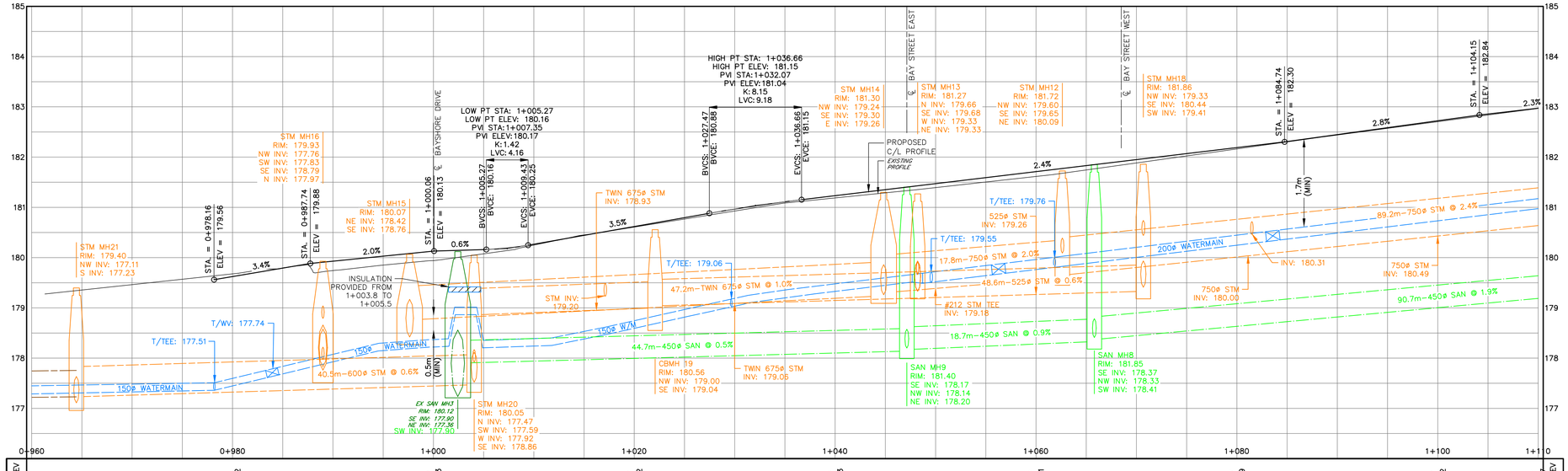
Drawing Name: 116024-PP01.dwg, Plotted: Apr 21, 2022



KEY PLAN

NOTES:

1. REFER TO STREETSCAPE PLANS FOR BOULEVARD REINSTATEMENT DETAILS.
2. REFER TO DRAWINGS SF–1 TO SF–4 FOR CURB RADII, ADDITIONAL GRADING INFORMATION, ROAD WIDTH AND LINE PAINTING & SIGNAGE DETAILS.
3. REFER TO ELECTRICAL PLANS FOR STREETLIGHT, TRAFFIC SIGNAL AND POWER SUPPLY DESIGN
4. REFER TO DRAWINGS XS–1 TO XS–8 FOR BOULEVARD GRADING DETAILS AND DE–2 FOR TYPICAL CROSS SECTIONS.
5. REFER TO DRAWINGS SCG–1 AND SCG–2 FOR SOIL CELL AND RAIN GARDEN SERVICING AND GRADING DETAILS.
6. REFER TO DRAWINGS DE–1 TO DE–3 FOR TYPICAL CROSS–SECTIONS, DETAILS AND SPECIFICATIONS.



	0+960	0+980	1+000	1+020	1+040	1+060	1+080	1+100	1+110
C/L ELEV	179.62	179.94 180.13	180.61 180.62	181.19 181.23	181.62 181.71	182.16 182.19	182.71 182.72	183.87 183.97	
TOP OF WATERMAIN	178.29 178.22		178.43	179.35	179.63	179.63	180.01	180.56	
SANITARY INVERT				#208 178.03	#212 178.19	#215 178.49	#219 178.59	#223 178.73 #225 178.77	#509 (BAY) 178.85 #227 178.92 #229 179.03 #226 179.12

RECORD DRAWING : NOTICE TO USERS

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AS–BUILT DRAWINGS

COMPILED BY:	KP	DATE:	11/09/20
CHECKED BY:	AT	DATE:	12/07/20
DRAWN BY:	AJO	DATE:	12/09/21
CHECKED BY:	AT	DATE:	03/15/22

STRUCTURE	STRUCTURE	SIZE	LENGTH	SLOPE
CB 11I	MAIN	250 mm	1.8 m	26.1%
CB 12C	STM MH12	300 mm	1.8 m	5.0%
CB 13A	STM MH13	250 mm	2.7 m	3.0%
CB 13B	STM MH13	250 mm	5.9 m	3.9%
CB 14A	MAIN	250 mm	4.3 m	3.0%
CB 16A	STM MH16	250 mm	9.6 m	1.5%
CB 16B	STM MH16	250 mm	5.0 m	4.2%
CB 17B	MAIN	250 mm	2.1 m	2.4%
CB 20A	MAIN	250 mm	6.9 m	0.9%
CB 20B	STM MH20	250 mm	10.6 m	2.5%
CBMH 19	STM MH20	525 mm	18.2 m	0.8%
DCB 11H	STM MH18	300 mm	10.7 m	4.0%

CATCH BASIN	RIM	PIPES
CB 11I	182.16	SW INV: 180.78 250ø SE INV: 180.90 150ø
CB 12C	181.69	SW INV: 180.18 300ø
CB 13A	181.30	NW INV: 179.76 250ø
CB 13B	181.08	S INV: 179.89 250ø
CB 14A	180.46	SW INV: 179.33 250ø
CB 16A	179.79	NW INV: 178.93 250ø
CB 16B	179.93	SW INV: 178.18 250ø
CB 17B	181.70	NW INV: 179.68 250ø
CB 20A	180.03	NW INV: 179.16 250ø E INV: 179.50 250ø
CB 20B	179.70	E INV: 178.18 250ø
CBMH 19	180.56	NW INV: 179.00 525ø SE INV: 179.04 525ø
DCB 11H	182.14	NW INV: 180.87 300ø SE INV: 180.81 150ø

DISCLAIMER AND COPYRIGHT

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BENCHMARKS

TBM 1 – 181.266: NAIL & WASHER IN EAST FACE OF HYDRO POLE LOCATED ON WEST SIDE OF ROAD BETWEEN #208 AND #212 KING STREET.
TBM 4 – 193.579: TOP BOLT OF LIGHT STANDARD AT SOUTHWEST CORNER OF ELIZABETH STREET AND KING STREET
TBM 5 – 202.589: NAIL & WASHER IN EAST FACE OF HYDRO POLE LOCATED ON NORTHWEST CORNER OF KING STREET AND YONGE STREET.
TBM 8 – 187.973: TOP BOLT OF LIGHT STANDARD AT SOUTHEAST CORNER OF HUGEL AVENUE AND KING STREET.

NOTES

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TOPOGRAPHIC SURVEY INFORMATION COMPILED BY TATHAM ENGINEERING, APRIL 26, 2016.

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR TENDER	NOV/18
2.	REVISED BY ADDENDUM #1	DEC/18
3.	ISSUED FOR CONSTRUCTION	MAR/20
4.	REVISED TO INCLUDE UPDATED STORM INFORMATION	APR/20
5.	AS–BUILT INFORMATION	APR/22

ENGINEER STAMP

ORIGINAL STAMPED BY
A. E. BROWNRIDGE
03/10/20

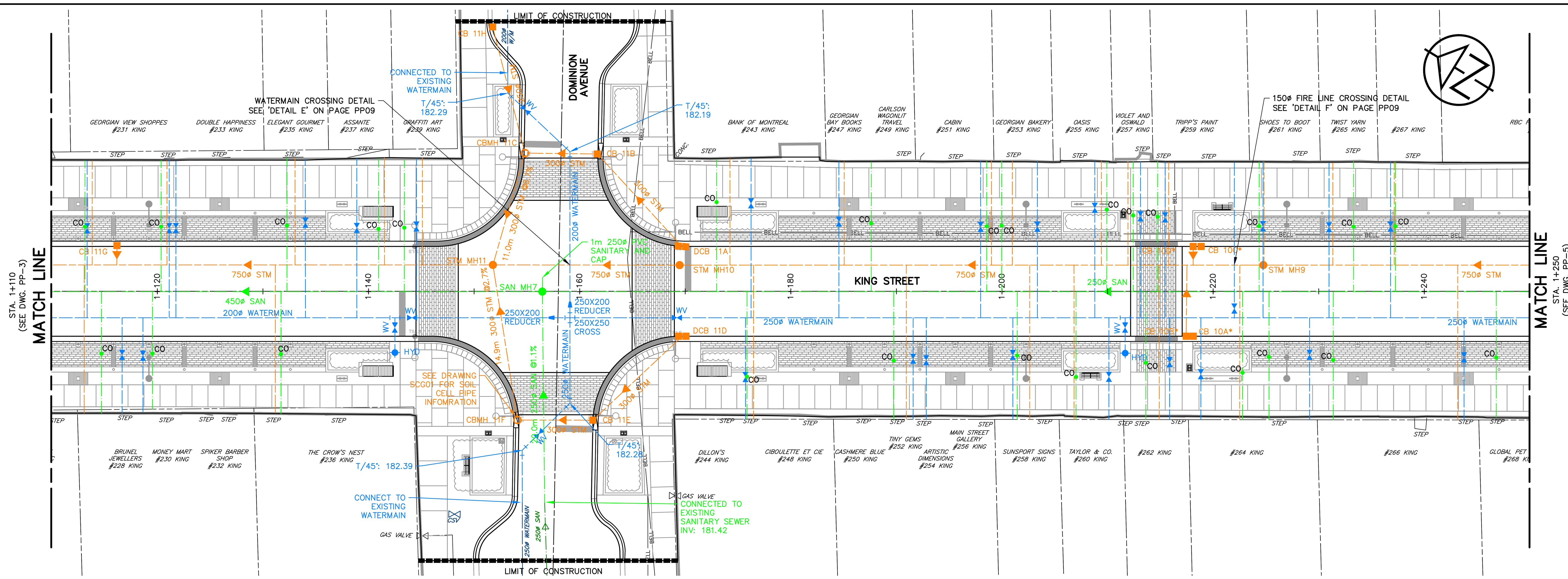
KING STREET REJUVENATION
TOWN OF MIDLAND

TATHAM ENGINEERING

PLAN AND PROFILE
KING STREET
STA. 0+970 TO 1+110

DESIGN: APR	FILE: 116024	DWG:	PP-3
DRAWN: APR	DATE: APR/16		
CHECK: AEB	SCALE: HORIZ. 1:250 VERT 1:50		

Drawing Name: 116024–PP01.dwg, Plotted: Apr 21, 2022



KEY PLAN

NOTES:

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2. REFER TO DRAWINGS SF–1 TO SF–4 FOR CURB RADII, ADDITIONAL GRADING INFORMATION, ROAD WIDTH AND LINE PAINTING & SIGNAGE DETAILS.
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4. REFER TO DRAWINGS XS–1 TO XS–8 FOR BOULEVARD GRADING DETAILS AND DE–2 FOR TYPICAL CROSS SECTIONS.
5. REFER TO DRAWINGS SCG–1 AND SCG–2 FOR SOIL CELL AND RAIN GARDEN SERVICING AND GRADING DETAILS.
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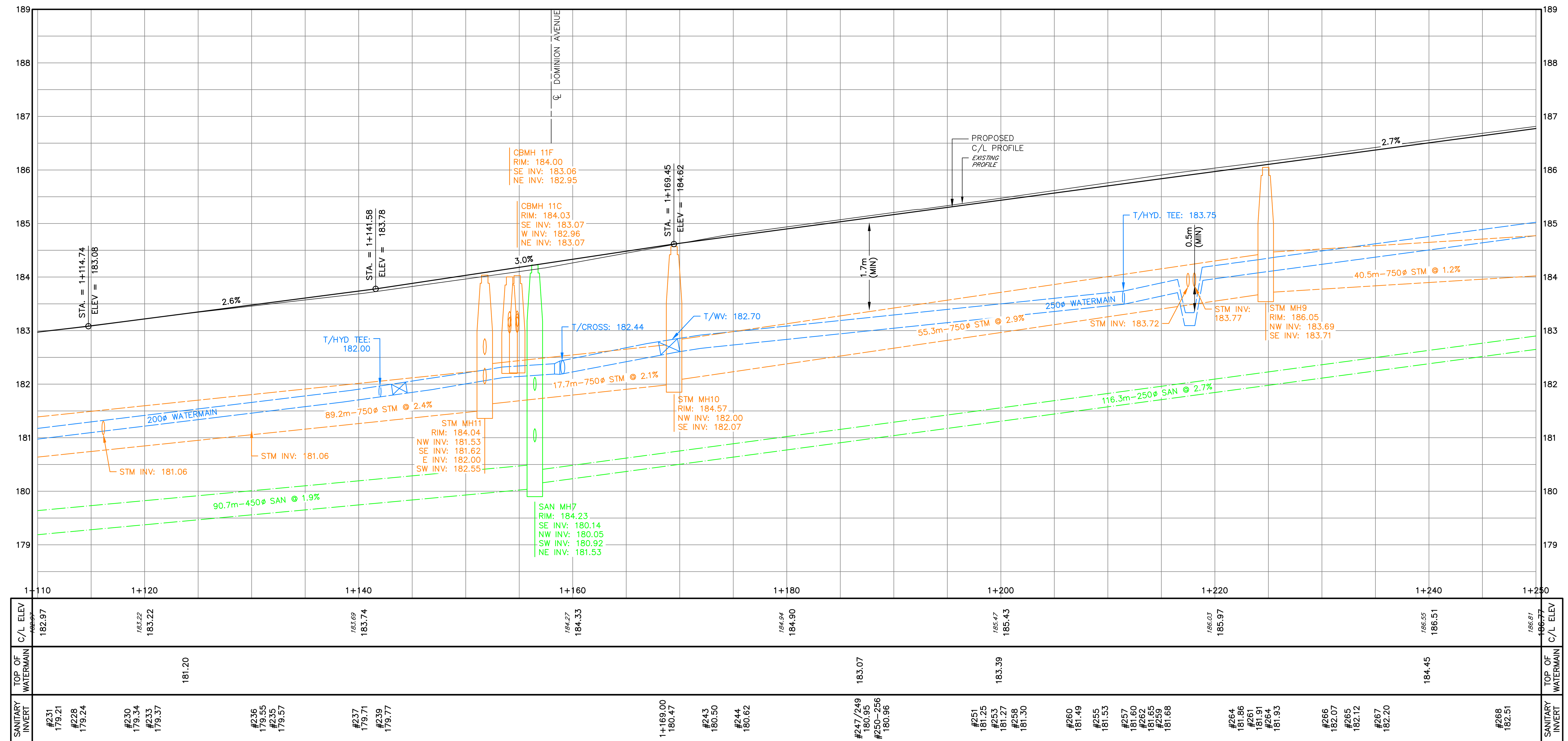
7. * INDICATES OVERFLOW PIPE INSTALLED BETWEEN CATCH BASIN PAIR. SEE DETAIL ON SHEET DE–3.



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AS–BUILT DRAWINGS

COMPILED BY: KP	DATE: 11/09/20
CHECKED BY: AT	DATE: 12/07/20
DRAWN BY: AJO	DATE: 12/09/21
CHECKED BY: AT	DATE: 03/15/22

STRUCTURE	STRUCTURE	SIZE	LENGTH	SLOPE
CB 10B*	MAIN	300 mm	6.7 m	7.5%
CB 10D*	MAIN	300 mm	1.8 m	13.0%
CB 11B	CBMH 11C	300 mm	6.9 m	1.7%
CB 11E	CBMH 11F	300 mm	7.2 m	1.0%
CB 11G	MAIN	250 mm	1.8 m	2.2%
CBMH 11C	STM MH11	300 mm	11.0 m	8.7%
CBMH 11F	STM MH11	300 mm	14.9 m	2.7%
DCB 11A	CB 11B	300 mm	11.9 m	1.0%
DCB 11D	CB 11E	300 mm	11.6 m	0.7%

CATCH BASIN	RIM	PIPES
CB 10A*	185.83	SW INV: 184.71 150ø NW INV: 184.93 250ø
CB 10B*	185.81	SW INV: 184.58 150ø NE INV: 184.27 300ø SE INV: 184.92 250ø
CB 10C*	185.85	NE INV: 184.72 150ø NW INV: 184.97 250ø
CB 10D*	185.83	NE INV: 184.54 150ø SE INV: 184.96 250ø SW INV: 184.01 300ø
CB 11B	184.24	NW INV: 183.19 300ø S INV: 183.19 300ø
CB 11E	184.20	NW INV: 183.13 300ø E INV: 183.17 300ø
CB 11G	183.07	SW INV: 181.10 250ø
CB 11H	183.89	SW INV: 183.13 250ø
DCB 11A	184.54	N INV: 183.31 300ø SE INV: 183.31 150ø
DCB 11D	184.53	W INV: 183.25 300ø S INV: 183.25 150ø

DISCLAIMER AND COPYRIGHT

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BENCHMARKS

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NOTES

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TOPOGRAPHIC SURVEY INFORMATION COMPILED BY TATHAM ENGINEERING, APRIL 26, 2016.

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR TENDER	NOV/18
2.	REVISED BY ADDENDUM #1	DEC/18
3.	ISSUED FOR CONSTRUCTION	MAR/20
4.	REVISED TO INCLUDE UPDATED STORM INFORMATION	APR/20
5.	AS–BUILT INFORMATION	APR/22

ENGINEER STAMP

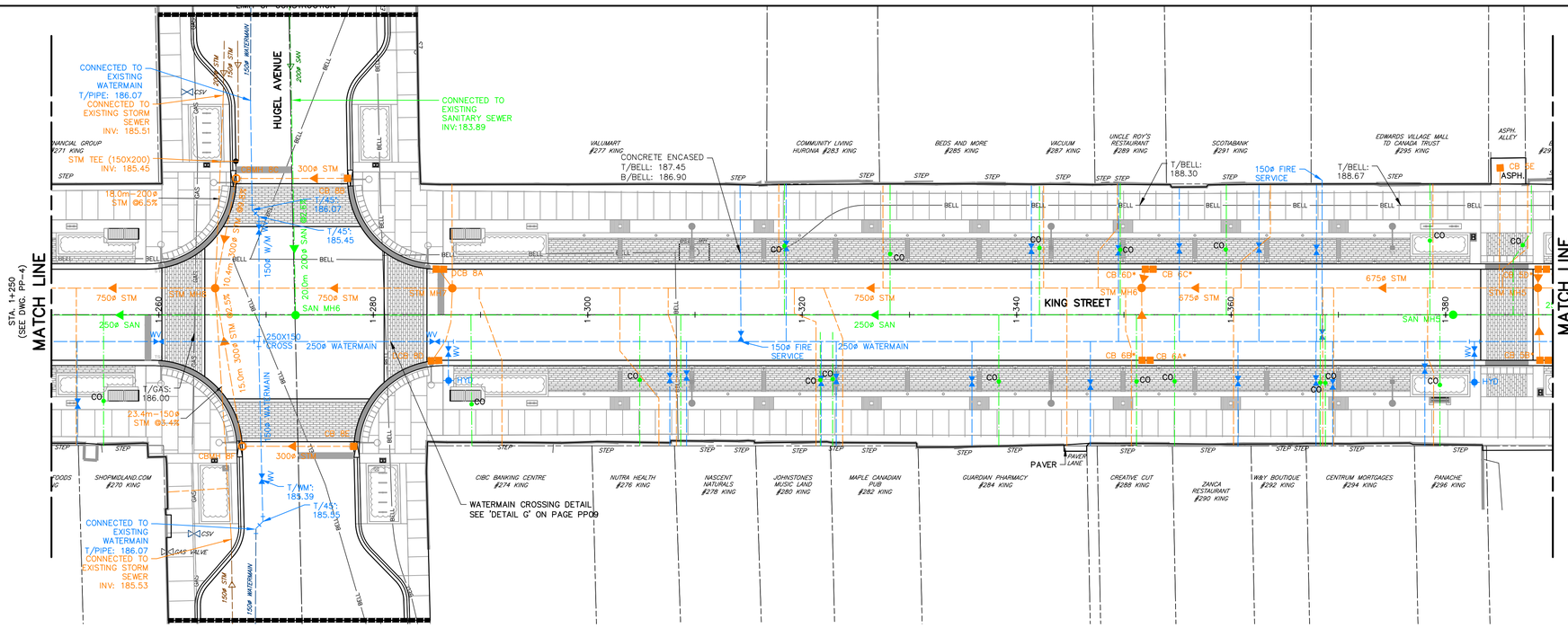
ORIGINAL STAMPED BY A. E. BROWNRIDGE 03/10/20

KING STREET REJUVENATION
TOWN OF MIDLAND

PLAN AND PROFILE
KING STREET
STA. 1+110 TO 1+250

TATHAM ENGINEERING

DESIGN: APR	FILE: 116024	DWG: PP-4
DRAWN: APR	DATE: APR/16	
CHECK: AEB	SCALE: HORIZ. 1:250 VERT 1:50	



KEY PLAN

NOTES: .

1. REFER TO STREETSCAPE PLANS FOR BOULEVARD REINSTATEMENT DETAILS.
2. REFER TO DRAWINGS SF-1 TO SF-4 FOR CURB RADII, ADDITIONAL GRADING INFORMATION, ROAD WIDTH AND LINE PAINTING & SIGNAGE DETAILS.
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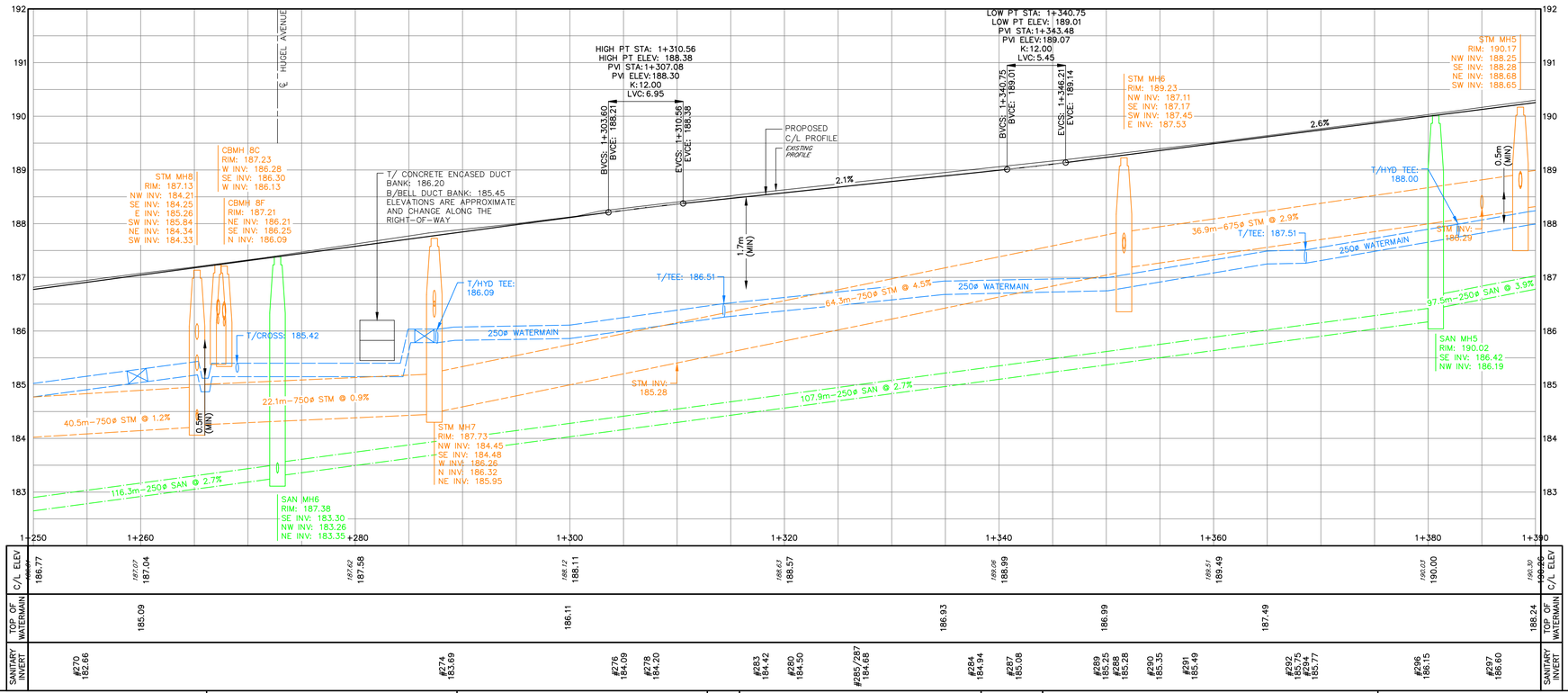
5. REFER TO DRAWINGS SCG-1 AND SCG-2 FOR SOIL CELL AND RAIN GARDEN SERVICING AND GRADING DETAILS.
6. REFER TO DRAWINGS DE-1 TO DE-3 FOR TYPICAL CROSS-SECTIONS, DETAILS AND SPECIFICATIONS.
7. * INDICATES OVERFLOW PIPE INSTALLED BETWEEN CATCH BASIN PAIR. SEE DETAIL ON SHEET DE-3.



RECORD DRAWING : NOTICE TO USERS	AS-BUILT DRAWINGS	
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	CHECKED BY: AT	DATE: 12/07/20
	DRAWN BY: AJO	DATE: 12/09/21
	CHECKED BY: AT	DATE: 03/15/22

STRUCTURE	STRUCTURE	SIZE	LENGTH	SLOPE
CB 5B*	STM MH5	300 mm	6.8 m	3.5%
CB 5D*	STM MH5	300 mm	1.8 m	11.6%
CB 5E	MAIN	250 mm	11.2 m	2.3%
CB 6B*	STM MH6	300 mm	6.8 m	1.0%
CB 6D*	STM MH6	300 mm	1.8 m	3.3%
CB 8B	CBMH 8C	300 mm	10.4 m	1.0%
CB 8E	CBMH 8F	300 mm	10.4 m	1.2%
CBMH 8C	STM MH8	300 mm	10.4 m	9.8%
CBMH 8F	STM MH8	300 mm	15.0 m	12.5%
DCB 8A	STM MH8	300 mm	2.0 m	0.8%
DCB 8D	STM MH8	300 mm	6.8 m	4.1%

CATCH BASIN	RIM	PIPES
CB 5A*	190.15	NW INV: 189.35 250ø SW INV: 189.20 150ø
CB 5B*	190.14	NE INV: 188.89 300ø SE INV: 189.34 250ø SW INV: 188.83 150ø
CB 5C*	190.15	NW INV: 189.47 250ø NE INV: 189.32 150ø
CB 5D*	190.13	SW INV: 188.89 300ø SE INV: 189.46 250ø NE INV: 188.84 150ø
CB 5E	190.23	SW INV: 188.55 250ø
CB 6A*	189.21	NW INV: 188.47 250ø SW INV: 188.31 150ø
CB 6B*	189.19	SE INV: 188.46 250ø NE INV: 187.52 300ø SW INV: 187.52 150ø
CB 6C*	189.21	NW INV: 188.50 250ø NE INV: 188.35 150ø
CB 6D*	189.20	SE INV: 188.47 250ø W INV: 187.59 300ø NE INV: 187.54 150ø
CB 8B	187.57	NW INV: 186.40 300ø
CB 8E	187.47	NW INV: 186.38 300ø
DCB 8A	187.66	N INV: 186.48 300ø
DCB 8D	187.63	W INV: 186.54 300ø SE INV: 186.53 150ø

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BENCHMARKS

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TOPOGRAPHIC SURVEY INFORMATION COMPILED BY TATHAM ENGINEERING, APRIL 26, 2016.

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR TENDER	NOV/18
2.	REVISED BY ADDENDUM #1	DEC/18
3.	ISSUED FOR CONSTRUCTION	MAR/20
4.	REVISED TO INCLUDE UPDATED STORM INFORMATION	APR/20
5.	AS-BUILT INFORMATION	APR/22

ENGINEER STAMP

ORIGINAL STAMPED BY
A. E. BROWNRIDGE
03/10/20

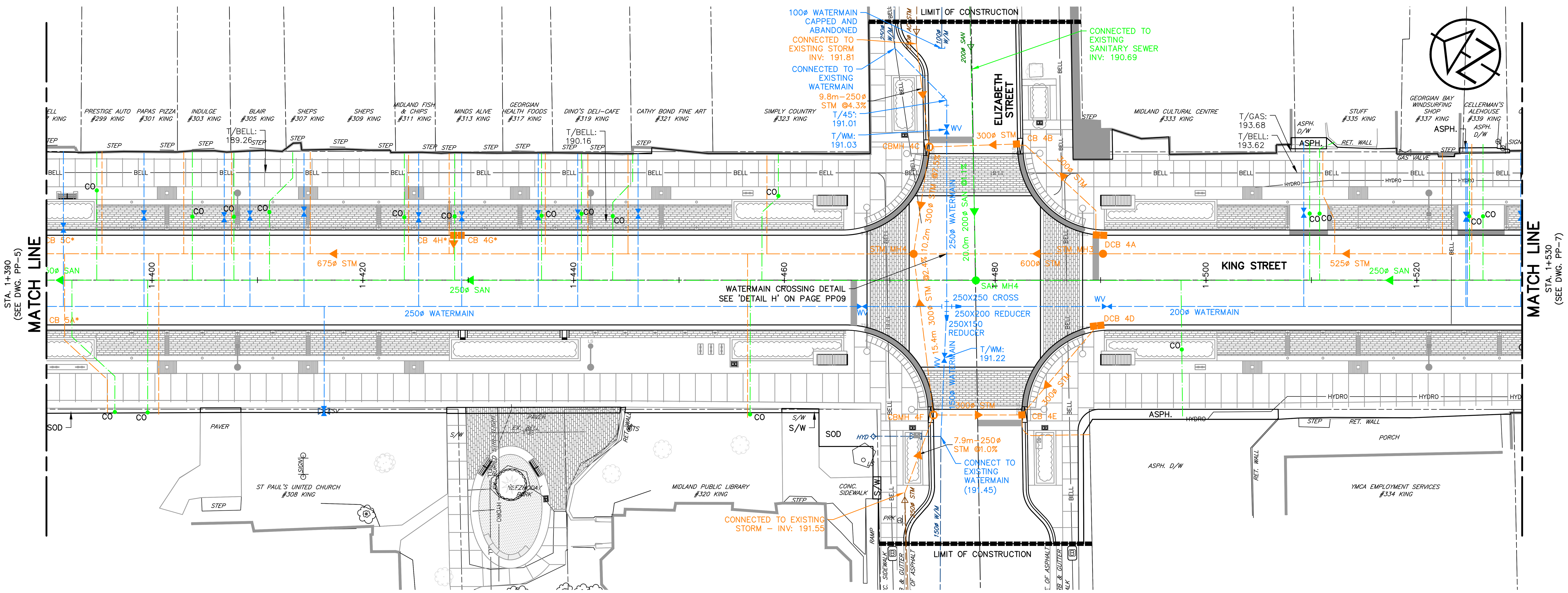
KING STREET REJUVENATION
TOWN OF MIDLAND

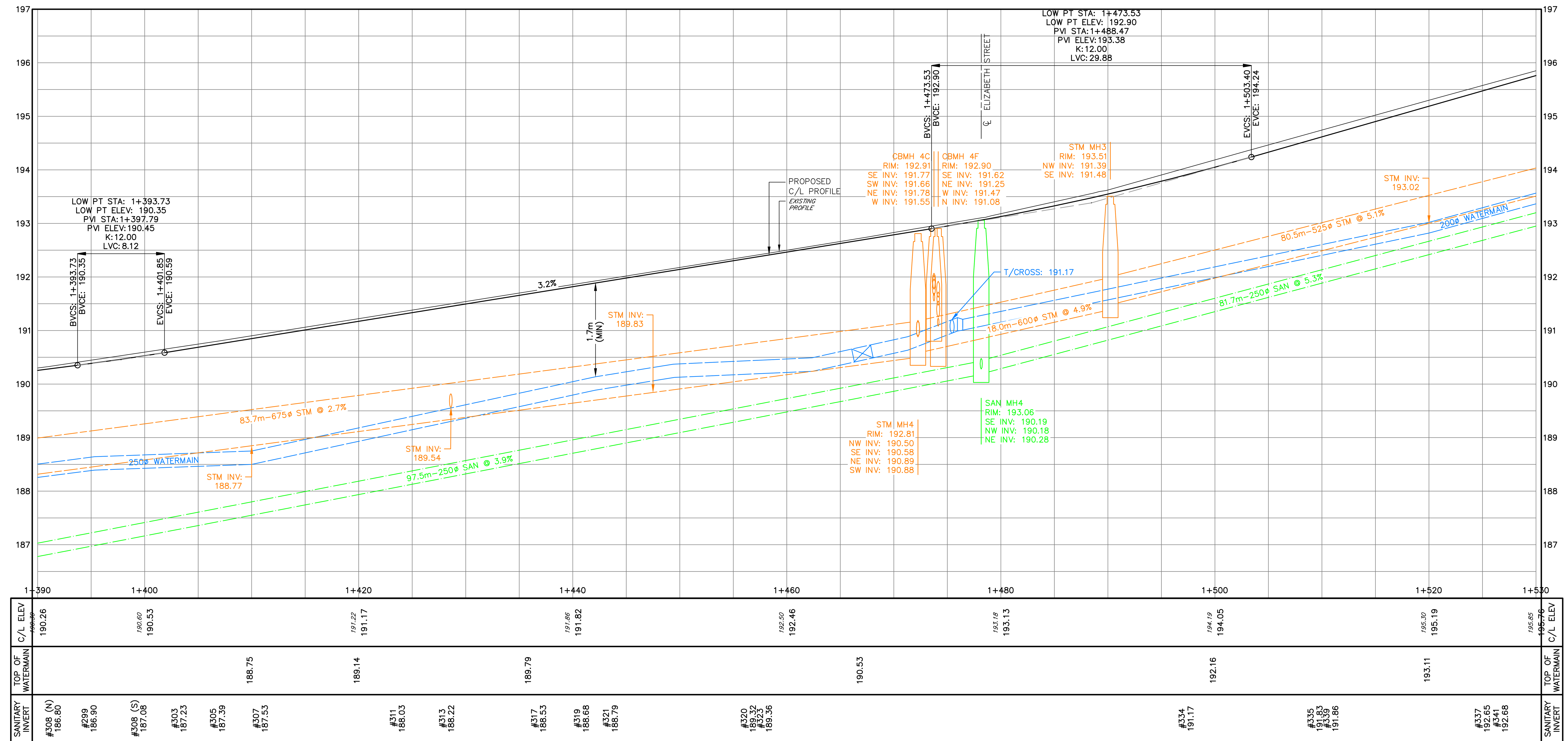
PLAN AND PROFILE
KING STREET
STA. 1+250 TO 1+390

TATHAM ENGINEERING

DESIGN: APR	FILE: 116024	DWG:	PP-5
DRAWN: APR	DATE: APR/16		
CHECK: AEB	SCALE: HORIZ. 1:250 VERT 1:50		

Drawing Name: 116024-PP01.dwg, Plotted: Apr 21, 2022





KEY PLAN

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AS–BUILT DRAWINGS

COMPILED BY: KP	DATE: 11/09/20
CHECKED BY: AT	DATE: 12/07/20
DRAWN BY: AJO	DATE: 12/09/21
CHECKED BY: AT	DATE: 03/15/22

STRUCTURE	STRUCTURE	SIZE	LENGTH	SLOPE
CB 4B	CBMH 4C	300 mm	8.3 m	1.9%
CB 4E	CBMH 4F	300 mm	8.4 m	0.7%
CB 4H*	MAIN	300 mm	1.8 m	8.8%
CBMH 4C	STM MH4	300 mm	10.2 m	0.8%
CBMH 4F	STM MH4	300 mm	15.4 m	2.4%
DCB 4A	CB 4B	300 mm	11.6 m	2.0%
DCB 4D	CB 4E	300 mm	11.0 m	1.0%

CATCH BASIN	RIM	PIPES
CB 4B	193.10	NW INV: 192.02 300ø S INV: 192.02 300ø
CB 4E	193.05	NW INV: 191.68 300ø E INV: 191.69 300ø NE INV: 191.88 150ø
CB 4G*	191.38	NW INV: 190.67 250ø NE INV: 190.52 150ø
CB 4H*	191.36	SW INV: 189.70 300ø SE INV: 190.66 250ø
DCB 4A	193.47	N INV: 192.22 300ø E INV: 192.49 150ø
DCB 4D	193.48	W INV: 192.51 300ø S INV: 192.48 150ø

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2.	REVISED BY ADDENDUM #1	DEC/18
3.	ISSUED FOR CONSTRUCTION	MAR/20
4.	REVISED TO INCLUDE UPDATED STORM INFORMATION	APR/20
5.	AS–BUILT INFORMATION	APR/22

ENGINEER STAMP

ORIGINAL STAMPED BY
A. E. BROWNRIDGE
03/10/20

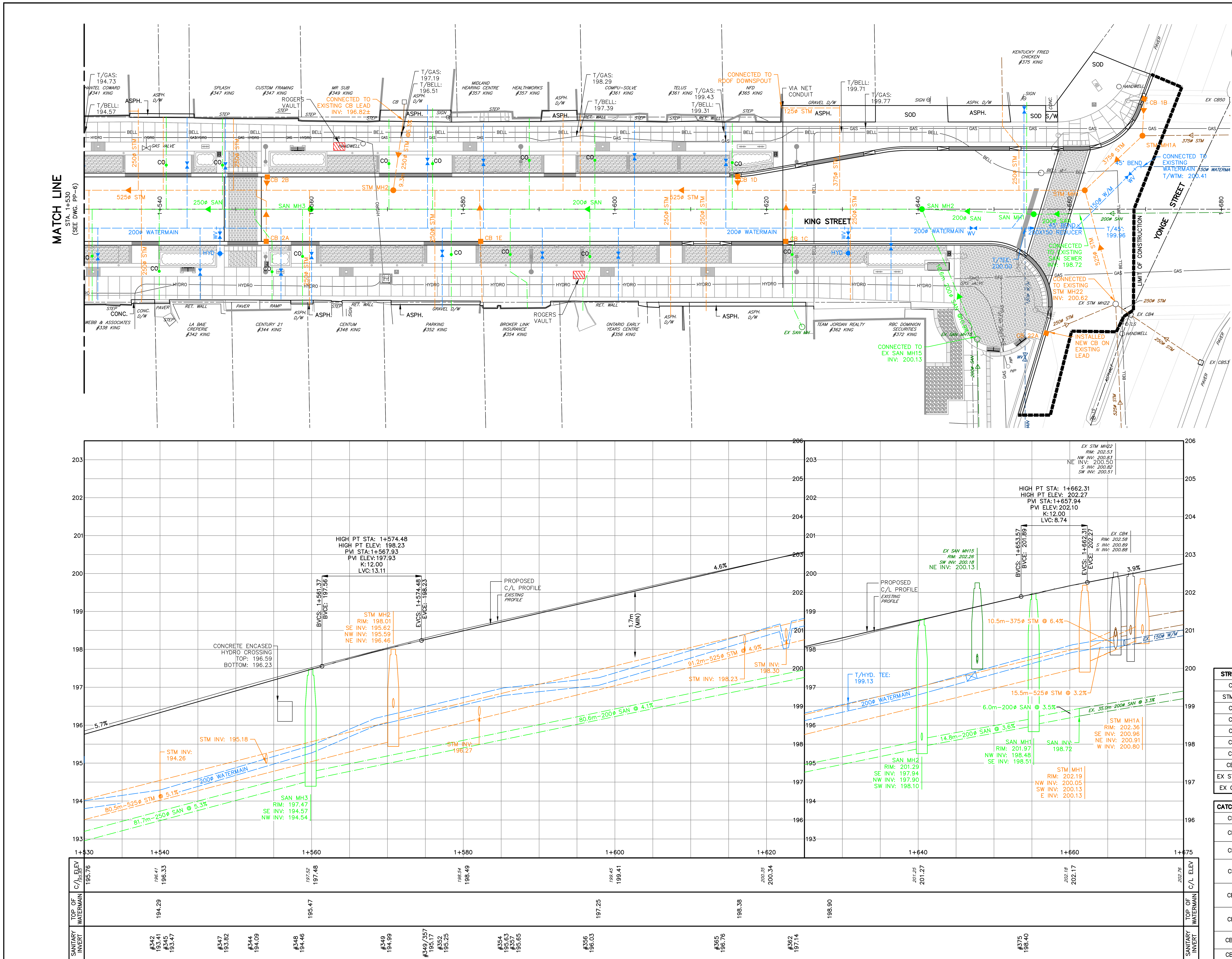
KING STREET REJUVENATION
TOWN OF MIDLAND

PLAN AND PROFILE
KING STREET
STA. 1+390 TO 1+530

TATHAM ENGINEERING

DESIGN: APR	FILE: 116024	DWG: PP-6
DRAWN: APR	DATE: APR/16	
CHECK: AEB	SCALE: HORIZ. 1:250 VERT 1:50	

Drawing Name: 116024–PP01.dwg, Plotted: Apr 21, 2022



KEY PLAN

NOTES:

1. REFER TO STREETSCAPE PLANS FOR BOULEVARD REINSTATEMENT DETAILS.
2. REFER TO DRAWINGS SF–1 TO SF–4 FOR CURB RADII, ADDITIONAL GRADING INFORMATION, ROAD WIDTH AND LINE PAINTING & SIGNAGE DETAILS.
3. REFER TO ELECTRICAL PLANS FOR STREETLIGHT, TRAFFIC SIGNAL AND POWER SUPPLY DESIGN
4. REFER TO DRAWINGS XS–1 TO XS–8 FOR BOULEVARD GRADING DETAILS AND DE–2 FOR TYPICAL CROSS SECTIONS.
5. REFER TO DRAWINGS SCG–1 AND SCG–2 FOR SOIL CELL AND RAIN GARDEN SERVICING AND GRADING DETAILS.
6. REFER TO DRAWINGS DE–1 TO DE–3 FOR TYPICAL CROSS–SECTIONS, DETAILS AND SPECIFICATIONS.
7. * INDICATES OVERFLOW PIPE INSTALLED BETWEEN CATCH BASIN PAIR. SEE DETAIL ON SHEET DE–3.

RECORD DRAWING : NOTICE TO USERS

INFORMATION CONTAINED ON THIS DRAWING HAS BEEN COMPILED FROM VARIOUS SOURCES AND MAY HAVE CHANGED SINCE COMPLETION OF CONSTRUCTION. NO WARRANTY CAN BE PROVIDED AS TO ITS ACCURACY AND/OR COMPLETENESS. TATHAM ENGINEERING LIMITED SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY RESULT FROM RELIANCE ON INFORMATION HEREIN.

AS–BUILT DRAWINGS

COMPILED BY:	KP	DATE:	11/09/20
CHECKED BY:	AT	DATE:	12/07/20
DRAWN BY:	AJO	DATE:	12/09/21
CHECKED BY:	AT	DATE:	03/15/22

STRUCTURE	STRUCTURE	SIZE	LENGTH	SLOPE
CB 1B	STM MH1A	250 mm	4.9 m	2.0%
STM MH1A	STM MH1	375 mm	10.5 m	6.4%
CB 1D	MAIN	250 mm	1.8 m	60.5%
CB 1C	MAIN	250 mm	6.7 m	19.4%
CB 1E	MAIN	250 mm	6.7 m	18.9%
CB 2B	MAIN	250 mm	1.7 m	21.6%
CB 2A	MAIN	250 mm	6.7 m	7.2%
CB 22B	CB 22A	250 mm	8.2 m	1.0%
EX STM MH22	STM MH1	525 mm	15.5 m	1.9%
EX CB LEAD	STM MH2	250 mm	9.3 m	3.7%

CATCH BASIN	RIM	PIPES
CB 1B	202.42	SW INV: 201.02 250ø
CB 1C	200.37	NW INV: 199.41 150ø NE INV: 199.62 250ø
CB 1D	200.12	SW INV: 199.32 250ø NW INV: 199.24 150ø
CB 1E	198.51	W INV: 197.75 150ø S INV: 197.61 150ø NE INV: 197.56 250ø
CB 2A	197.05	NE INV: 195.52 250ø W INV: 195.36 150ø S INV: 195.46 150ø
CB 2B	197.06	SW INV: 195.57 250ø N INV: 195.44 150ø E INV: 195.62 150ø
CB 22A	202.45	SE INV: 201.09 250ø
CB 22B	202.14	S INV: 201.12 250ø

DISCLAIMER AND COPYRIGHT

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BENCHMARKS

TBM 1 – 181.266: NAIL & WASHER IN EAST FACE OF HYDRO POLE LOCATED ON WEST SIDE OF ROAD BETWEEN #208 AND #212 KING STREET.
TBM 4 – 193.579: TOP BOLT OF LIGHT STANDARD AT SOUTHWEST CORNER OF ELIZABETH STREET AND KING STREET
TBM 5 – 202.589: NAIL & WASHER IN EAST FACE OF HYDRO POLE LOCATED ON NORTHWEST CORNER OF KING STREET AND YONGE STREET.
TBM 8 – 187.973: TOP BOLT OF LIGHT STANDARD AT SOUTHEAST CORNER OF HUGEL AVENUE AND KING STREET.

NOTES

PIPE SIZES ARE IN MILLIMETRES UNLESS INDICATED. ELEVATIONS ARE IN METRES UNLESS INDICATED. ALL DIMENSIONS, ELEVATIONS AND SIZES ARE IN METRIC UNITS UNLESS INDICATED.

LEGAL BOUNDARIES SHOWN ON THIS PLAN ARE APPROXIMATE ONLY, BASED ON A COMPILATION OF TOPOGRAPHIC SURVEY, AERIAL IMAGERY AND GIS BASE MAPPING.

TOPOGRAPHIC SURVEY INFORMATION COMPILED BY TATHAM ENGINEERING, APRIL 26, 2016.

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR TENDER	NOV/18
2.	REVISED BY ADDENDUM #1	DEC/18
3.	ISSUED FOR CONSTRUCTION	MAR/20
4.	REVISED TO INCLUDE UPDATED STORM INFORMATION	APR/20
5.	AS–BUILT INFORMATION	APR/22

ENGINEER STAMP

ORIGINAL STAMPED BY A. E. BROWNRIDGE 03/10/20

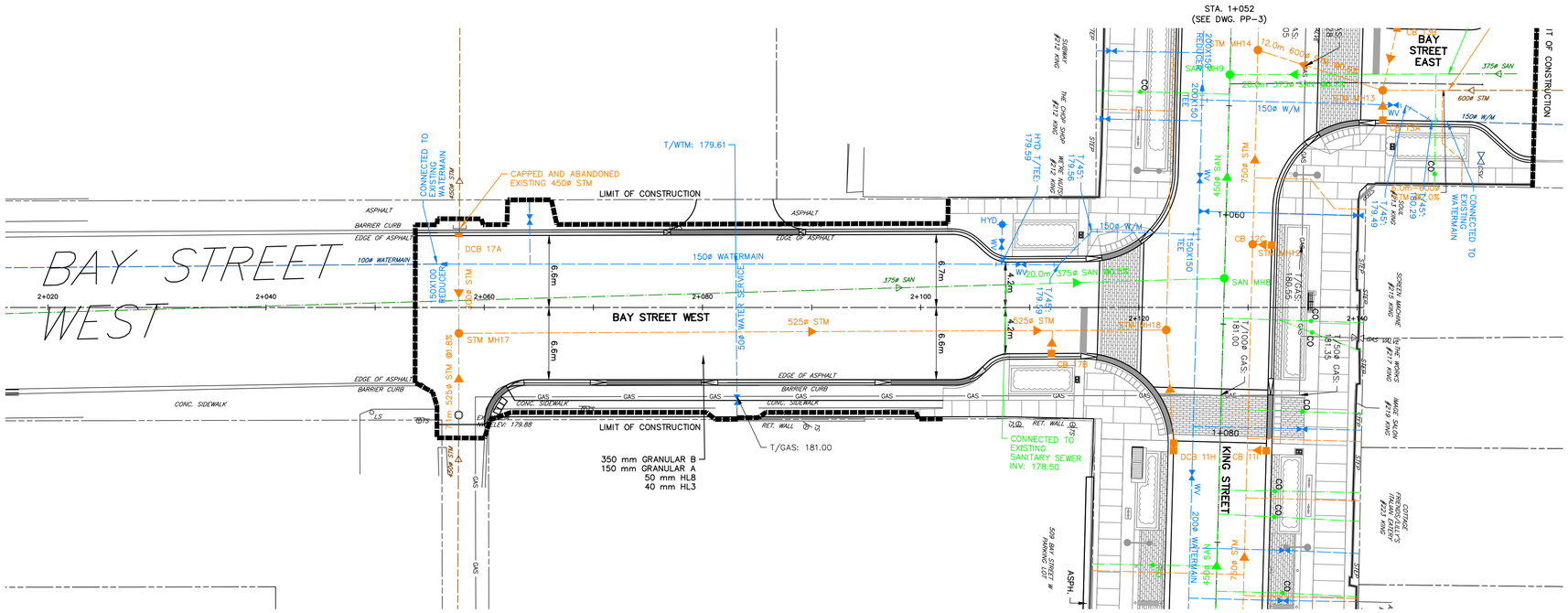
KING STREET REJUVENATION
TOWN OF MIDLAND

PLAN AND PROFILE
KING STREET
STA. 1+530 TO 1+670

TATHAM ENGINEERING

DESIGN: APR	FILE: 116024	DWG:
DRAWN: APR	DATE: APR/16	PP-7
CHECK: AEB	SCALE: HORIZ. 1:250 VERT 1:50	

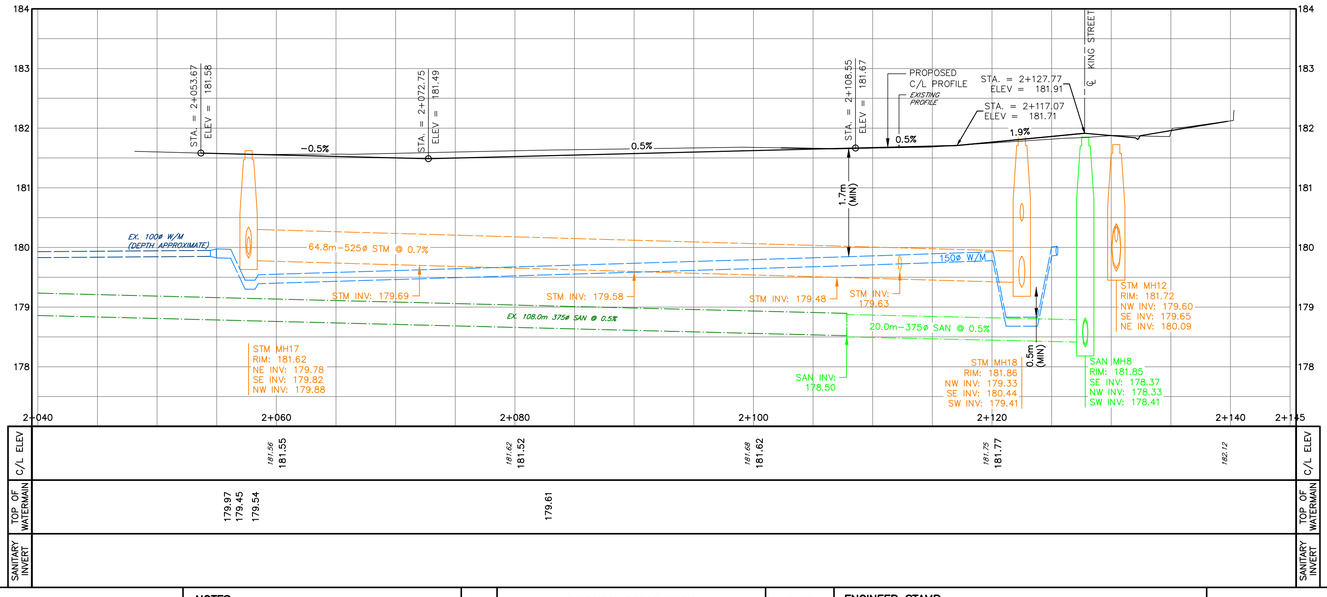
Drawing Name: 116024–PP01.dwg, Plotted: Aug 31, 2022



KEY PLAN

NOTES:.

1. REFER TO STREETSCAPE PLANS FOR BOULEVARD REINSTATEMENT DETAILS.
2. REFER TO DRAWINGS SF-1 TO SF-4 FOR CURB RADII, ADDITIONAL GRADING INFORMATION, ROAD WIDTH AND LINE PAINTING & SIGNAGE DETAILS.
3. REFER TO ELECTRICAL PLANS FOR STREETLIGHT, TRAFFIC SIGNAL AND POWER SUPPLY DESIGN



STRUCTURE	STRUCTURE	SIZE	LENGTH	SLOPE
CB 12C	STM MH12	300 mm	1.8 m	5.0%
CB 17B	MAIN	250 mm	2.1 m	2.4%
DCB 17A	STM MH17	300 mm	9.0 m	2.7%

CATCH BASIN	RIM	PIPES
CB 12C	181.69	SW INV: 180.18 300ø
CB 17B	181.70	NW INV: 179.68 250ø
DCB 17A	181.21	SE INV: 180.13 300ø

RECORD DRAWING : NOTICE TO USERS

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AS-BUILT DRAWINGS

COMPILED BY: KP	DATE: 11/09/20
CHECKED BY: AT	DATE: 12/07/20
DRAWN BY: AJO	DATE: 12/09/21
CHECKED BY: AT	DATE: 03/15/22

DISCLAIMER AND COPYRIGHT

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BENCHMARKS

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TBM 4 – 193.579: TOP BOLT OF LIGHT STANDARD AT SOUTHWEST CORNER OF ELIZABETH STREET AND KING STREET
TBM 5 – 202.589: NAIL & WASHER IN EAST FACE OF HYDRO POLE LOCATED ON NORTHWEST CORNER OF KING STREET AND YONGE STREET.
TBM 8 – 187.973: TOP BOLT OF LIGHT STANDARD AT SOUTHEAST CORNER OF HUGEL AVENUE AND KING STREET.

NOTES

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TOPOGRAPHIC SURVEY INFORMATION COMPILED BY TATHAM ENGINEERING, APRIL 26, 2016.

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR TENDER	NOV/18
2.	REVISED BY ADDENDUM #1	DEC/18
3.	ISSUED FOR CONSTRUCTION	MAR/20
4.	REVISED TO INCLUDE UPDATED STORM INFORMATION	APR/20
5.	AS-BUILT INFORMATION	APR/22

ENGINEER STAMP

ORIGINAL STAMPED BY
A. E. BROWNRIDGE
03/10/20

KING STREET REJUVENATION
TOWN OF MIDLAND

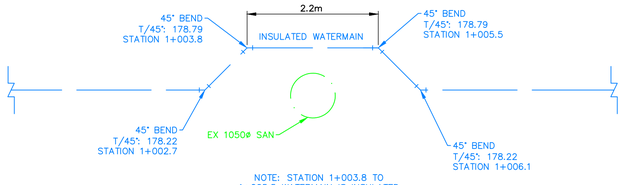
PLAN AND PROFILE
BAY STREET WEST
STA. 2+020 TO 2+140

TATHAM ENGINEERING

DESIGN: APR	FILE: 116024	DWG:	PP-8
DRAWN: APR	DATE: APR/16		
CHECK: AEB	SCALE: HORIZ. 1:250 VERT 1:50		

Drawing Name: 116024-PP01.dwg, Plotted: Apr 21, 2022

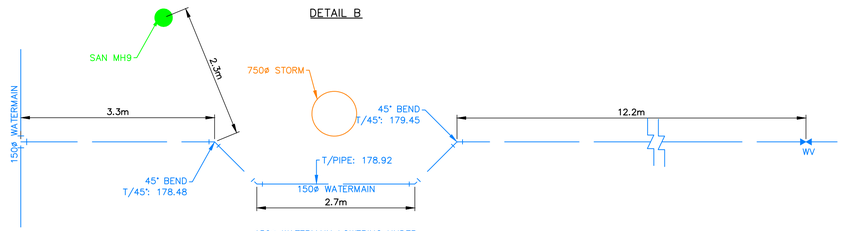
DETAIL A



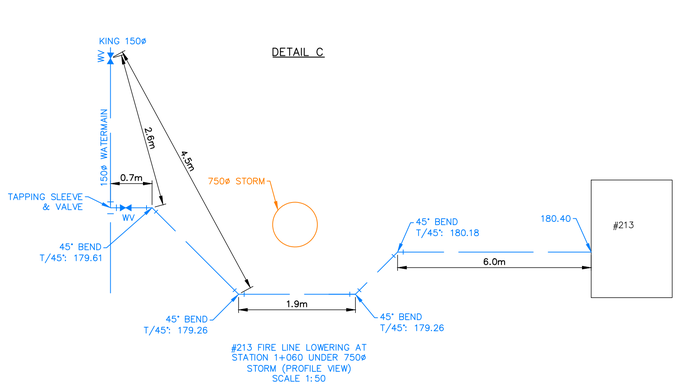
NOTE: STATION 1+003.8 TO
1+065.5 WATERMAIN IS INSULATED

150ø WATERMAIN OVER
1500ø EXISTING SANITARY SEWER
FROM STATION 1+002 TO 1+006
WATERMAIN DETAIL (PROFILE VIEW)
SCALE 1:50

DETAIL B



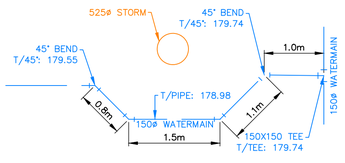
150ø WATERMAIN LOWERING UNDER
750ø STORM AT STATION 1+049
WATERMAIN DETAIL (PROFILE VIEW)
SCALE 1:50



DETAIL C

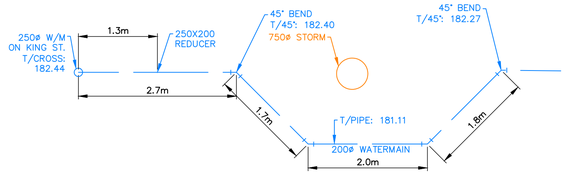
#213 FIRE LINE LOWERING AT
STATION 1+060 UNDER 750ø
STORM (PROFILE VIEW)
SCALE 1:50

DETAIL D



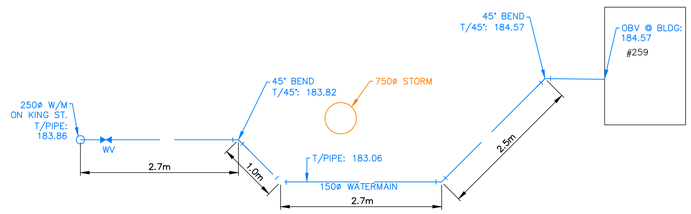
150ø WATERMAIN LOWERING UNDER
575ø STORM AT STATION 1+062
WATERMAIN DETAIL (PROFILE VIEW)
SCALE 1:50

DETAIL E



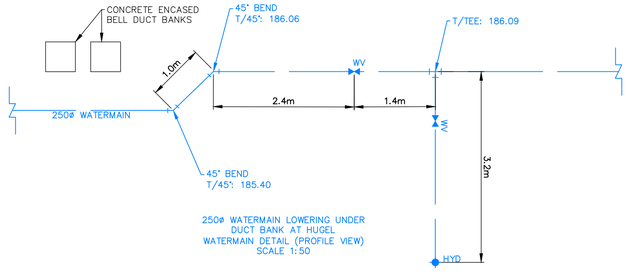
200ø WATERMAIN LOWERING UNDER
750ø STORM AT DOMINION AVE AT
STATION 1+160
WATERMAIN DETAIL (PROFILE VIEW)
SCALE 1:50

DETAIL F



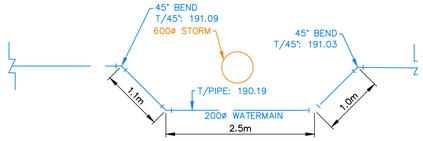
150ø FIRE LINE LOWERING UNDER
750ø STORM AT #259
AT STATION 1+222
FIRE LINE DETAIL (PROFILE VIEW)
SCALE 1:50

DETAIL G



250ø WATERMAIN LOWERING UNDER
DUCT BANK AT HUGEL
WATERMAIN DETAIL (PROFILE VIEW)
SCALE 1:50

DETAIL H



250ø WATERMAIN LOWERING UNDER
600ø STORM AT ELIZABETH STREET
WATERMAIN DETAIL (PROFILE VIEW)
SCALE 1:50

KEY PLAN

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AS–BUILT DRAWINGS

COMPILED BY: KP	DATE: 11/09/20
CHECKED BY: AT	DATE: 12/07/20
DRAWN BY: AJO	DATE: 12/09/21
CHECKED BY: AT	DATE: 03/15/22

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BENCHMARKS

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NOTES

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TOPOGRAPHIC SURVEY INFORMATION COMPILED BY TATHAM ENGINEERING, APRIL 26, 2016.

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR TENDER	NOV/18
2.	REVISED BY ADDENDUM #1	DEC/18
3.	ISSUED FOR CONSTRUCTION	MAR/20
4.	REVISED TO INCLUDE UPDATED STORM INFORMATION	APR/20
5.	AS–BUILT INFORMATION	APR/22

ENGINEER STAMP

ORIGINAL STAMPED BY
A. E. BROWNRIDGE
03/10/20

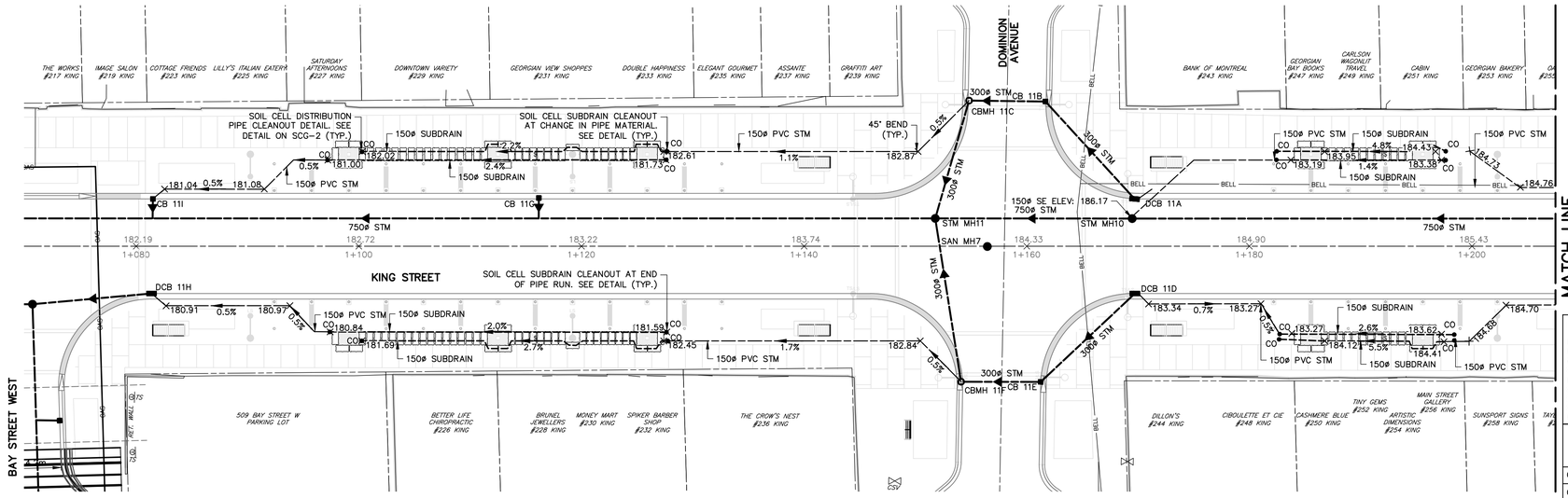
KING STREET REJUVENATION
TOWN OF MIDLAND

TATHAM ENGINEERING

ADDITIONAL WATERMAIN DETAILS

DESIGN: APR	FILE: 116024	DWG:	PP-9
DRAWN: APR	DATE: APR/16		
CHECK: AEB	SCALE: SCALE: 1:50		

Drawing Name: 116024–PP01.dwg, Plotted: Apr 21, 2022



KEY PLAN

RECORD DRAWING : NOTICE TO USERS
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AS–BUILT DRAWINGS

COMPILED BY: KP	DATE: 11/09/20
CHECKED BY: AT	DATE: 12/07/20
DRAWN BY: AJO	DATE: 12/09/21
CHECKED BY: AT	DATE: 03/15/22

NOTES:

1. REFER TO LANDSCAPE PLANS FOR SOIL CELL TYPICAL DETAILS AND SECTIONS.
2. REFER TO SCG–2 FOR SOIL CELL DISTRIBUTION PIPE DETAIL.
3. * INDICATES OVERFLOW PIPE INSTALLED BETWEEN CATCH BASIN PAIR. SEE DETAIL ON SHEET DE–3.

SOIL CELL SUBDRAIN CLEANOUT AT CHANGE IN PIPE MATERIAL
NTS

SOIL CELL SUBDRAIN CLEANOUT AT END OF PIPE RUN
NTS

CATCH BASIN	RIM	PIPES
CB 6A*	189.21	NW INV: 188.46 250ø SW INV: 188.23 150ø
CB 6B*	189.19	SE INV: 188.45 250ø NE INV: 187.52 300ø SW INV: 187.46 150ø
CB 6C*	189.21	NW INV: 188.50 250ø NE INV: 188.34 150ø
CB 6D*	189.20	SE INV: 188.49 250ø W INV: 187.53 300ø NE INV: 187.57 150ø
CB 8B	187.57	NW INV: 186.39 300ø S INV: 186.42 300ø
CB 8E	187.47	NW INV: 186.37 300ø E INV: 186.44 300ø

CATCH BASIN	RIM	PIPES
CB 10A*	185.83	SW INV: 184.71 150ø NW INV: 184.91 250ø
CB 10B*	185.81	SW INV: 184.58 150ø NE INV: 184.20 300ø SE INV: 184.92 250ø
CB 10C*	185.85	NE INV: 184.82 150ø NW INV: 184.84 250ø
CB 10D*	185.83	NE INV: 184.64 150ø SE INV: 184.82 250ø SW INV: 184.10 300ø
CB 11B	184.24	NW INV: 183.18 300ø S INV: 183.11 300ø
CB 11E	184.20	NW INV: 183.13 300ø E INV: 183.70 300ø

CATCH BASIN	RIM	PIPES
CB 11G	183.07	SW INV: 181.11 250ø
CB 11I	182.16	SW INV: 180.78 250ø SE INV: 181.03 150ø
CBMH 8C	187.23	W INV: 186.28 300ø SE INV: 186.34 300ø W INV: 186.16 150ø
CBMH 8F	187.21	NE INV: 186.24 300ø SE INV: 186.32 300ø N INV: 186.07 150ø
CBMH 11C	184.03	SE INV: 183.13 300ø W INV: 183.05 300ø W INV: 182.55 150ø
CBMH 11F	184.00	SE INV: 183.03 300ø NE INV: 182.95 300ø N INV: 182.85 150ø

CATCH BASIN	RIM	PIPES
DCB 8A	187.66	N INV: 186.48 300ø E INV: 186.48 150ø
DCB 8D	187.63	W INV: 186.50 300ø S INV: 186.50 150ø
DCB 11A	184.54	N INV: 183.33 300ø SE INV: 183.33 150ø
DCB 11D	184.53	W INV: 183.33 300ø S INV: 183.33 150ø
DCB 11H	182.14	NE INV: 180.88 300ø SE INV: 180.91 150ø

STRUCTURE	STRUCTURE	SIZE	LENGTH	SLOPE
CB 6B*	STM MH6	300 mm	6.8 m	1.0%
CB 6D*	STM MH6	300 mm	1.8 m	1.1%
CB 8B	CBMH 8C	300 mm	10.4 m	0.5%
CB 8E	CBMH 8F	300 mm	10.4 m	0.5%
CB 10B*	MAIN	300 mm	6.7 m	5.6%
CB 10D*	MAIN	300 mm	1.8 m	15.1%
CB 11B	CBMH 11C	300 mm	6.9 m	0.7%
CB 11E	CBMH 11F	300 mm	7.2 m	0.7%

STRUCTURE	STRUCTURE	SIZE	LENGTH	SLOPE
CB 11G	MAIN	250 mm	1.8 m	2.2%
CB 11I	MAIN	250 mm	1.8 m	18.2%
CBMH 8C	STM MH8	300 mm	10.4 m	4.1%
CBMH 8F	STM MH8	300 mm	15.0 m	2.6%
CBMH 11C	STM MH11	300 mm	11.0 m	8.9%
CBMH 11F	STM MH11	300 mm	14.9 m	2.1%
DCB 8A	CB 8B	300 mm	12.1 m	0.5%
DCB 8D	CB 8E	300 mm	10.8 m	0.6%

STRUCTURE	STRUCTURE	SIZE	LENGTH	SLOPE
DCB 11A	CB 11B	300 mm	11.9 m	1.3%
DCB 11D	CB 11E	300 mm	11.6 m	1.1%
DCB 11H	STM MH18	300 mm	10.7 m	4.0%

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BENCHMARKS

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NOTES

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TOPOGRAPHIC SURVEY INFORMATION COMPILED BY TATHAM ENGINEERING, APRIL 26, 2016.

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR TENDER	NOV/18
2.	REVISED BY ADDENDUM #1	DEC/18
3.	ISSUED FOR CONSTRUCTION	MAR/20
4.	REVISED TO INCLUDE UPDATED STORM INFORMATION	APR/20
5.	AS–BUILT INFORMATION	DEC/21

ENGINEER STAMP

ORIGINAL STAMPED BY
A. E. BROWNRIDGE
03/10/20

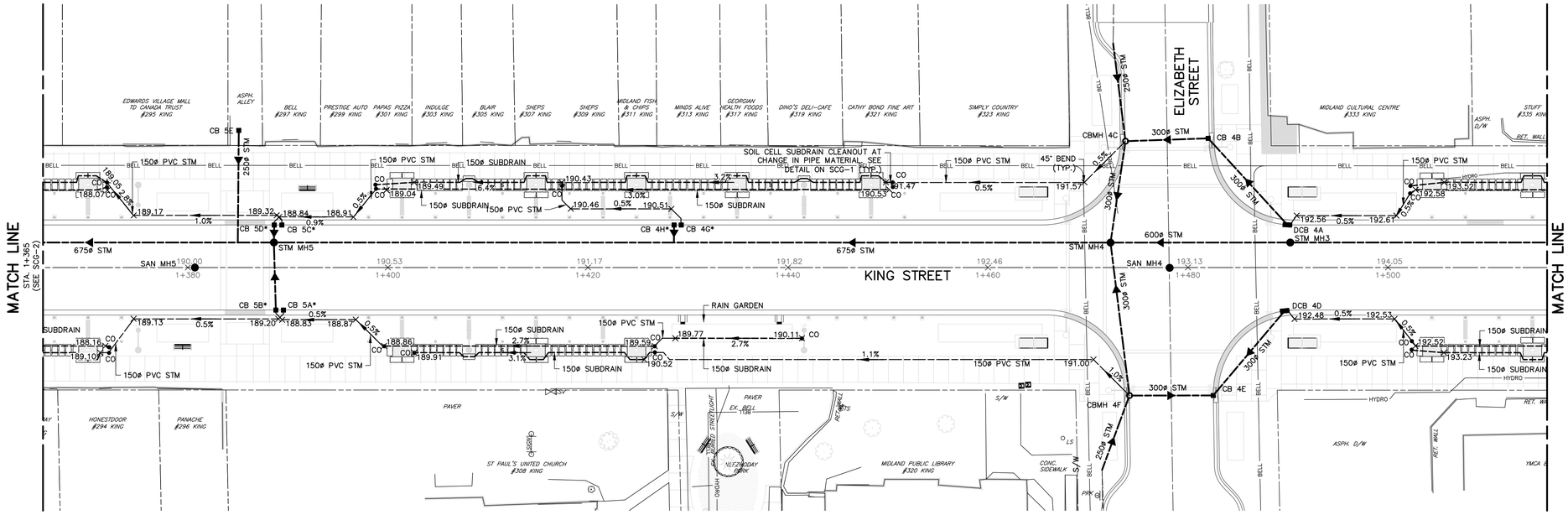
KING STREET REJUVENATION
TOWN OF MIDLAND

SOIL CELL GRADING AND SERVICING
STA. 1+070 TO 1+365

TATHAM ENGINEERING

DESIGN: APR	FILE: 116024	DWG:	**SCG-1**
DRAWN: APR	DATE: APR/16		
CHECK: AEB	SCALE: 1:250		

Drawing Name: 116024–SOIL–CELL01.dwg, Plotted: Apr 03, 2022



KEY PLAN

NOTES:

1. REFER TO LANDSCAPE PLANS FOR SOIL CELL TYPICAL DETAILS AND SECTIONS.
2. REFER TO SCG-2 FOR SOIL CELL DISTRIBUTION PIPE DETAIL.
3. * INDICATES OVERFLOW PIPE INSTALLED BETWEEN CATCH BASIN PAIR. SEE DETAIL ON SHEET DE-3.

SOIL CELL DISTRIBUTION PIPE CLEANOUT
NTS

ENGINEERED SOIL COMPOSITION	
COMPONENT	PERCENTAGE BY WEIGHT
SAND (2.0 TO 0.050mmø)	60%
SAND FRACTIONS (0.25 TO 2.0mmø)	MIN 55% OF TOTAL
FINES (< 0.050mmø)	25% TO 40%
ALLOWABLE GRAVEL	UP TO 10%
ORGANICS	5%

RAIN GARDEN
NTS

CATCH BASIN	RIM	PIPES
CB 1C	200.37	NW INV: 199.41 150ø NE INV: 199.56 250ø
CB 1D	200.12	SW INV: 199.39 250ø NW INV: 199.27 150ø
CB 1E	198.51	W INV: 197.40 150ø S INV: 197.51 150ø NE INV: 197.56 250ø
CB 2A	197.04	NE INV: 195.51 250ø W INV: 195.36 150ø S INV: 195.46 150ø
CB 2B	197.05	SW INV: 195.57 250ø N INV: 195.44 150ø E INV: 195.62 150ø

CATCH BASIN	RIM	PIPES
CB 4B	193.10	NW INV: 191.95 300ø S INV: 192.00 300ø
CB 4E	193.05	NW INV: 191.45 300ø E INV: 191.53 300ø
CB 4G*	191.38	NW INV: 190.67 250ø NE INV: 190.52 150ø
CB 4H*	191.36	SW INV: 189.72 300ø SE INV: 190.66 250ø
CB 5A*	190.15	NW INV: 189.35 250ø SW INV: 189.20 150ø

CATCH BASIN	RIM	PIPES
CB 5B*	190.14	NE INV: 188.83 300ø SE INV: 189.34 250ø SW INV: 188.86 150ø
CB 5C*	190.15	NW INV: 189.47 250ø NE INV: 189.24 150ø
CB 5D*	190.13	SW INV: 188.84 300ø SE INV: 189.46 250ø NE INV: 188.92 150ø
CB 5E	190.23	SW INV: 188.50 250ø
CBMH 4C	192.91	SE INV: 191.83 300ø SW INV: 191.75 300ø NE INV: 192.00 200ø W INV: 191.55 150ø

CATCH BASIN	RIM	PIPES
CBMH 4F	192.90	SE INV: 191.28 300ø NE INV: 191.20 300ø W INV: 191.44 250ø N INV: 191.08 150ø
DCB 4A	193.47	N INV: 192.20 300ø E INV: 192.49 150ø
DCB 4D	193.48	W INV: 191.80 300ø S INV: 192.48 150ø

STRUCTURE	STRUCTURE	SIZE	LENGTH	SLOPE
CB 1C	MAIN	250 mm	6.8 m	15.4%
CB 1D	MAIN	250 mm	1.8 m	61.7%
CB 1E	MAIN	250 mm	6.8 m	13.8%
CB 2A	MAIN	250 mm	6.7 m	4.9%
CB 2B	MAIN	250 mm	1.8 m	22.1%
CB 4B	CBMH 4C	300 mm	8.3 m	1.5%
CB 4E	CBMH 4F	300 mm	8.4 m	2.0%
CB 4H*	MAIN	300 mm	1.8 m	2.3%

STRUCTURE	STRUCTURE	SIZE	LENGTH	SLOPE
CB 5B*	STM MH5	300 mm	6.8 m	2.7%
CB 5D*	STM MH5	300 mm	1.8 m	10.7%
CB 5E	MAIN	250 mm	11.2 m	2.1%
CBMH 4C	STM MH4	300 mm	10.2 m	8.6%
CBMH 4F	STM MH4	300 mm	15.4 m	2.1%
DCB 4A	CB 4B	300 mm	11.6 m	1.7%
DCB 4D	CB 4E	300 mm	11.0 m	2.4%

RECORD DRAWING : NOTICE TO USERS

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DRAWN BY:	AJO	DATE:	12/09/21
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BENCHMARKS

TBM 1 – 181.266: NAIL & WASHER IN EAST FACE OF HYDRO POLE LOCATED ON WEST SIDE OF ROAD BETWEEN #208 AND #212 KING STREET.
TBM 4 – 193.579: TOP BOLT OF LIGHT STANDARD AT SOUTHWEST CORNER OF ELIZABETH STREET AND KING STREET
TBM 5 – 202.589: NAIL & WASHER IN EAST FACE OF HYDRO POLE LOCATED ON NORTHWEST CORNER OF KING STREET AND YONGE STREET.
TBM 8 – 187.973: TOP BOLT OF LIGHT STANDARD AT SOUTHEAST CORNER OF HUGEL AVENUE AND KING STREET.

NOTES

PIPE SIZES ARE IN MILLIMETRES UNLESS INDICATED. ELEVATIONS ARE IN METRES UNLESS INDICATED. ALL DIMENSIONS, ELEVATIONS AND SIZES ARE IN METRIC UNITS UNLESS INDICATED.

LEGAL BOUNDARIES SHOWN ON THIS PLAN ARE APPROXIMATE ONLY, BASED ON A COMPILATION OF TOPOGRAPHIC SURVEY, AERIAL IMAGERY AND GIS BASE MAPPING.

TOPOGRAPHIC SURVEY INFORMATION COMPILED BY TATHAM ENGINEERING, APRIL 26, 2016.

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR TENDER	NOV/18
2.	REVISED BY ADDENDUM #1	DEC/18
3.	ISSUED FOR CONSTRUCTION	MAR/20
4.	REVISED TO INCLUDE UPDATED STORM INFORMATION	APR/20
5.	AS-BUILT INFORMATION	DEC/21

ENGINEER STAMP

ORIGINAL STAMPED BY
A. E. BROWNRIDGE
03/10/20

KING STREET REJUVENATION
TOWN OF MIDLAND

SOIL CELL GRADING AND SERVICING
STA. 1+365 TO 1+645

TATHAM ENGINEERING

DESIGN: APR	FILE: 116024	DWG:	
DRAWN: APR	DATE: APR/16		**SCG-2**
CHECK: AEB	SCALE: 1:250		

Drawing Name: 116024-SOIL-CELL01.dwg, Plotted: Apr 03, 2022

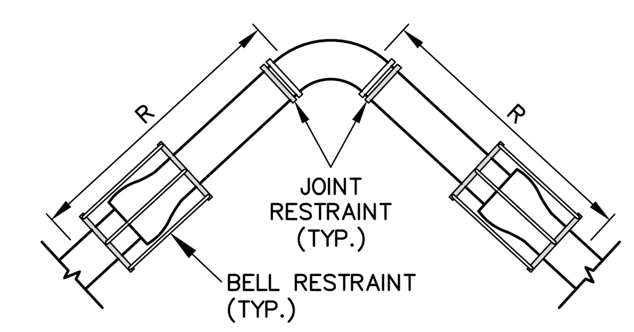
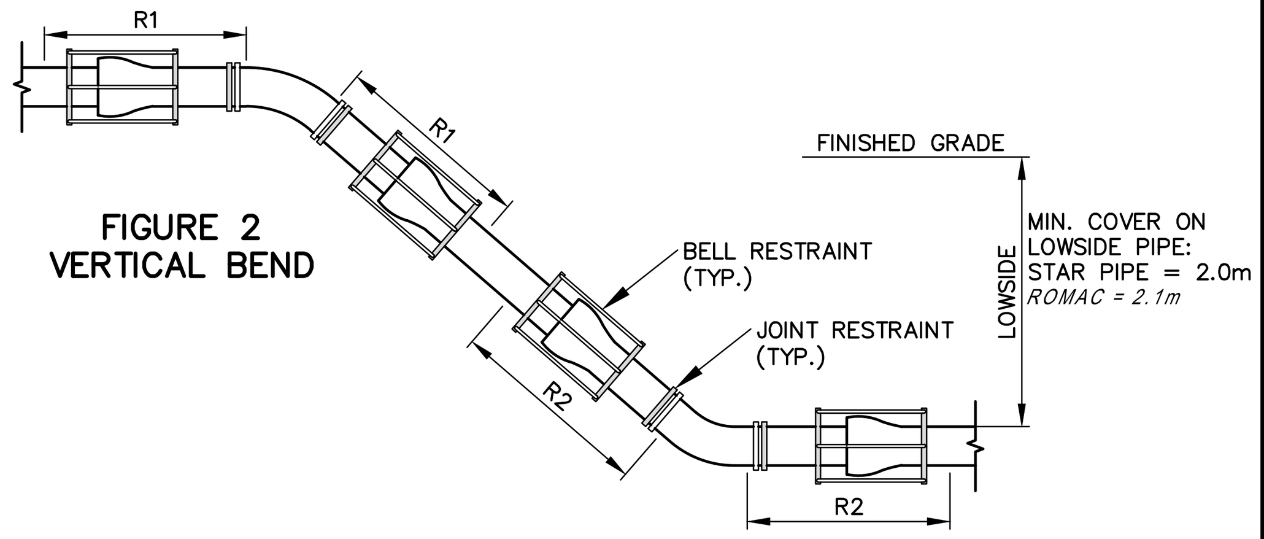


FIGURE 1
HORIZONTAL BEND



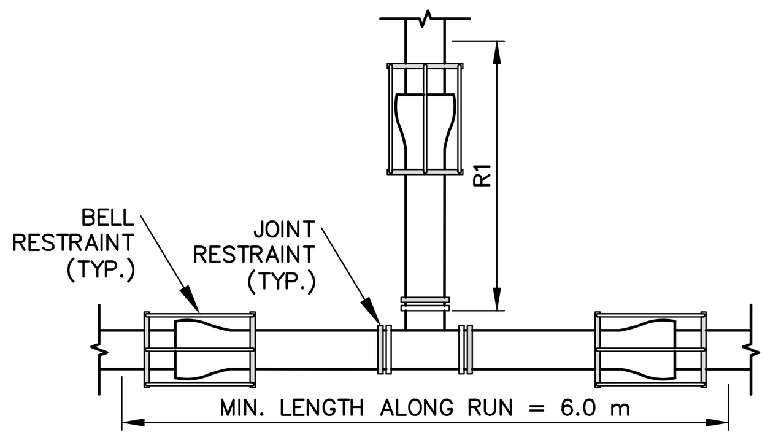


FIGURE 3
TEE

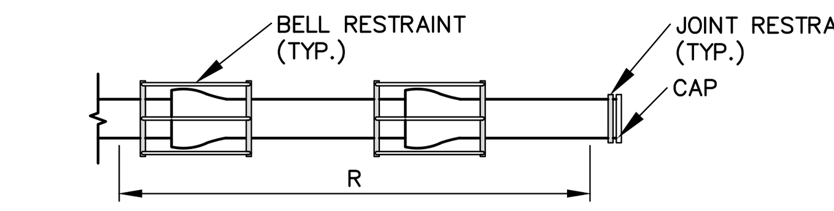


FIGURE 4
DEAD END

CHARACTERISTICS USED TO CALCULATE RESTRAINT LENGTH:

PIPE MATERIAL: PVC
SOIL TYPE: ML (INORGANIC SILTS, VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, ROCK FLAIR)
SAFETY FACTOR: 1.5 TO 1
TRENCH TYPE: 5 (PIPE BEDDED IN COMPACT GRANULAR MATERIAL)
DEPTH OF BURY: 1.52 m (5 ft)
TEST PRESSURE: 1035 kPa (150 p.s.i.)

PROGRAM: ROMAC INDUSTRIES – THRUST RESTRAINT CALCULATOR

TABLE 1: PIPE RESTRAINT SCHEDULE FOR PVC PIPE
(ALL JOINTS AND BELLS LOCATED WITHIN THE CALCULATED RESTRAINT LENGTH SHALL BE RESTRAINED WITH APPROVED BELL AND JOINT RESTRAINTS)

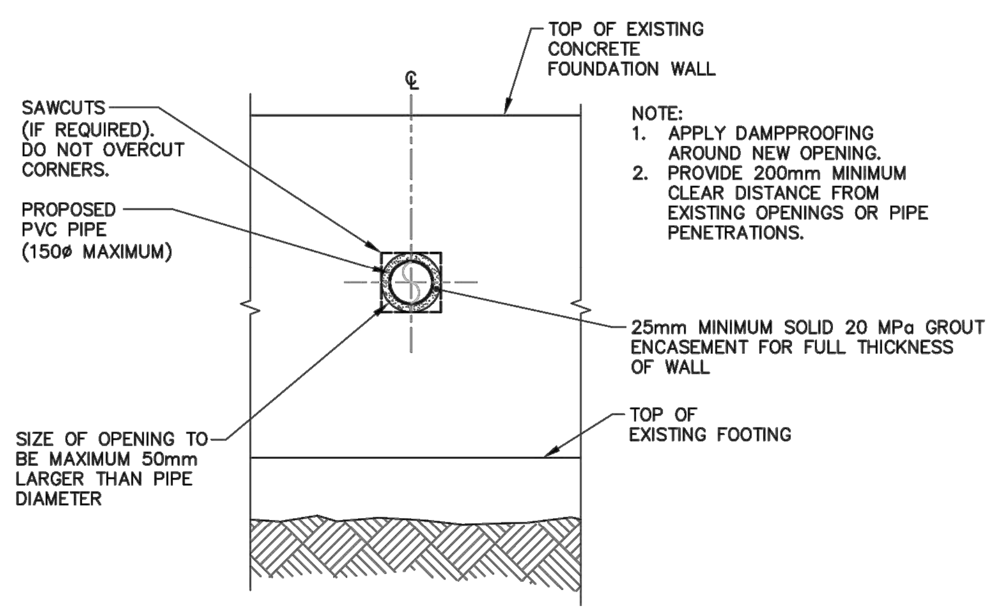
		HORIZONTAL BEND	VERTICAL BEND		DEAD END (NO BEND ANGLE)
PIPE DIA.	BEND ANGLE	RESTRAINT LENGTH (m)	RESTRAINT 1 LENGTH (m)	RESTRAINT 2 LENGTH (m)	RESTRAINT LENGTH (m)
150ø	90°	4.3	–	–	16.7
	45°	1.8	7.0	1.4	
	22.5°	0.8	3.4	0.7	
	11.25°	0.4	1.7	0.4	
250ø	90°	6.8	–	–	26.4
	45°	2.8	10.9	2.2	
	22.5°	1.4	5.3	1.1	
	11.25°	0.7	2.6	0.5	

TABLE 2: PIPE RESTRAINT SCHEDULE FOR PVC TEES
(ALL JOINTS AND BELLS LOCATED WITHIN THE CALCULATED RESTRAINT LENGTH SHALL BE RESTRAINED WITH APPROVED BELL AND JOINT RESTRAINTS)

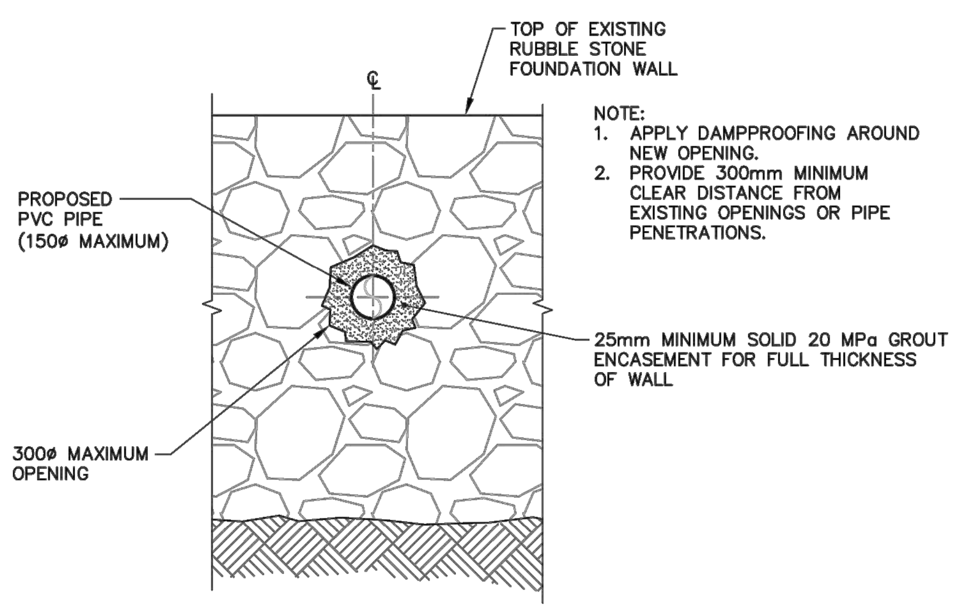
TEES		
NOMINAL PIPE DIA.	BRANCH PIPE DIA.	RESTRAINT 1 LENGTH (m)
150	150	0
250	150	0

REDUCERS		
LARGER PIPE DIA.	SMALLER PIPE DIA.	RESTRAINT ON LARGER SIDE (m)
250	150	16.2

NOTES:
1. CONTRACTOR TO REPORT IN WRITING TO THE ENGINEER ANY CHANGES TO SOIL OR SITE CHARACTERISTIC THAT MAY ALTER THE PIPE RESTRAINT CALCULATION.
2. THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THRUST RESTRAINT REQUIREMENTS WITH THE PIPE AND RESTRAINT MANUFACTURERS.
3. VALVES TO BE RESTRAINED ON BOTH SIDES AS IF THEY ARE DEAD ENDS.



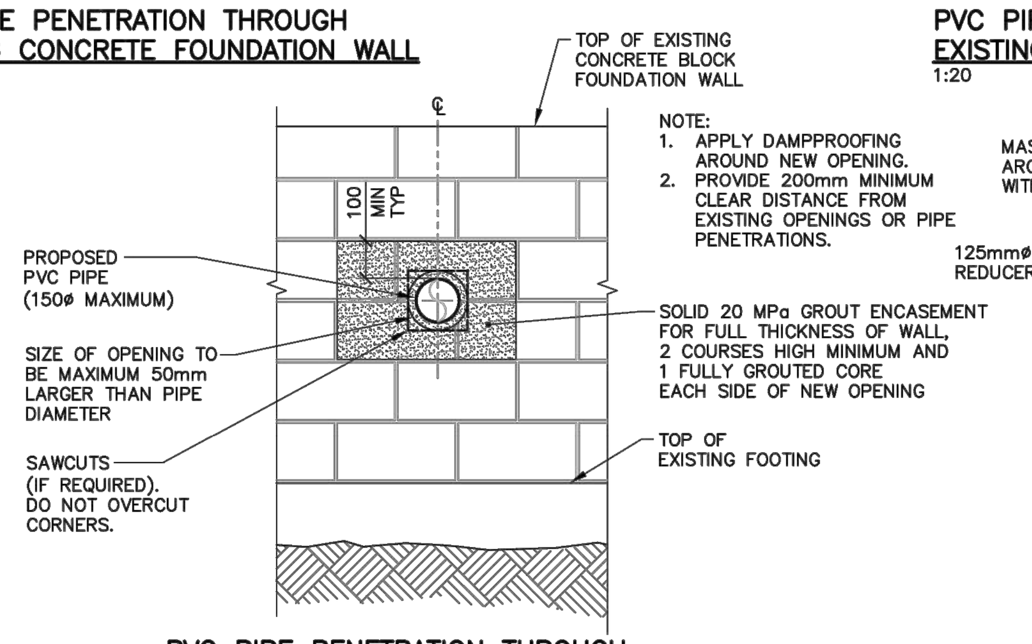
PVC PIPE PENETRATION THROUGH
EXISTING CONCRETE FOUNDATION WALL
1:20



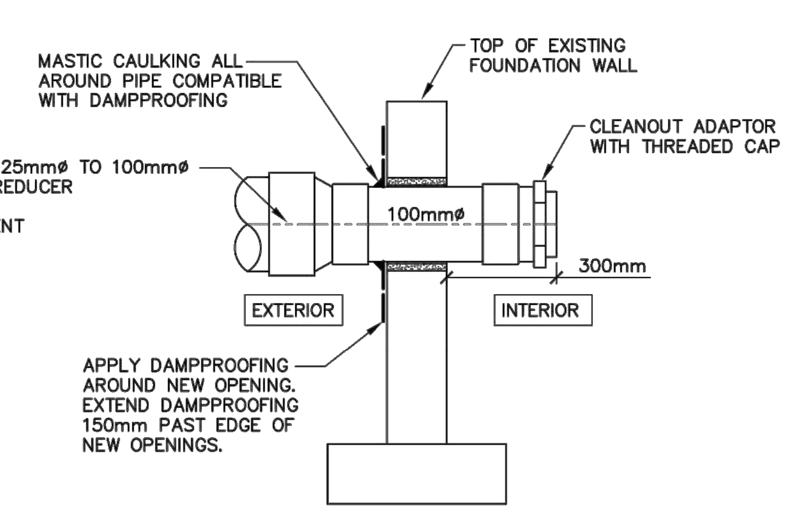
PVC PIPE PENETRATION THROUGH
EXISTING RUBBLE FOUNDATION WALL
1:20

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL CONFORM TO REQUIREMENTS SET OUT IN THE 2012 ONTARIO BUILDING CODE.
2. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT OF ONTARIO.



PVC PIPE PENETRATION THROUGH
EXISTING CONCRETE BLOCK FOUNDATION WALL
1:20



TYPICAL WALL SECTION
1:20

THIS DRAWING TO BE READ IN CONJUNCTION WITH CONTRACT DRAWINGS. ALL DIMENSIONS TO BE CONFIRMED ON SITE.

TATHAM ENGINEERING | KING STREET REJUVENATION TOWN OF MIDLAND | DWG. No. SSK-1
SCALE: AS NOTED | DRAWN: WHG | DATE: AUG/19 | JOB NO. 116024

Drawing Name: 116024 – SSK-1.dwg, Plotted: Oct 04, 2019

GENERAL

1. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH TOWN OF MIDLAND STANDARDS AND OPS STANDARDS. WHERE CONFLICT OCCURS, TOWN STANDARDS TO GOVERN.
2. THE ENGINEER SHALL PROVIDE TEMPORARY BENCHMARK ELEVATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DETAILED LAYOUT OF THE WORK.
3. LEGAL SURVEY BOUNDARIES SHOWN ON DRAWING ARE APPROXIMATE, BASED ON GIS, SURVEYED PROPERTY BARS AND AERIAL IMAGERY. CONTRACTOR SHALL CONFIRM ALL BOUNDARIES AS REQUIRED TO COMPLETE THE WORK.
4. LOCATION OF EXISTING INFRASTRUCTURE BASED ON A TOPOGRAPHICAL SURVEY COMPLETED BY TATHAM ENGINEERING LTD., AS-BUILT DRAWINGS AND/OR GIS INFORMATION PROVIDED BY THE TOWN AND/OR THE UTILITY COMPANIES. DEPTH OF WATERMAIN IS APPROXIMATE, BASED ON FIELD MEASUREMENTS AT EXISTING VALVES AND AS-BUILT DRAWINGS.
5. EXISTING WATER AND SANITARY SERVICE LOCATIONS SHOWN ARE APPROXIMATE ONLY, BASED ON AS-BUILT DRAWINGS AND GIS INFRASTRUCTURE INVENTORY PROVIDED BY THE TOWN. IN SOME LOCATIONS WITHIN THE PROJECT LIMITS, AS-BUILT INFORMATION IS NOT AVAILABLE AND THE LOCATION OF THE SANITARY AND WATER SERVICES ARE UNKNOWN AND NOT SHOWN ON THE DRAWINGS. CONTRACT QUANTITIES ARE BASED ON ONE SERVICE PER BUILDING/UNIT. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING EXACT LOCATION IN THE FIELD (INCLUDING DYE TESTING, TEST PITS AND/OR CCTV INSPECTION AS REQUIRED).
6. LOCATIONS OF EXISTING UTILITIES ARE NOT GUARANTEED. THE CONTRACTOR SHALL OBTAIN LOCATES FROM ALL RELEVANT UTILITY COMPANIES, 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY WORK AND IF NECESSARY, LOCATE UTILITIES BY HAND DIGGING AND/OR HYDROVAC. CONTRACTOR SHALL ASSUME THERE ARE FULL UTILITY SERVICES TO EACH BUILDING (GAS, BELL, ROGERS, HYDRO, SANITARY, WATER) NOT NECESSARILY SHOWN ON THE DRAWINGS. CONTRACTOR SHALL WORK AROUND ALL EXISTING SERVICES AND SUPPORT THEM AS NECESSARY TO COMPLETE THE WORK.
7. ALL PROPERTY BARS TO BE PRESERVED AND REPLACED BY OLS AT CONTRACTOR'S EXPENSE IF DISTURBED DURING CONSTRUCTION.
8. THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THE SUPPLY OF TEMPORARY WATER AND POWER.
9. DEWATERING TO BE CARRIED OUT IN ACCORDANCE WITH OPSS.MUNI 517, OPSS.MUNI 518, OWRA AND O.REG 64/16. MAINTAIN ALL TRENCHES IN A DRY AND STABLE CONDITION. A PERMIT TO TAKE WATER (PTTW) HAS NOT BEEN OBTAINED FOR THIS PROJECT.
10. ALL ENGINE DRIVEN PUMPS TO BE ADEQUATELY SILENCED, SUITABLE FOR OPERATION IN A RESIDENTIAL DISTRICT.
11. GENERAL INSTALLATION AND TESTING OF SEWERS, WATERMAIN AND APPURTENANCES TO BE IN ACCORDANCE WITH OPSS.MUNI 407, 408, 409 (CCTV), OPSS.MUNI 410, OPSS.MUNI 421, AND 441 AND ALL SPECIFICATIONS REFERENCED WITHIN THESE SECTIONS.
12. ALL MAINTENANCE HOLES ARE 1200 mm DIAMETER, UNLESS OTHERWISE SPECIFIED.
13. EXCAVATION AND GRADING TO BE IN ACCORDANCE WITH OPSS.MUNI 206 AND OPSS.MUNI 510.
14. ALL STRUCTURES TO BE INSTALLED WITH FROST STRAPS IN ACCORDANCE WITH OPSD 701.100.
15. PIPE SUPPORT AT ALL STRUCTURES IN ACCORDANCE WITH OPSD 708.020.
16. ALL MAINTENANCE HOLE AND CATCH BASIN FRAME AND GRATES TO BE SET TO BINDER COURSE ASPHALT ELEVATION IN ACCORDANCE WITH OPSD 704.010. FRAME AND GRATES TO BE RAISED TO FINISHED GRADE PRIOR TO THE PLACEMENT OF SURFACE COURSE ASPHALT USING CONCRETE ADJUSTMENT UNITS IN ACCORDANCE WITH OPSD 704.010.
17. TRENCH BACKFILL TO BE SELECT NATIVE MATERIAL OR IMPORTED SELECT SUBGRADE MATERIAL IN ACCORDANCE WITH OPSS.MUNI 1010. BACKFILL TO BE PLACED IN MAXIMUM 200 mm THICK LIFTS (OR AS OTHERWISE DIRECTED BY THE GEOTECHNICAL ENGINEER) AND COMPACTED TO A DRY DENSITY OF AT LEAST 95% OF THE MATERIAL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD).
18. PIPE EMBEDMENT TO BE COMPACTED TO A DRY DENSITY OF AT LEAST 95% OF THE MATERIAL'S SPMDD. BACKFILL AND EMBEDMENT IN ACCORDANCE WITH OPSD 802.010 (FLEXIBLE PIPE), GRANULAR A EMBEDMENT OR OPSD 802.031 (RIGID PIPE) CLASS B, GRANULAR A BEDDING, GRANULAR B COVER (MAX. AGGREGATE SIZE 25 mm). MINIMUM BEDDING DEPTH 150 mm, MINIMUM COVER DEPTH 300 mm ON ALL PIPES. WHERE EXCESSIVELY WET OR POOR SUBGRADE IS ENCOUNTERED AT THE INVERT LEVEL, IT MAY BE NECESSARY TO INCREASE THE BEDDING THICKNESS.
19. REINSTATEMENT OF ALL DISTURBED GRASS BOULEVARDS TO INCLUDE REGRADING, PLACEMENT OF MIN. 150 mm TOPSOIL AND KENTUCKY BLUEGRASS SOD IN ACCORDANCE WITH OPSS 802 AND OPSS.MUNI 803. SOD TO BE STAKED WHERE NECESSARY TO AVOID MOVEMENT. BOULEVARD REINSTATEMENT ALONG KING STREET TO BE AS SPECIFIED BY THE LANDSCAPE PLANS PREPARED BY ENVISION TATHAM INC. AND/OR AS SHOWN ON THE SURFACE FEATURES PLANS.
20. THE CONTRACTOR IS RESPONSIBLE FOR THE PRESERVATION OF ALL EXISTING INFRASTRUCTURE/FACILITIES AS WELL AS NOTIFYING ALL UTILITY COMPANIES PRIOR TO COMMENCING WORK AND CO-ORDINATE CONSTRUCTION ACCORDINGLY.
21. ALL ON-SITE MATERIAL SHALL BE PROPERLY STORED, SECURED, MONITORED AND COVERED AS REQUIRED. SPECIFICALLY, ALL PVC PIPE SHALL BE COVERED WHILE STORED ON-SITE. ALL ACTIVE WORK AND STORAGE AREAS SHALL BE PROPERLY BARRICADED THROUGHOUT CONSTRUCTION TO PREVENT PUBLIC ACCESS.
22. ALL SILTATION & EROSION CONTROL PROTECTION DEVICES ARE TO BE INSTALLED PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONTRACTOR SHALL MAINTAIN CONTROL DEVICES THROUGHOUT CONSTRUCTION AND REMOVE THE CONTROL DEVICES ONCE GROUND COVER IS ESTABLISHED IN ALL DISTURBED AREAS.
23. DURING CONSTRUCTION, TRAFFIC MARKERS & SIGNS ARE TO BE INSTALLED IN ACCORDANCE WITH THE ONTARIO TRAFFIC MANUAL BOOK 7. THE CONTRACTOR WILL BE RESPONSIBLE FOR SUBMITTING A TRAFFIC CONTROL PLAN FOR APPROVAL BY THE ENGINEER PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.
24. ALL CONSTRUCTION MATERIALS SHALL BE REMOVED FROM THE SITE PRIOR TO RESTORATION OF DISTURBED AREAS.

ROADS

1. SUBGRADE AND BOULEVARD MATERIAL SHALL BE COMPACTED TO A DRY DENSITY OF AT LEAST 98% OF THE MATERIAL'S SPMDD. SUBGRADE TO BE PROOF ROLLED PRIOR TO PLACING GRANULAR B. GRANULAR B TO BE PROOF ROLLED PRIOR TO PLACING GRANULAR A.
2. GRANULAR A AND B TO BE COMPACTED TO A DRY DENSITY OF AT LEAST 100% OF THE MATERIAL'S RESPECTIVE SPMDD.
3. ALL GRANULAR AND ASPHALT MATERIAL TO BE PLACED IN ACCORDANCE WITH OPSS 310 AND OPSS.MUNI 314.
4. ASPHALT TO BE COMPACTED TO A MINIMUM OF 92% OF THE MATERIAL'S MAXIMUM RELATIVE DENSITY.
5. ROADWAY AND PARKING STALLS TO BE CONSTRUCTED WITH MIN. 350 mm GRANULAR B – TYPE II, 150 mm GRANULAR A BASE. ROAD TO BE CONSTRUCTED WITH 50 mm HL8 BINDER COURSE ASPHALT AND 40 mm HL3 SURFACE COURSE ASPHALT, UNLESS OTHERWISE NOTED.
6. JOINTS WITH EXISTING ASPHALT TO BE SAW CUT STRAIGHT PRIOR TO PLACING NEW ASPHALT AND TACK COAT SHALL BE APPLIED TO EXISTING ASPHALT. WHERE EXISTING ASPHALT IS GREATER THAN 75 mm DEPTH, A 300 mm WIDE BY 40 mm DEEP LAP JOINT SHALL BE GROUND INTO EXISTING ASPHALT, OTHERWISE A BUTT JOINT SHALL BE USED. SEE DETAIL ON DRAWING DE-3.
7. TACK COAT TO BE APPLIED AT THE DIRECTION OF THE ENGINEER.
8. EXISTING STOP SIGNS AND STREET SIGNS TO BE REMOVED, SALVAGED AND REUSED/RETURNED TO THE TOWN PUBLIC WORKS FACILITY. REFER TO SURFACE FEATURES PLAN FOR NEW SIGN DETAILS.
9. CONCRETE CURB AND GUTTER IN ACCORDANCE WITH OPSD 600.040, OPSD 600.100 AND OPSS 353. CURB DEPRESSIONS AT SIDEWALK CROSSINGS IN ACCORDANCE WITH OPSD 310.030, 310.031 AND 310.033. DEPRESSIONS AT DRIVEWAYS IN ACCORDANCE WITH OPSD 351.010, WIDTH TO MATCH PRE-CONSTRUCTION DRIVEWAY WIDTHS.
10. CONCRETE SIDEWALK IN ACCORDANCE WITH OPSD 310.010, 310.020, 310.030, 310.031, 310.033 AND OPSS 351, AS APPLICABLE. SUBBASE TO CONSIST OF 150 mm DEPTH GRANULAR A COMPACTED TO 100% OF THE MATERIAL'S SPMDD.
11. TACTILE WALKING SURFACE INDICATORS IN ACCORDANCE WITH OPSD 310.030, OPSD 310.031, OPSD 310.033 AND OPSD 310.039. RADIUS PLATES TO USED TO MATCH CURB RADII.
12. 150 mm DIAMETER PIPE SUBDRAINS SHALL BE PROVIDED BEHIND/BELOW GUTTER ON BOTH SIDES OF THE ROAD IN ACCORDANCE WITH OPSS 405 AND OPSD 216.021.
13. SUBDRAINS TO BE PERFORATED, COMPLETE WITH FILTER SOCK, OTHER THAN THE 2.0 m SECTION IMMEDIATELY UPSTREAM OF ALL STRUCTURES WHICH SHALL BE NON-PERFORATED. CONNECTION TO STRUCTURES IN ACCORDANCE WITH OPSD 809.010.
14. ASPHALT DRIVEWAYS AND ASPHALT BOULEVARDS TO BE RECONSTRUCTED WITH MIN. 250 mm GRANULAR A, 75 mm HL3 SURFACE COURSE ASPHALT.

STORM SEWER

1. MAINTENANCE HOLES (FORTERRA) AND CATCH BASIN MAINTENANCE HOLES (FORTERRA) IN ACCORDANCE WITH OPSD 701.010 AND OPSD 701.011 AS APPROPRIATE.
2. MAINTENANCE HOLES TO BE BENCHED IN ACCORDANCE WITH OPSD 701.021.
3. MAINTENANCE HOLE AND CATCH BASIN MAINTENANCE HOLE STEPS IN ACCORDANCE WITH OPSD 405.010.
4. MAINTENANCE HOLE FRAMES AND GRATES IN ACCORDANCE WITH OPSD 401.010 TYPE A CLOSED COVER.
5. CATCH BASINS IN ACCORDANCE WITH OPSD 705.010 AND OPSD 705.020 WITH 600 mm SUMP.
6. CATCH BASIN AND CATCH BASIN MAINTENANCE HOLE FRAMES AND GRATES IN ACCORDANCE WITH OPSD 400.020 AND OPSD 400.030. FRAME AND GRATES TO BE INSTALLED IN THE CURB LINE IN ACCORDANCE WITH OPSD 610.010.
7. CATCH BASIN LEADS – 250ø FOR SINGLE, 300ø FOR DOUBLE (UNLESS OTHERWISE NOTED) TO OPSD 708.010 OR OPSD 708.030, AS APPLICABLE.
7. SERVICE CONNECTIONS IN ACCORDANCE WITH OPSD 1006.020, SIZE TO MATCH EXISTING (125 mm MINIMUM DIAMETER) WITH REDUCER INSTALLED AT PROPERTY LINE AS REQUIRED, GRANULAR A EMBEDMENT (MIN. 150 mm BEDDING AND 300 mm COVER). SEE DETAIL ON DRAWING DE-3. RADIUS BENDS TO BE USED ON ALL SEWER CONNECTIONS WHERE THE ANGLE OF CONNECTION BETWEEN THE SERVICE AND SEWER EXCEEDS 90°.

SANITARY SEWER

1. MAINTENANCE HOLES (FORTERRA) IN ACCORDANCE WITH OPSD 701.010 AND OPSD 701.011, AS APPROPRIATE.
2. MAINTENANCE HOLES TO BE BENCHED IN ACCORDANCE WITH OPSD 701.021 ALL CONNECTIONS TO MAINTENANCE HOLES TO INCLUDE KOR-N-SEAL RUBBER BOOT PIPE CONNECTION.
3. MAINTENANCE HOLE STEPS IN ACCORDANCE WITH OPSD 405.010.
4. SAFETY PLATFORMS TO BE INSTALLED IN ACCORDANCE WITH OPSD 404.020.
5. MAINTENANCE HOLE FRAME AND COVER IN ACCORDANCE WITH OPSD 401.010 TYPE A CLOSED COVER.
6. CONTRACTOR SHALL REPLACE ALL EXISTING SANITARY SERVICES WITHIN THE PROJECT LIMITS TO THE PROPERTY LINE. ALIGNMENT OF NEW SERVICES SHALL BE AT 90° TO THE MAINLINE SEWER, UNLESS OTHERWISE APPROVED BY THE ENGINEER TO AVOID CONFLICT WITH EXISTING FEATURES. WHERE MULTIPLE BUILDINGS/UNITS ARE CONNECTED THROUGH A SINGLE SERVICE, INDIVIDUAL SERVICES ARE TO BE PROVIDED AND CAPPED INSIDE THE FOUNDATION WALL FOR FUTURE CONNECTION.
7. SERVICE CONNECTIONS IN ACCORDANCE WITH OPSD 1006.020, SIZE TO MATCH EXISTING (125 mm MINIMUM DIAMETER) WITH REDUCER INSTALLED AT PROPERTY LINE AS REQUIRED, GRANULAR A EMBEDMENT (MIN. 150 mm BEDDING AND 300 mm COVER). RADIUS BENDS TO BE USED ON ALL SEWER CONNECTIONS WHERE THE ANGLE OF CONNECTION BETWEEN THE SERVICE AND SEWER EXCEEDS 90°. CLEANOUT TO BE BURIED ACCORDING TO DETAIL ON DE-3.
8. NEW SERVICE CONNECTIONS TO BE CONNECTED TO EXISTING SERVICE CONNECTION AT PROPERTY LINE/BUILDING FACE COMPLETE WITH SLEEVES, REDUCERS ETC. AS REQUIRED OR AS DIRECTED BY THE ENGINEER. SERVICE TO BE CONNECTED WITH APPROPRIATE FITTINGS TO AWWA/ANSI SPECIFICATION.

WATERMAIN

1. ALL WORK DONE ON EXISTING WATERMAIN TO BE COORDINATED WITH TOWN STAFF.
2. THRUST PROTECTION TO BE PROVIDED BY THE USE OF RESTRAINING GLANDS WHERE THRUST PRESSURES OCCUR. WATER VALVES SHALL BE RESTRAINED ON BOTH SIDES TO THE SAME STANDARD AS A DEAD END. PIPE RESTRAINTS SHALL BE PER DETAIL ON DRAWING DE-1, AND IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. WHERE RESTRAINING GLANDS CANNOT BE USED (OR AS OTHERWISE SPECIFIED), THRUST BLOCKS SHALL BE USED IN ACCORDANCE WITH OPSD 1103.010 AND OPSD 1103.020.
3. SERVICE CONNECTIONS TO OPSD 1104.010 DIRECT TAP, 200 mm GRANULAR A EMBEDMENT. CONNECT TO EXISTING SERVICE AT PROPERTY LINE C/W CURB STOP, VALVE, BOX AND APPROPRIATE FITTING TO AWWA/ANSI SPECIFICATIONS. SEE DETAIL ON DRAWING DE-3.
4. FIRE HYDRANTS TO OPSD 1105.010. HYDRANTS ARE TO BE MIN. 1.98 m LONG. EXTENSIONS IF REQUIRED ARE TO BE INSTALLED BELOW THE 1.98 m SECTION. DRAIN PLUGS TO BE INSTALLED WHERE HIGH WATER TABLE IS ENCOUNTERED.
5. MINIMUM COVER ON WATERMAIN AND SERVICES TO BE 1.7 m. INSULATION TO BE INSTALLED OVER WATERMAIN AND SERVICES WITH LESS THAN 1.7 m COVER AS PER DETAIL ON DRAWING DE-3 AND AS DIRECTED BY THE ENGINEER TO OPSD 1109.030.
6. METALLIC WARNING TAPE SHALL BE PLACED BETWEEN 0.3 m AND 0.5 m DIRECTLY ABOVE WATERMAIN.
7. SEPARATION BETWEEN WATERMAINS AND SEWERS TO BE A MINIMUM OF 0.5 m VERTICAL AND A MINIMUM OF 2.5 m HORIZONTAL WHERE SEWER CONFLICT EXISTS, WATERMAIN AND SERVICES SHALL BE INSTALLED WITH 0.5 m SEPARATION.
8. FOLLOWING TESTING, THE CONTRACTOR SHALL CONTACT THE TOWN, WHO WILL THEN OPERATE EACH WATER SERVICE TO VERIFY FULL FLOW AND PRESSURE AT THE CURB STOP TO THE SATISFACTION OF THE ENGINEER AND THE TOWN.
9. GENERAL INSTALLATION AND TESTING OF WATERMAIN AND APPURTENANCES TO BE IN ACCORDANCE WITH OPSS 421.MUNI, OPSS 441 AND TOWN WATERMAIN COMMISSIONING PROCEDURE.
   - –ALL WATERMAINS ARE TO BE SWABBED USING A MINIMUM OF 2 CLEAN NEW MARKED SWABS 2" LARGER THAN THE PIPE DIAMETER AND FLUSHED BY THE CONTRACTOR.
   - –ALL WATERMAINS ARE TO BE PRESSURE TESTED BY THE CONTRACTOR.
   - –WATERMAIN TO BE DISINFECTED IN ACCORDANCE WITH OPSS 441 FOLLOWING THE PRESSURE TEST.
   - –WATERMAINS SHALL NOT TO BE CONNECTED TO THE EXISTING WATERMAIN UNTIL BACTERIOLOGICAL TESTING HAS BEEN SUCCESSFULLY COMPLETED. THE CONTRACTOR SHALL COLLECT THE SAMPLES AND ADVISE THE TOWN OF THE RESULTS.
   - –ENGINEER AND THE TOWN'S REPRESENTATIVE TO BE PRESENT DURING ALL TESTING.
   - –THE TOWN AND ENGINEER TO RECEIVE A MINIMUM 72 HOURS NOTICE PRIOR TO TESTING OF THE WATERMAINS.
10. CATHODIC PROTECTION OF ALL WATERMAIN FITTINGS AND APPURTENANCES TO BE PROVIDED AS PER TOWN STANDARD (SEE CHART ON DRAWING DE-3). THE ANODE SHALL BE CONNECTED USING THE 'CADWELD' METHOD INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. ALL 'CADWELDS' ARE TO BE COVERED WITH ROYSTON HANDY CAP PATCH. THE ANODE SHALL BE CONNECTED TO CURB STOPS IN CONJUNCTION WITH AN ELECTRICAL BRASS GROUNDING CLAMP. ALL FITTING BOLTS ARE TO BE FITTED WITH 19 mm SACRIFICIAL ZINC CAPS.

MATERIALS

1. ALL MATERIAL TO COMPLY WITH CSA, OPSS AND TOWN STANDARDS.
2. SANITARY SEWER – PVC SDR 35 (FOR SIZES OF 200 TO 375 mm) (ROYAL PIPE) – MINIMUM 65-D OR AS OTHERWISE REQUIRED TO MEET OPS SPECIFICATIONS FOR ACTUAL COVER AND BEDDING CONDITIONS (REFER TO OPSD 807.010 AND OPSD 807.030).
3. SANITARY SERVICE CONNECTIONS – PVC SDR 28 (GREEN) (ROYAL PIPE FOR SERVICES).
4. STORM SEWER – PVC SDR 35 (ROYAL PIPE), CONCRETE CLASS (FORTERRA) – MINIMUM 65-D OR AS OTHERWISE REQUIRED TO MEET OPS SPECIFICATIONS FOR ACTUAL COVER AND BEDDING CONDITIONS (REFER TO OPSD 807.010 AND OPSD 807.030), OR SMOOTH WALL HDPE (BOSS 2000 WITH BELL AND SPIGOT AND MIN. PIPE STIFFNESS = 320 kPa OR EQUAL).
5. SUBDRAIN (FACTORY PERFORATED) – BIG 'O' WITH GEOTEXTILE FILTER SOCK OR APPROVED EQUAL (FOR CURBS).
6. SOIL CELL CONNECTIONS – SUBDRAIN FOR SOIL CELLS TO BE 150 mmø FACTORY PERFORATED BIG 'O' HDPE WITHOUT SOCK OR APPROVED EQUAL. STORM SEWER CONNECTIONS TO BE 150 mmø PVC SDR 35 (ROYAL PIPE).
7. AGGREGATES IN ACCORDANCE WITH OPSS.MUNI 1010.
8. TACTILE WALKING SURFACE INDICATORS – CAST IRON, UNPAINTED.
9. FILTER FABRIC – TERRAFIX 270R OR APPROVED EQUAL.
10. WATERMAIN – PVC DR18 (ROYAL PIPE)
11. TRACER WIRE – #12 AWG/TWU SOLID COPPER, STAINLESS STEEL CLAD WITH DRYCONN WATERPROOF CONNECTOR.
12. WATERMAIN SERVICES – 25 mm AND 50 mm DIAMETER TYPE "K", PE – REHAU MUNICIPEX. BAYSHORE DRIVE TO BAY STREET WATER SERVICES – COPPER. BAY STREET TO YONGE STREET – REHAU MUNICIPEX.
13. MAIN STOPS – CAMBRIDGE BRASS 301NL-A4H4 (25 mm) AND 301NL-A7H7 (50 mm).
14. CURB STOPS – CAMBRIDGE BRASS 202NL-H4H4 (25 mm) OR 202NL H7H7 (50 mm).
15. SERVICE BOXES – EPOXY COATED CAST IRON C/W FROST RING– MUELLER (A726/A728 OR A800).
16. SERVICE BOX RODS – STAINLESS STEEL MUELLER.
17. HYDRANTS – CANADA VALVE CENTURY, OPEN LEFT (o/l) TO AWWA C502.
18. VALVES – RESILIENT SEATED GATE VALVE OPEN LEFT MUELLER A2361-23.
19. VALVE BOX – BIBBY STE CROIX (VB875 #7339, VB725 #7374, VB730 #7375).
20. MECHANICAL JOINT DUCTILE FITTINGS – AWWA/ANSI C153/A21.53.
21. RESTRAINER GLANDS – SIGMA ONE-LOK.
22. LIVE TAP SADDLES – SMITH-BLAIR (313, 373, 374), FORD (F202, FS313), CAMBRIDGE BRASS (TECK SADDLE SERIES 403DB), ROBAR (2408, 2616DB, 2626DB) OR CASCADE (CSC2).
23. TAPPING SLEEVE – MUELLER (H-621).
24. COUPLINGS – NO LEAD VARIETY MUELLER (H-15403), FORD (C44-77), CAMBRIDGE BRASS (118-H3H3, 118-H7H7) OR MCDONALD BRASS (4758T).
25. LIVE TAP VALVE – RESILIENT SEATED VALVES OPEN LEFT MUELLER H-687.
26. ANODES – BRENTECH ZINC ANODE.
27. SACRIFICIAL CAPS – NUTS AND CAPS, PROTECTO CAPS 175P190.

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CHECKED BY:	AT	DATE: 03/15/22

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BENCHMARKS

TBM 1 – 181.266: NAIL & WASHER IN EAST FACE OF HYDRO POLE LOCATED ON WEST SIDE OF ROAD BETWEEN #208 AND #212 KING STREET.
TBM 4 – 193.579: TOP BOLT OF LIGHT STANDARD AT SOUTHWEST CORNER OF ELIZABETH STREET AND KING STREET
TBM 5 – 202.589: NAIL & WASHER IN EAST FACE OF HYDRO POLE LOCATED ON NORTHWEST CORNER OF KING STREET AND YONGE STREET.
TBM 8 – 187.973: TOP BOLT OF LIGHT STANDARD AT SOUTHEAST CORNER OF HUGEL AVENUE AND KING STREET.

NOTES

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TOPOGRAPHIC SURVEY INFORMATION COMPILED BY TATHAM ENGINEERING, APRIL 26, 2016.

No.	REVISION DESCRIPTION	DATE
1.	ISSUED FOR TENDER	NOV/18
2.	REVISED BY ADDENDUM #1	DEC/18
3.	ISSUED FOR CONSTRUCTION	MAR/20
4.	REVISED TO INCLUDE UPDATED STORM INFORMATION	APR/20
5.	AS-BUILT INFORMATION	DEC/21

ENGINEER STAMP

ORIGINAL STAMPED BY A. E. BROWNRIDGE 03/10/20

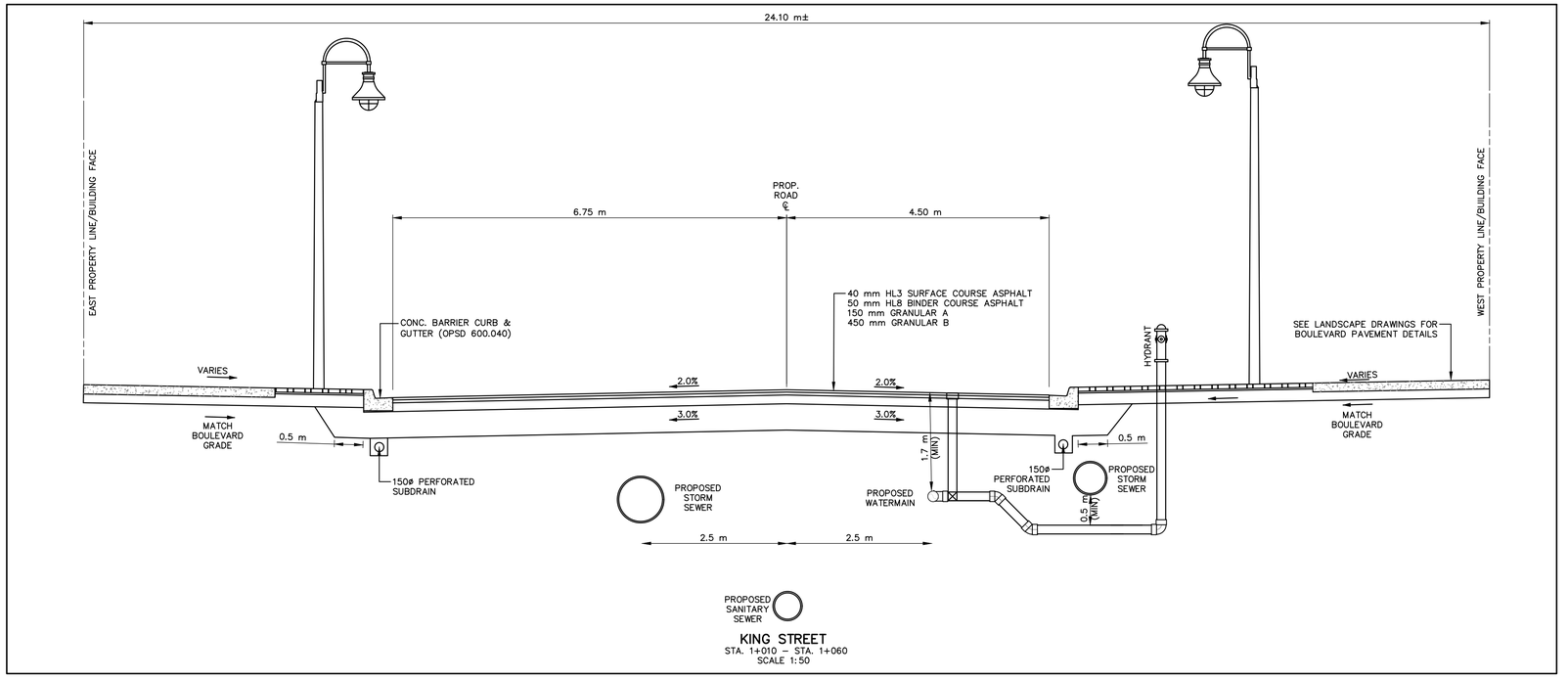
KING STREET REJUVENATION
TOWN OF MIDLAND

TATHAM ENGINEERING

DETAILS AND NOTES

DESIGN: APR	FILE: 116024	DWG:
DRAWN: APR	DATE: APR/16	DE-1
CHECK: AEB	SCALE: AS SHOWN	

Drawing Name: 116024-DE01.dwg, Plotted: Apr 03, 2022



KING STREET
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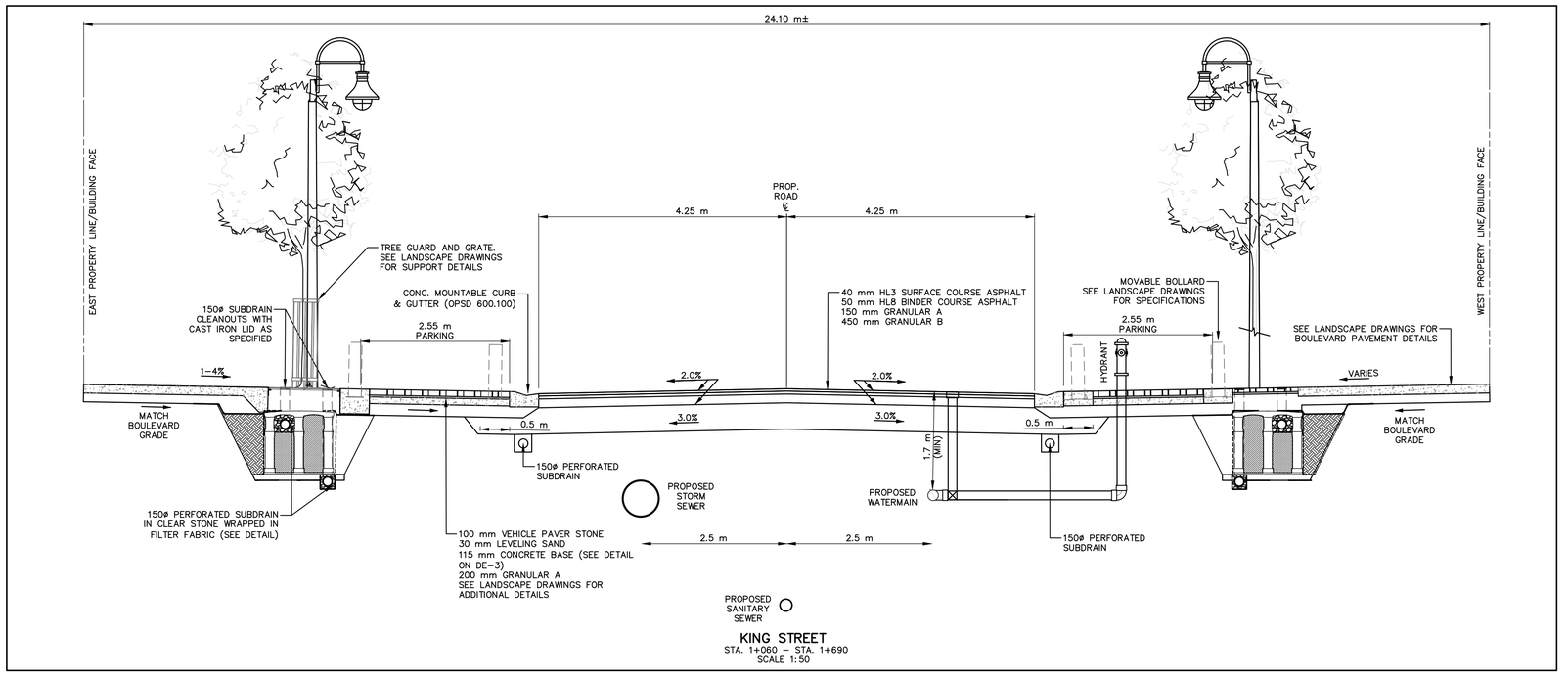

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CHECKED BY: AT	DATE: 12/07/20
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5.	AS–BUILT INFORMATION	DEC/21

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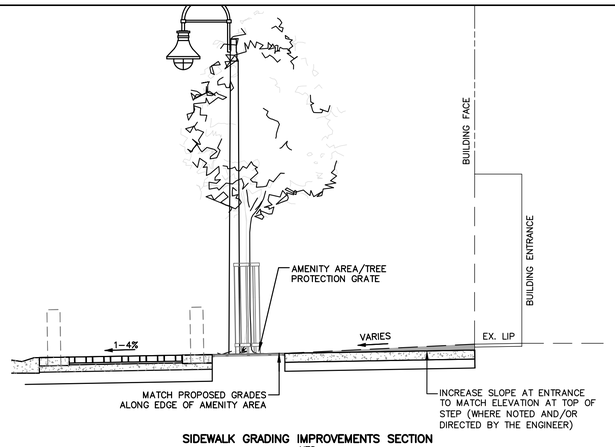
KING STREET REJUVENATION
TOWN OF MIDLAND

TYPICAL ROAD SECTIONS

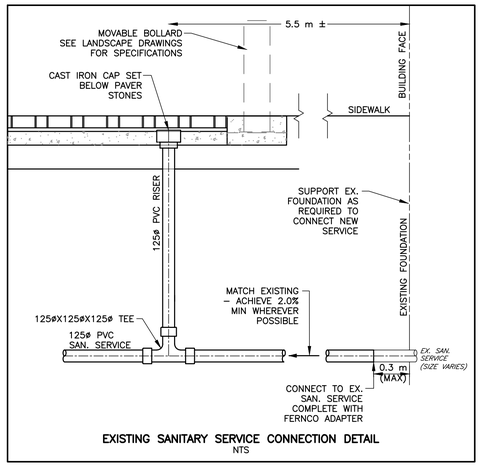
TATHAM ENGINEERING

DESIGN: APR	FILE: 116024	DWG:	
DRAWN: APR	DATE: APR/16		**DE-2**
CHECK: AEB	SCALE: AS SHOWN		

Drawing Name: 116024–DE01.dwg, Plotted: Apr 03, 2022



SIDEWALK GRADING IMPROVEMENTS SECTION
NTS



EXISTING SANITARY SERVICE CONNECTION DETAIL
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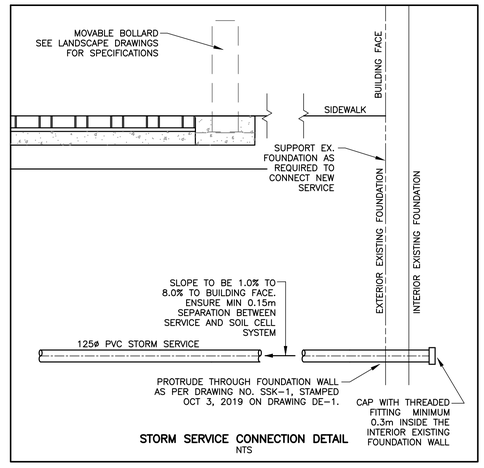

STORM SERVICE CONNECTION DETAIL
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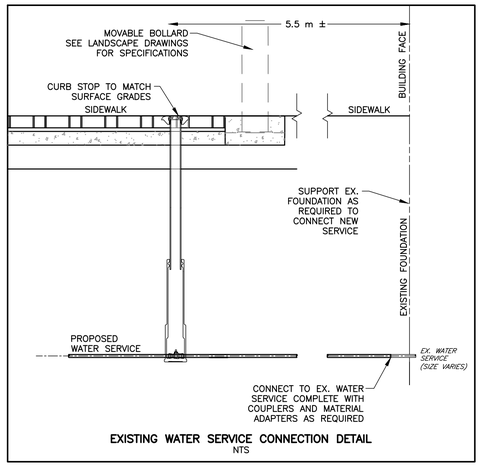

EXISTING WATER SERVICE CONNECTION DETAIL
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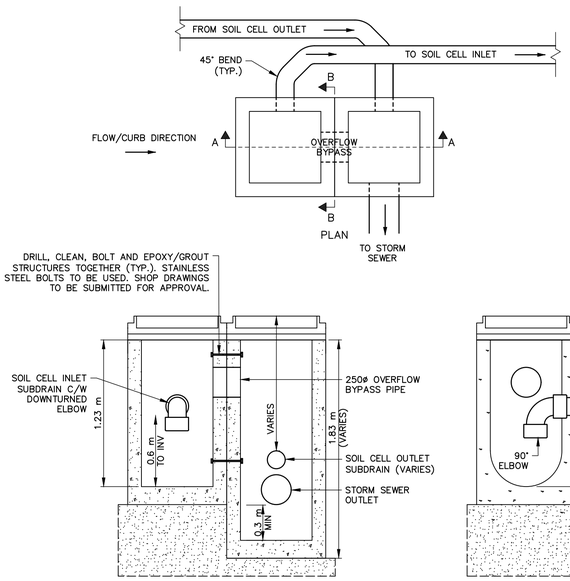

SOIL CELL INLET/OUTLET CATCH BASIN
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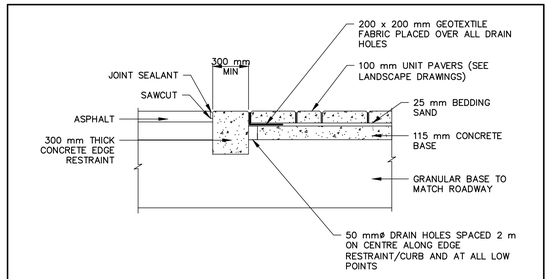
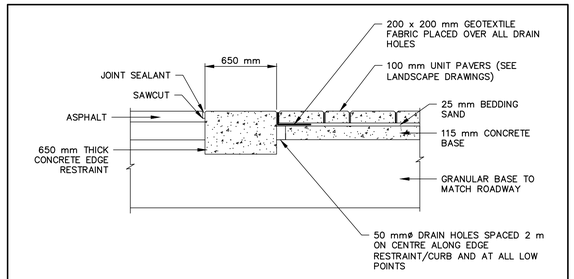


UNIT PAVERS AT INTERSECTION CROSSWALKS
NTS



UNIT PAVERS AT MID–BLOCK CROSSWALKS
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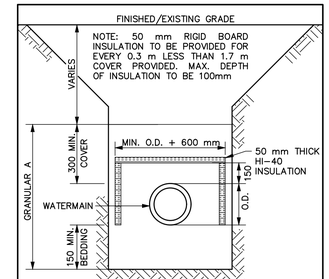
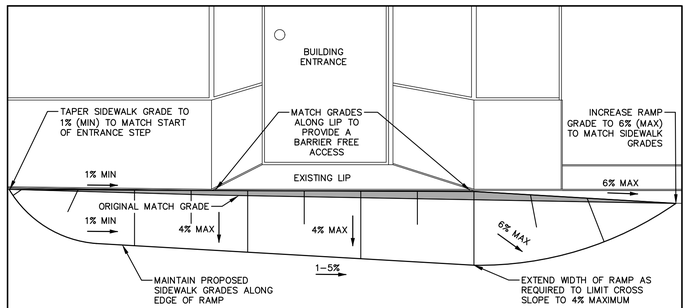
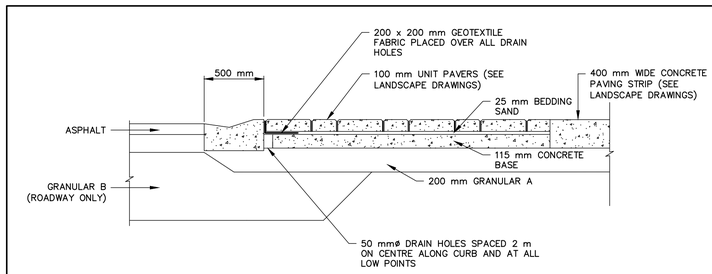


WATERMAIN INSULATION DETAIL
NTS



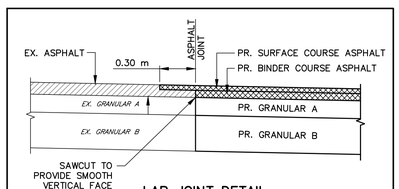
SIDEWALK GRADING IMPROVEMENTS DETAIL
NTS



UNIT PAVERS IN BOULEVARD PARKING AREAS
NTS

ANODE SIZING CHART FOR ZINC ANODES

Wtm/Fitting	Anode Size (kg)	Spacing
100 mm	2.3	Per length over 3.0 m or fitting of similar size
150 mm	2.3	Per length over 3.0 m or fitting of similar size
200 mm	5.5	Per length over 3.0 m or fitting of similar size
250 mm	5.5	Per length over 3.0 m or fitting of similar size
300 mm	11.0	Per length over 3.0 m or fitting of similar size
Copper Service	2.3	At each curbstop
Hydrant	5.5	At hydrant base
Valve	5.5	At each valve
Service Saddle	2.3	At each service saddle
Tees, elbows etc.	2.3	On each fitting for 100 mm – 150 mm pipe



LAP JOINT DETAIL
NTS

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COMPILED BY: KP	DATE: 11/09/20
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DRAWN BY: AJO	DATE: 12/09/21
CHECKED BY: AT	DATE: 03/15/22

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2.	REVISED BY ADDENDUM #1	DEC/18
3.	ISSUED FOR CONSTRUCTION	MAR/20
4.	REVISED TO INCLUDE UPDATED STORM INFORMATION	APR/20
5.	AS–BUILT INFORMATION	DEC/21

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A. E. BROWNRIDGE
03/10/20

KING STREET REJUVENATION
TOWN OF MIDLAND

GRADING AND SERVICING DETAILS

TATHAM ENGINEERING

DESIGN: APR	FILE: 116024	DWG:	DE-3
DRAWN: APR	DATE: APR/16		
CHECK: AEB	SCALE: AS SHOWN		

Drawing Name: 116024–DE01.dwg, Plotted: Apr 03, 2022

ELECTRIC HOT WATER HEATER SCHEDULE

UNIT NO.	MANUFACTURER	MODEL NO.	LOCATION	SERVICE	STOR. CAP. (L)	HTG ELEC (KW)	V/PH/HZ	HEIGHT (MM)	DIAMETER (MM).	WEIGHT (KG)	ACCESSORIES
HWT-1	SPACESAVER	SS004SE15	GROUND FLOOR	DOMESTIC HOT WATER	15	1.44	120/1/60	490	260	30	–
HWT-2	SPACESAVER	SS004SE15	GROUND FLOOR	DOMESTIC HOT WATER	15	1.44	120/1/60	490	260	30	–
HWT-3	SPACESAVER	SS630SSEBN-30	LIV/DIN 14	DOMESTIC HOT WATER	108	3	240/1/60	760	560	200	–
HWT-4	SPACESAVER	SS630SSEBN-30	LIV/DIN 14	DOMESTIC HOT WATER	108	3	240/1/60	760	560	200	–
HWT-5	SPACESAVER	SS630SSEBN-30	LIV/DIN 14	DOMESTIC HOT WATER	108	3	240/1/60	760	560	200	–

EXPANSION TANK SCHEDULE

SYMBOL	MFGR.	MODEL	SYSTEM	TEMP. (MAX.) (°C)	MAX. PRESSURE (GAUGE) (kPa)	HEIGHT (mm)	DIA. (mm)	TANK VOLUME (L)	MAX. ACCEPTABLE FACTOR	WEIGHT (Kg)	REMARKS
ET-1	AMTROL	ST-5C-DD	DHW	93	1034	356	203	8	0.45	20	NOTE 1
ET-2	AMTROL	ST-5C-DD	DHW	93	1034	356	203	8	0.45	20	NOTE 1
ET-3	AMTROL	ST-5C-DD	DHW	93	1034	356	203	8	0.45	20	NOTE 1
ET-4	AMTROL	ST-5C-DD	DHW	93	1034	356	203	8	0.45	20	NOTE 1
ET-5	AMTROL	ST-5C-DD	DHW	93	1034	356	203	8	0.45	20	NOTE 1
ET-6	AMTROL	ST-5C-DD	DHW	93	1034	356	203	8	0.45	20	NOTE 1

NOTES: 1. SUITABLE FOR DOMESTIC WATER APPLICATION

PLUMBING FIXTURE SCHEDULE

TYPE	FIXTURE	D.H.W.	D.C.W.	VENT	SANITARY	NOTES
T-1	TOILET	–	18ø	38ø	75ø	FLOOR MOUNTED, TANK FLUSH
L-1	LAVATORY	38ø	38ø	32ø	32ø	COUNTER MOUNTED
S-1	SINK	38ø	38ø	38ø	38ø	COUNTER MOUNTED

SPLIT HEAT PUMP UNIT SCHEDULE–INDOOR UNIT

UNIT NO.	SERVICE	LOCATION	MAKE & MODEL	CLG. CAPACITY (BTUH)	HTG. CAPACITY (BTUH)	FAN CAPACITES	ELECTRIC DATA UNIT		APPROX. WEIGHT (LBS)	REMARKS
						SUPPLY AIR (CFM)	MCA	V-PH-HZ		
SAC-1	GROUND FLOOR	GROUND FLOOR	MITSUBISHI MSZ-FS12NA	12000	11000	424	1	230/1/60	30	CONNECT TO OUTDOOR UNIT 'SCU-1', C/W CONDENSATE PUMP
SAC-2	GROUND FLOOR	GROUND FLOOR	MITSUBISHI MSZ-FS12NA	12000	11000	424	1	230/1/60	30	CONNECT TO OUTDOOR UNIT 'SCU-2', C/W CONDENSATE PUMP
SAC-3	BR 7	BR 7	MITSUBISHI MSZ-FS12NA	12000	11000	424	1	230/1/60	30	CONNECT TO OUTDOOR UNIT 'SCU-3', C/W CONDENSATE PUMP
SAC-4	LIV/DIN 8	LIV/DIN 8	MITSUBISHI MSZ-FS12NA	12000	11000	424	1	230/1/60	30	CONNECT TO OUTDOOR UNIT 'SCU-3', C/W CONDENSATE PUMP
SAC-5	LIV/DIN 13	LIV/DIN 13	MITSUBISHI MSZ-FS12NA	12000	11000	424	1	230/1/60	30	CONNECT TO OUTDOOR UNIT 'SCU-4', C/W CONDENSATE PUMP
SAC-6	LIV/DIN 14	LIV/DIN 14	MITSUBISHI MSZ-FS12NA	12000	11000	424	1	230/1/60	30	CONNECT TO OUTDOOR UNIT 'SCU-5', C/W CONDENSATE PUMP

SPLIT HEAT PUMP UNIT SCHEDULE – OUTDOOR UNIT

UNIT NO.	SERVICE	LOCATION	MAKE & MODEL	CLG. CAPACITY (BTUH)	HTG. CAPACITY (MBH)	ELECTRIC DATA		OPERATION RANGE		APPROX. WEIGHT (LBS)	REMARKS
						MCA (A)	V-PH-HZ	COOLING (°F)	HEATING (°F)		
SCU-1	GROUND FLOOR	OUTDOOR WALL	MITSUBISHI MUZ-FS12NA	12000	11000	10	230/1/60	95	-13	100	NOTE:1,2
SCU-2	GROUND FLOOR	OUTDOOR WALL	MITSUBISHI MUZ-FS12NA	12000	11000	10	230/1/60	95	-13	100	NOTE:1,2
SCU-3	SECOND FLOOR	OUTDOOR WALL	MITSUBISHI MXZ-3C30NAHZ4	28400	22500	31.5	230/1/60	95	-13	200	NOTE:1,2
SCU-4	SECOND FLOOR	OUTDOOR WALL	MITSUBISHI MUZ-FS12NA	12000	11000	10	230/1/60	95	-13	100	NOTE:1,2
SCU-5	SECOND FLOOR	OUTDOOR WALL	MITSUBISHI MUZ-FS12NA	12000	11000	10	230/1/60	95	-13	100	NOTE:1,2

NOTE: 1. CONNECT TO INDOOR UNIT C/W ALL PIPING, VALVES, FITTINGS.
2. C/W WNDSCREENS FOR OPERATION BELOW 23°F.

PUMP SCHEDULE

SYMBOL	SERVICE	LOCATION	MANUFACTURER	MODEL NO.	FLUID	FLOW RATE (GPH)	HEAD (FT)	MOTOR (RPM)	MOTOR (W)	MOTOR (V/PH/Hz)	REMARKS
P-1	CONDENSATE	GROUND FLOOR	SAUERMANN	DELTA PACK	CONDENSATE	5	33	–	14W	230/1/60	FOR SPLIT AC INDOOR UNIT
P-2	CONDENSATE	GROUND FLOOR	SAUERMANN	DELTA PACK	CONDENSATE	5	33	–	14W	230/1/60	FOR SPLIT AC INDOOR UNIT
P-3	CONDENSATE	BR 7	SAUERMANN	DELTA PACK	CONDENSATE	5	33	–	14W	230/1/60	FOR SPLIT AC INDOOR UNIT
P-4	CONDENSATE	LIV/DIN 8	SAUERMANN	DELTA PACK	CONDENSATE	5	33	–	14W	230/1/60	FOR SPLIT AC INDOOR UNIT
P-5	CONDENSATE	LIV/DIN 13	SAUERMANN	DELTA PACK	CONDENSATE	5	33	–	14W	230/1/60	FOR SPLIT AC INDOOR UNIT
P-6	CONDENSATE	LIV/DIN 14	SAUERMANN	DELTA PACK	CONDENSATE	5	33	–	14W	230/1/60	FOR SPLIT AC INDOOR UNIT

ENERGY/HEAT RECOVERY UNIT SCHEDULE

UNIT NO.	LOCATION	MAKE & MODEL SIZE	FAN CAPACITIES			POWER		WEIGHT (KG)	CONTROL	REMARKS
			SUPPLY AIR (L/S)	EXHAUST AIR (L/S)	E.S.P. (PA)	W	V-PH-HZ			
HRV-1	LAUNDRY	ALDES E130-HRX-M-N	68	68	99.5	145	120/1/60	16	INTERLOCK WITH EDH-1	–
HRV-2	LAUNDRY	ALDES E130-HRX-M-N	68	68	99.5	145	120/1/60	16	INTERLOCK WITH EDH-2	–
HRV-3	LAUNDRY	ALDES E130-HRX-M-N	68	68	99.5	145	120/1/60	16	INTERLOCK WITH EDH-3	–
HRV-4	LAUNDRY	ALDES E130-HRX-M-N	68	68	99.5	145	120/1/60	16	INTERLOCK WITH EDH-4	–
HRV-5	LAUNDRY	ALDES E130-HRX-M-N	68	68	99.5	145	120/1/60	16	INTERLOCK WITH EDH-5	–

ELECTRIC DUCT HEATER SCHEDULE

UNIT	L/S	ELECTRICAL DATA		REMARK
		POWER(KW)	V-PH-HZ	
EDH-1	68	1.5	120/1/60	C/W SENSORS AND CONTROLLERS. INTERLOCK WITH HRV-1.
EDH-2	68	1.5	120/1/60	C/W SENSORS AND CONTROLLERS. INTERLOCK WITH HRV-2.
EDH-3	68	1.5	120/1/60	C/W SENSORS AND CONTROLLERS. INTERLOCK WITH HRV-3.
EDH-4	68	1.5	120/1/60	C/W SENSORS AND CONTROLLERS. INTERLOCK WITH HRV-4.
EDH-5	68	1.5	120/1/60	C/W SENSORS AND CONTROLLERS. INTERLOCK WITH HRV-5.

GRILLE & DIFFUSER SCHEDULE

REF. LETTER	TYPE	MAKE/MODEL	DAMPER	FINISH	REMARKS
A	SUPPLY AIR SQUARE DIFFUSER	E.H. PRICE MODEL SCD	N	–	300X300
B	AIR GRILLE	E.H. PRICE MODEL 630	N	B-12	ALUMINUM LOUVERED FACE GRILLE

1. COLOUR TO ARCHITECT'S CHOICE.

MECHANICAL DRAWING LIST

DWG. NO.	DRAWING TITLE
M-01	LEGEND, DRAWNG LIST, KEY PLAN & SCHEDULES – MECHANICAL
M-02	DETAILS & SPECIFICATIONS – MECHANICAL
M-11	PROPOSED HVAC LAYOUTS – GROUND & SECOND FLOOR
M-12	PROPOSED PLUMBING & DRAINAGE LAYOUTS – BASEMENT
M-13	PROPOSED PLUMBING & DRAINAGE LAYOUTS – GROUND FLOOR
M-14	PROPOSED PLUMBING & DRAINAGE LAYOUTS – SECOND FLOOR
M-21	MECHANICAL SPECIFICATIONS

HVAC LEGEND

SYMBOL	DESCRIPTION
	DUCTWORK (SINGLE LINE)
T H	THERMOSTAT
$	MANUAL SWITCH
BD BD	BALANCING DAMPER
FD FD	FIRE DAMPER
MD MD	MOTORIZED DAMPER
	SQUARE SUPPLY AIR DIFFUSER
	RETURN OR EXHAUST AIR GRILLE
X Y Z	DIFFUSER/GRILLE TYPE X – TYPE Y – SIZE (INCH) Z – AIR VOLUME (CFM)

PLUMBING LEGEND

SYMBOL	DESCRIPTION
	DOMESTIC COLD WATER (DCW)
	DOMESTIC HOT WATER (DHW)
	BURIED SANITARY DRAIN OR IN CEILING SPACE/FLOOR BELOW
	SUSPENDED SANITARY DRAIN
C	CONDENSATE DRAIN
CO	CLEANOUT PLUG
CO	FLOOR CLEANOUT
	VALVE SHUT-OFF
M	WATER METER/CHECK METER
	PIPE CUT
	PIPE DOWN
	PIPE UP
	SANITARY ROUGH-IN

ABBREVIATIONS

ABBREV.	DESCRIPTION
DN	DOWN
S/A	SUPPLY AIR
R/A	RETURN AIR
E/A	EXHAUST AIR
F/A	FRESH AIR
CV	CONTROL VALVE
NIC	NOT IN CONTRACT
CTE	CONNECT TO EXISTING
RE	DENOTES EXISTING DEVICE(S) IN RELOCATED POSITION
R	DENOTES EXISTING DEVICE(S) TO BE RELOCATED
D	DENOTES EXISTING DEVICE(S) TO BE REMOVED
EX	DENOTES EXISTING DEVICE(S) TO REMAIN
N	DENOTES PROVIDE NEW DEVICE(S)
(1)	DENOTES DRAWING REFERENCE NOTES # 1

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AUG. 01, 2025
25029
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No.	Description	Date
1	Issued for 60% Review	2025-07-25
2	Issued for Building Permit	2025-08-01

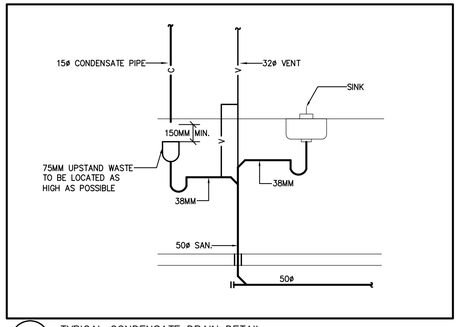
288 KING STREET,
MIDLAND, ONTARIO

LEGENDS, DRAWING LIST, KEY PLAN & SCHEDULES - MECHANICAL

Project number	25029
Date	JULY 7, 2025
Drawn by	RC
Checked by	MY

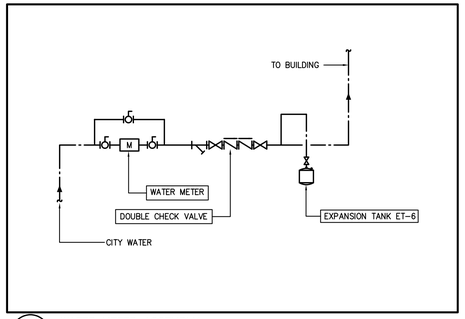
M-01

Scale N.T.S.



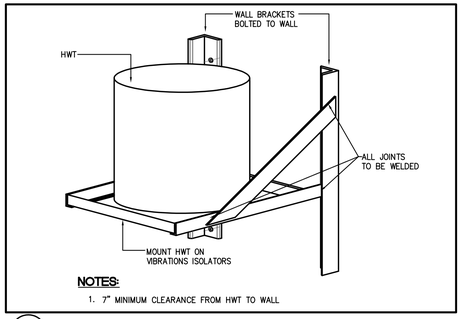
1 / M-02 TYPICAL CONDENSATE DRAIN DETAIL

SCALE: N.T.S.



2 / M-02 WATER METER ASSEMBLY

SCALE: N.T.S.

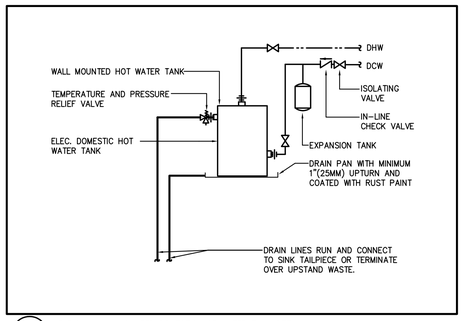


NOTES:

1. 7" MINIMUM CLEARANCE FROM HWT TO WALL

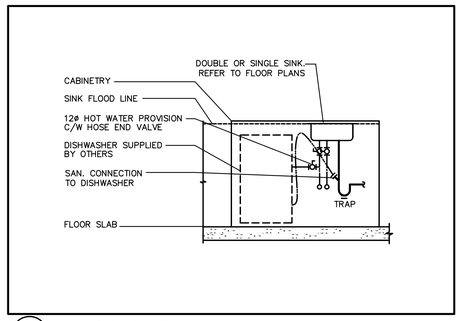
3 / M-02 HOT WATER TANK MOUNT DETAIL

SCALE: N.T.S



4 / M-02 TYPICAL WALL MOUNTED DOMESTIC HOT WATER TANK DETAIL

SCALE: N.T.S



5 / M-02 DISHWASHER PLUMBING DETAIL

SCALE: N.T.S.

DUCT HEATER SPECIFICATION:

.1 MECHANICAL DIVISION SHALL PROVIDE CSA APPROVED DUCT HEATERS.

.2 FRAME CONSTRUCTED FROM GALVANIZED SHEET STEEL, COILS OF HIGH-GRADE NICKEL-CHROME ALLOY INSULATED BY FLOATING CERAMIC BUSHINGS. STAINLESS STEEL TERMINAL PINS, INSULATED FROM THE FRAME.

.3 COILS SHALL BE PROTECTED BY FAIL-SAFE AUTO RESET DISC-TYPE THERMAL CUT-OUTS. HEATERS SHALL BE PROTECTED BY FAIL-SAFE MANUAL RESET DISC-TYPE THERMAL CUT-OUTS. COIL SUPPORT BUSHINGS OF CERAMIC LOCKED IN PLACE.

.4 HEATERS SHALL BE SLIP-IN TYPE OR FLANGE-MOUNTED AS INDICATED.

.5 HEATERS SHALL BE TESTED ACCORDING TO CSA.

.6 HEATERS SHALL BE COMPLETE WITH THE FOLLOWING CONTROLS:

.1 BUILT-IN CONTROL PANEL, INCLUDING LINE-VOLTAGE MAGNETIC CONTACTOR, CONTROL TRANSFORMER, OPERATION INDICATORS, ETC.

.2 HIGH LIMIT CUT-OUTS. CUT-OUT CONTROLS TO DE-ENERGIZE THE HEATER IN THE CASE OF INSUFFICIENT OR ZERO AIRFLOW CONDITIONS.

.3 AIRFLOW SENSOR, INSTALLED IN AIR DUCT AND WIRED BACK TO CONTROL PANEL. AIR FLOW SENSOR SHALL PERMIT HEATER ON/OFF (AIR INTERLOCK WITH SUPPLY FAN).

.4 SPACE THERMOSTAT, INSTALLED IN DOWNSTREAM AIR DUCT, MINIMUM 1 METER AWAY FROM HEATER, WIRED BACK TO CONTROL PANEL. THERMOSTAT SHALL AUTOMATICALLY CONTROL HEATER ON/OFF. SET TEMPERATURE AT 22℃ UNLESS NOTED OTHER WISE.

.5 ALL CONTROL WIRES SHALL BE BY MECHANICAL DIVISION.

.7 OUTPUTS, NUMBER OF STAGES, POWER SUPPLY, ETC., AS INDICATED ON DRAWING.

.8 ACCEPTABLE MANUFACTURERS: INDEECO, OUELLET, OR APPROVED EQUAL.

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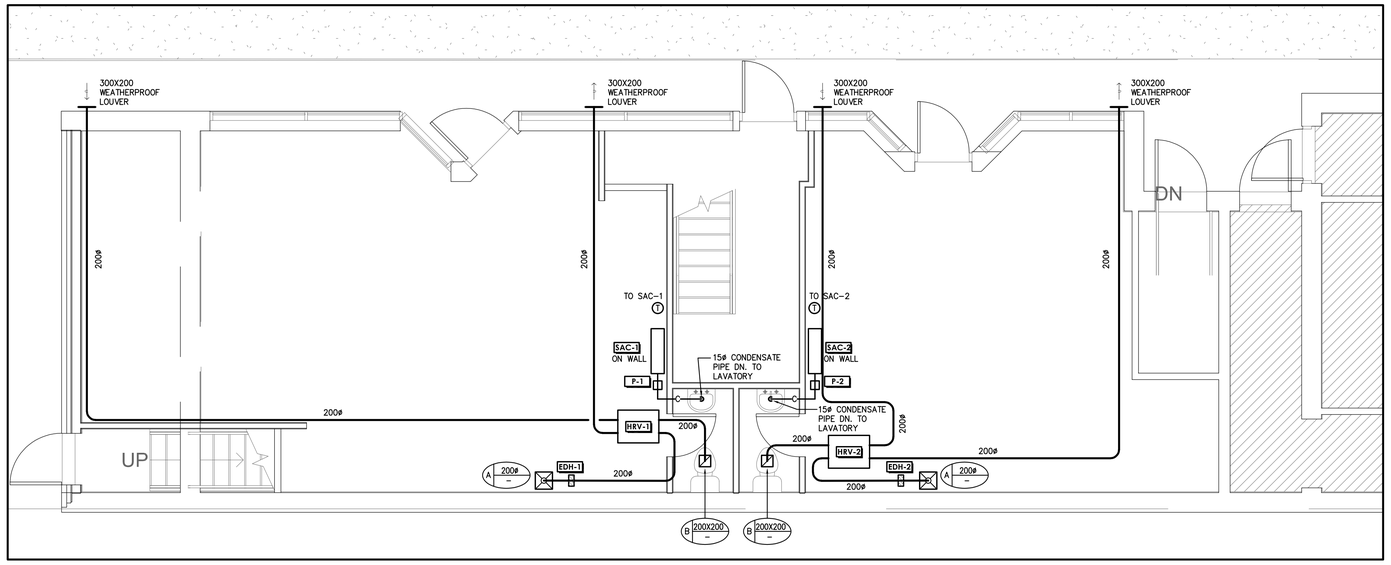
288 KING STREET,
MIDLAND, ONTARIO

DETAILS & SPECIFICATIONS - MECHANICAL

Project number	25029
Date	JULY 7, 2025
Drawn by	RC
Checked by	MY

M-02

Scale N.T.S.

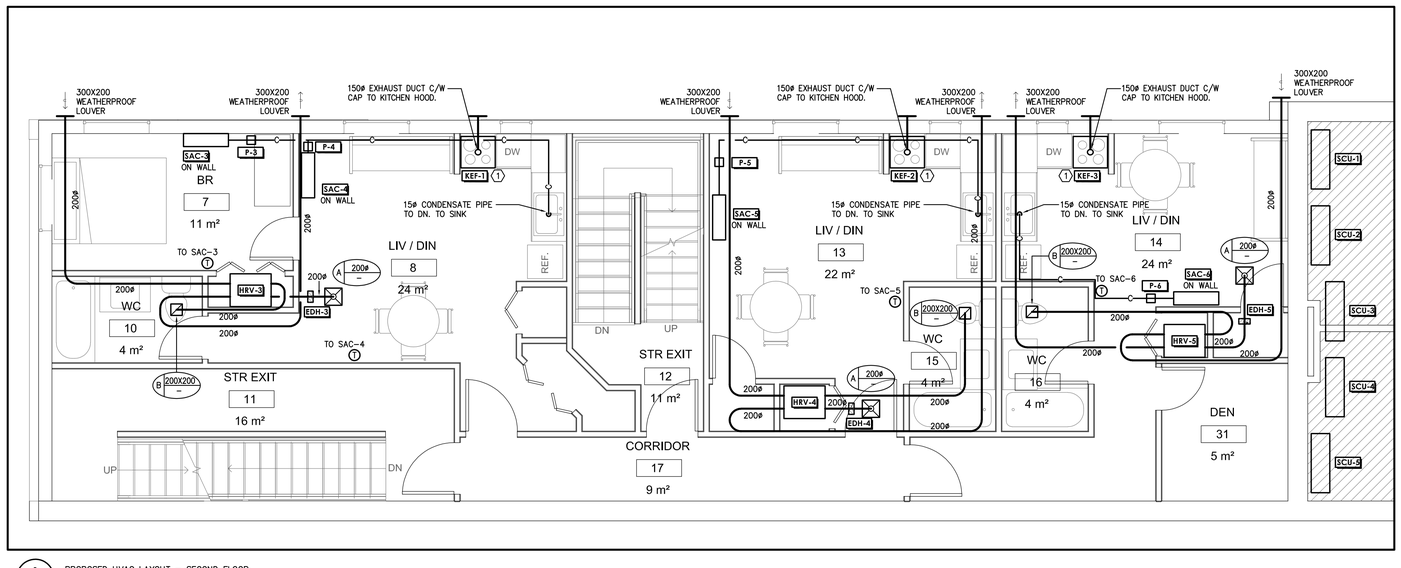


1 / M-11 PROPOSED HVAC LAYOUT – GROUND FLOOR

SCALE: 1:50

GENERAL NOTES:

1. ALL MECHANICAL SERVICE/EQUIPMENT SHOWN ON THIS DRAWING SHALL BE NEW UNLESS OTHERWISE NOTED.
2. TEMPERATURE SENSORS SHALL BE NOMINALLY 1200MM (48 IN.) ABOVE THE FINISHED FLOOR UNLESS INDICATED OTHERWISE.
3. DIFFUSER DUCT RUN-OUTS SHALL BE THE SAME SIZE AS THE DIFFUSER INLETS UNLESS INDICATED OTHERWISE.
4. RE-BALANCE AIR FLOW AS SHOWN ON DRAWING.
5. COORDINATE ARCHITECTURAL REFLECTED CEILING PLAN FOR LOCATIONS OF GRILLES AND DIFFUSERS.
6. CONTRACTOR TO VERIFY EXISTING FIRE DAMPER LOCATIONS WITHIN SCOPE AREA. PROVIDE FIRE DAMPERS ON EXISTING DUCTS WHERE DUCTS PENETRATE FIRE SEPARATIONS WHEN REQUIRED.



2 / M-11 PROPOSED HVAC LAYOUT – SECOND FLOOR

SCALE: 1:50

GENERAL NOTES:

1. ALL MECHANICAL SERVICE/EQUIPMENT SHOWN ON THIS DRAWING SHALL BE NEW UNLESS OTHERWISE NOTED.
2. TEMPERATURE SENSORS SHALL BE NOMINALLY 1200MM (48 IN.) ABOVE THE FINISHED FLOOR UNLESS INDICATED OTHERWISE.
3. DIFFUSER DUCT RUN-OUTS SHALL BE THE SAME SIZE AS THE DIFFUSER INLETS UNLESS INDICATED OTHERWISE.
4. RE-BALANCE AIR FLOW AS SHOWN ON DRAWING.
5. COORDINATE ARCHITECTURAL REFLECTED CEILING PLAN FOR LOCATIONS OF GRILLES AND DIFFUSERS.
6. CONTRACTOR TO VERIFY EXISTING FIRE DAMPER LOCATIONS WITHIN SCOPE AREA. PROVIDE FIRE DAMPERS ON EXISTING DUCTS WHERE DUCTS PENETRATE FIRE SEPARATIONS WHEN REQUIRED.

DRAWING NOTES:

(1) PROVIDE NEW KITCHEN HOOD KEF-1, SIZE 30"X21", MODEL VENT-A-HOOD NPH9-130, C/W WASHABLE FILTER, BUILT IN LIGHTING, FAN SPEED CONTROL, 120V, 2.5A, 225CFM @ 0.3 ESP.

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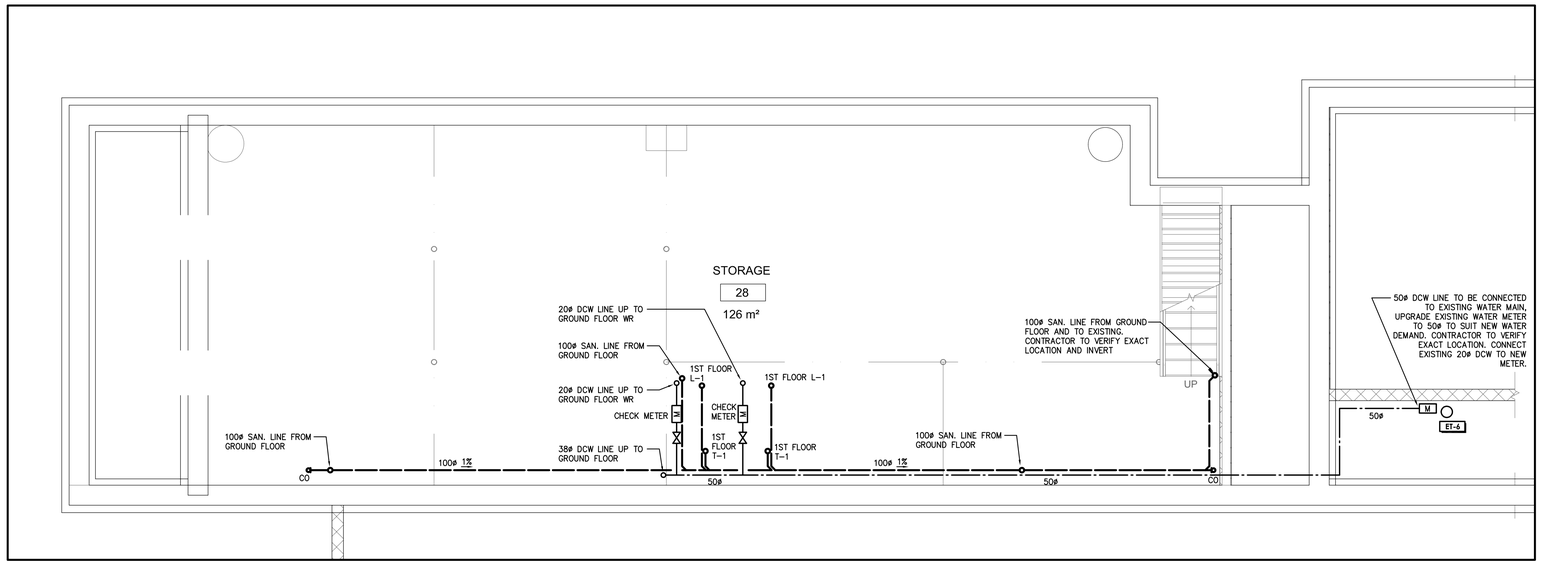
288 KING STREET,
MIDLAND, ONTARIO

PROPOSED HVAC LAYOUTS - GROUND & SECOND FLOOR

Project number	25029
Date	JULY 7, 2025
Drawn by	RC
Checked by	MY

M-11

Scale N.T.S.



1 / M-12 PROPOSED PLUMBING & DRAINAGE LAYOUT – BASEMENT

SCALE: 1:50

GENERAL NOTES:

1. ALL MECHANICAL SERVICE/EQUIPMENT SHOWN ON THIS DRAWING SHALL BE NEW UNLESS OTHERWISE NOTED.
2. ALL DOMESTIC COLD WATER AND DOMESTIC HOT WATER PIPES SHALL BE MINIMUM 20ø UNLESS INDICATED OTHERWISE.
3. PROVIDE ISOLATING BALL VALVES ON MAIN AND/OR BRANCH LINES AND FOR ALL EQUIPMENT SERVED WITH HOT AND COLD WATER LINES. ALL VALVES SHALL BE SUITABLE FOR THE OPERATING PRESSURE OF THE SYSTEM IN WHICH THEY ARE INSTALLED.
4. PROVIDE INSULATION FOR ALL COLD & HOT WATER PIPING C/W PVC JACKET.
5. PROVIDE COMPLETE SANITARY VENT CONNECTION TO EXISTING VENT PIPES COMPLY WITH OBC REQUIREMENT.
6. ALL SANITARY DRAINAGE BELOW GRADE SHALL BE MINIMUM 75ø UNLESS INDICATED OTHERWISE.
7. ALL NEW FLOOR DRAINS SHALL BE COMPLETE WITH TRAPS AND TRAP PRIMERS. CONTRACTOR TO VERIFY EXISTING TRAP PRIMER WHEN FLOOR DRAIN IS REPLACED. PROVIDE NEW TRAP PRIMER WHEN REQUIRED.

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PROPOSED PLUMBING &
DRAINAGE LAYOUTS - BASEMENT

Project number	25029
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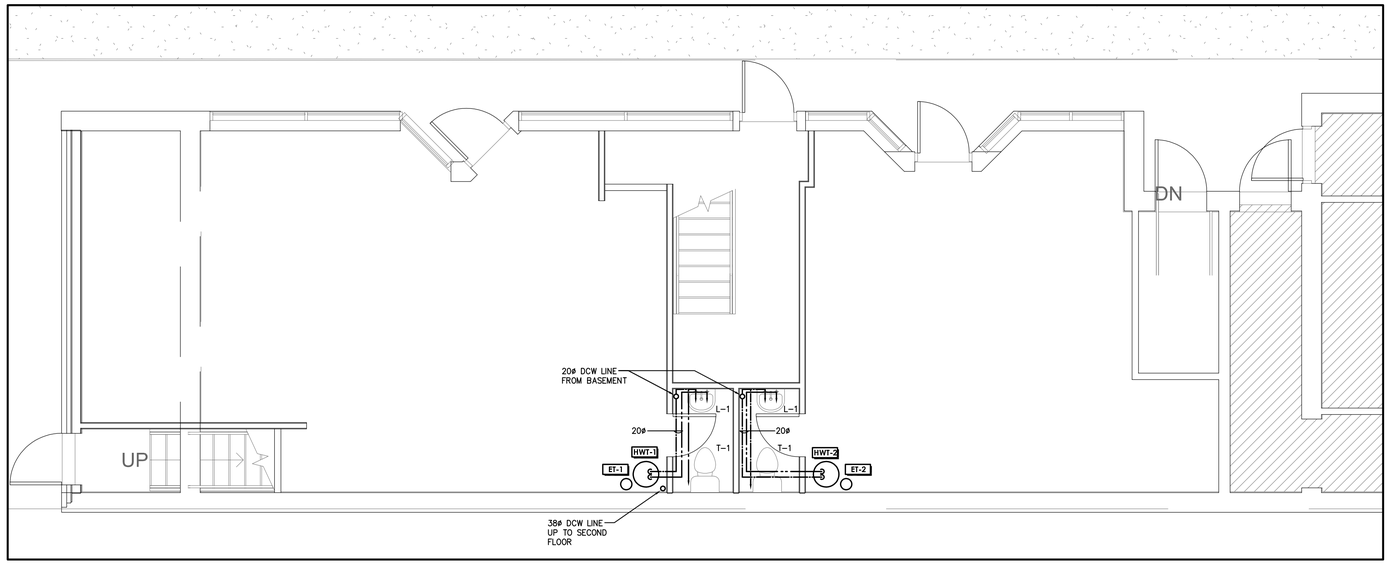
Drawn by	RC
Checked by	MY

M-12

Scale 1:50

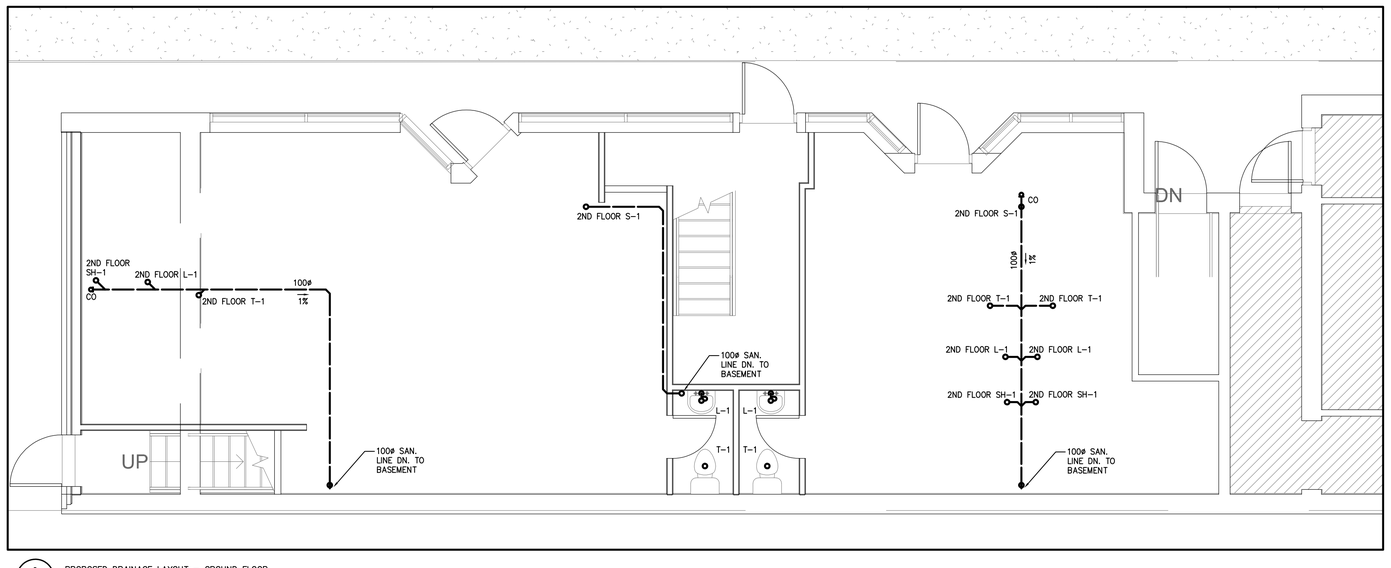


1 / M-13 PROPOSED PLUMBING LAYOUT – GROUND FLOOR

SCALE: 1:50

GENERAL NOTES:

1. ALL MECHANICAL SERVICE/EQUIPMENT SHOWN ON THIS DRAWING SHALL BE NEW UNLESS OTHERWISE NOTED.
2. ALL DOMESTIC COLD WATER AND DOMESTIC HOT WATER PIPES SHALL BE MINIMUM 20Ø UNLESS INDICATED OTHERWISE.
3. PROVIDE ISOLATING BALL VALVES ON MAIN AND/OR BRANCH LINES AND FOR ALL EQUIPMENT SERVED WITH HOT AND COLD WATER LINES. ALL VALVES SHALL BE SUITABLE FOR THE OPERATING PRESSURE OF THE SYSTEM IN WHICH THEY ARE INSTALLED.
4. PROVIDE INSULATION FOR ALL COLD & HOT WATER PIPING C/W PVC JACKET.
5. PROVIDE COMPLETE SANITARY VENT CONNECTION TO EXISTING VENT PIPES COMPLY WITH OBC REQUIREMENT.
6. ALL SANITARY DRAINAGE BELOW GRADE SHALL BE MINIMUM 75Ø UNLESS INDICATED OTHERWISE.
7. ALL NEW FLOOR DRAINS SHALL BE COMPLETE WITH TRAPS AND TRAP PRIMERS. CONTRACTOR TO VERIFY EXISTING TRAP PRIMER WHEN FLOOR DRAIN IS REPLACED. PROVIDE NEW TRAP PRIMER WHEN REQUIRED.



2 / M-13 PROPOSED DRAINAGE LAYOUT – GROUND FLOOR

SCALE: 1:50

GENERAL NOTES:

1. ALL MECHANICAL SERVICE/EQUIPMENT SHOWN ON THIS DRAWING SHALL BE NEW UNLESS OTHERWISE NOTED.
2. ALL DOMESTIC COLD WATER AND DOMESTIC HOT WATER PIPES SHALL BE MINIMUM 20Ø UNLESS INDICATED OTHERWISE.
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4. PROVIDE INSULATION FOR ALL COLD & HOT WATER PIPING C/W PVC JACKET.
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6. ALL SANITARY DRAINAGE BELOW GRADE SHALL BE MINIMUM 75Ø UNLESS INDICATED OTHERWISE.
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PROPOSED PLUMBING & DRAINAGE LAYOUTS - GROUND FLOOR

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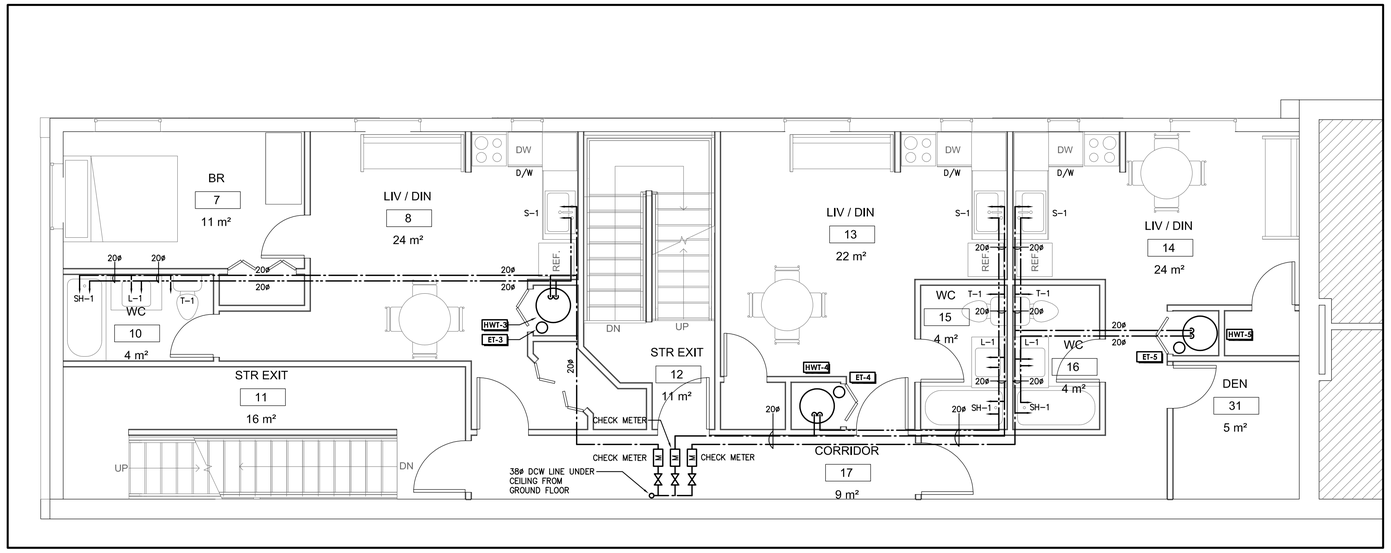
Checked by	MY

M-13

Scale 1:50



1 / M-14 PROPOSED PLUMBING LAYOUT – SECOND FLOOR

SCALE: 1:50

GENERAL NOTES:

1. ALL MECHANICAL SERVICE/EQUIPMENT SHOWN ON THIS DRAWING SHALL BE NEW UNLESS OTHERWISE NOTED.
2. ALL DOMESTIC COLD WATER AND DOMESTIC HOT WATER PIPES SHALL BE MINIMUM 20Ø UNLESS INDICATED OTHERWISE.
3. PROVIDE ISOLATING BALL VALVES ON MAIN AND/OR BRANCH LINES AND FOR ALL EQUIPMENT SERVED WITH HOT AND COLD WATER LINES. ALL VALVES SHALL BE SUITABLE FOR THE OPERATING PRESSURE OF THE SYSTEM IN WHICH THEY ARE INSTALLED.
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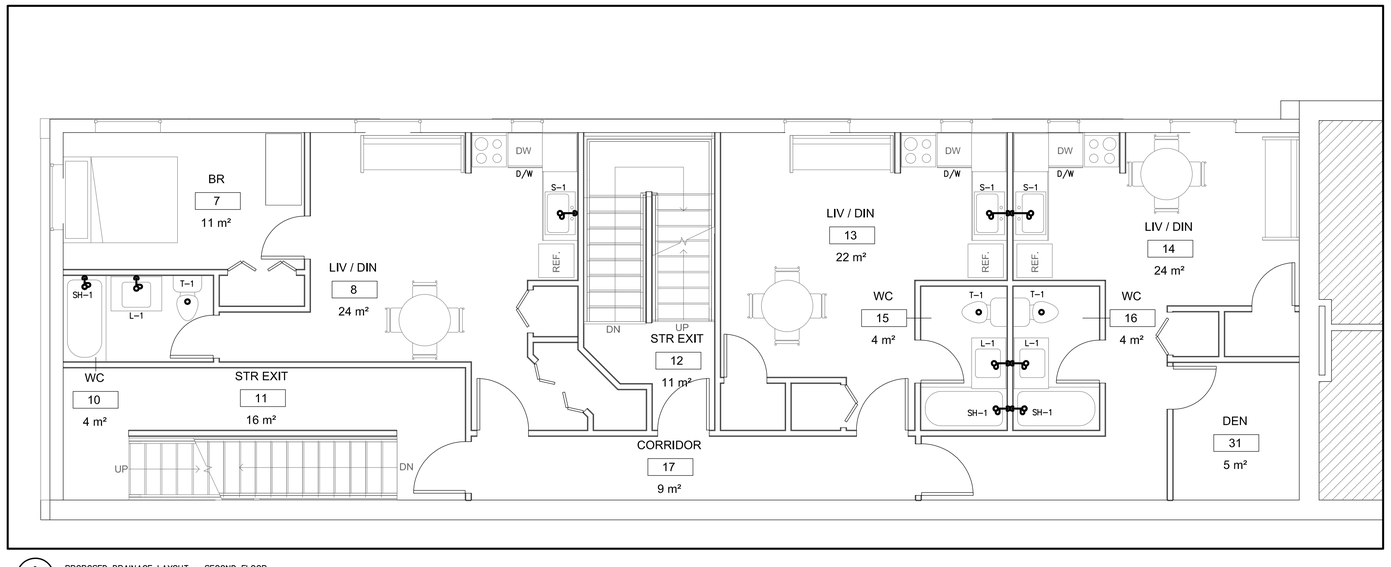
7. ALL NEW FLOOR DRAINS SHALL BE COMPLETE WITH TRAPS AND TRAP PRIMERS. CONTRACTOR TO VERIFY EXISTING TRAP PRIMER WHEN FLOOR DRAIN IS REPLACED. PROVIDE NEW TRAP PRIMER WHEN REQUIRED.



2 / M-14 PROPOSED DRAINAGE LAYOUT – SECOND FLOOR

SCALE: 1:50

GENERAL NOTES:

1. ALL MECHANICAL SERVICE/EQUIPMENT SHOWN ON THIS DRAWING SHALL BE NEW UNLESS OTHERWISE NOTED.
2. ALL DOMESTIC COLD WATER AND DOMESTIC HOT WATER PIPES SHALL BE MINIMUM 20Ø UNLESS INDICATED OTHERWISE.
3. PROVIDE ISOLATING BALL VALVES ON MAIN AND/OR BRANCH LINES AND FOR ALL EQUIPMENT SERVED WITH HOT AND COLD WATER LINES. ALL VALVES SHALL BE SUITABLE FOR THE OPERATING PRESSURE OF THE SYSTEM IN WHICH THEY ARE INSTALLED.
4. PROVIDE INSULATION FOR ALL COLD & HOT WATER PIPING C/W PVC JACKET.
5. PROVIDE COMPLETE SANITARY VENT CONNECTION TO EXISTING VENT PIPES COMPLY WITH OBC REQUIREMENT.
6. ALL SANITARY DRAINAGE BELOW GRADE SHALL BE MINIMUM 75Ø UNLESS INDICATED OTHERWISE.
7. ALL NEW FLOOR DRAINS SHALL BE COMPLETE WITH TRAPS AND TRAP PRIMERS. CONTRACTOR TO VERIFY EXISTING TRAP PRIMER WHEN FLOOR DRAIN IS REPLACED. PROVIDE NEW TRAP PRIMER WHEN REQUIRED.

HL ENGINEERING LTD
7725 BIRCHMOUNT RD, UNIT 46, MARKHAM,
ON L3R 9X3 905-713-0003 www.hlengineering.ca

LICENSED PROFESSIONAL ENGINEER
M. J. LI
AUG. 01, 2025
25029
PROVINCE OF ONTARIO

No.	Description	Date
1	Issued for 60% Review	2025-07-25
2	Issued for Building Permit	2025-08-01

288 KING STREET,
MIDLAND, ONTARIO

PROPOSED PLUMBING & DRAINAGE LAYOUTS - SECOND FLOOR

Project number	25029
Date	JULY 7, 2025
Drawn by	RC
Checked by	MY

M-14

Scale 1:50

MECHANICAL SPECIFICATION:

1. GENERAL

.1 COMPLY WITH GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, AND ALL DOCUMENTS REFERRED TO THEREIN.

.2 THE DOCUMENTS ARE NOT INTENDED TO DELEGATE FUNCTIONS NOR TO DELEGATE WORK TO ANY TRADE.

.3 THE DRAWINGS AND SPECIFICATIONS SHALL BE READ IN CONJUNCTION WITH BASE BUILDING DRAWINGS AND SPECIFICATIONS. DO ALL WORK IN ACCORDANCE WITH THE OWNER GUIDELINES. MAXIMUM CONDITIONS WILL GOVERN.

.4 PRIOR TO SUBMITTING THE TENDER, CAREFULLY EXAMINE AND VERIFY THE SITE AND CONDITIONS OF THE PROPOSED WORK TOGETHER WITH THE WORK BY ALL OTHER TRADES, INCLUDING LOCATIONS AND DIMENSIONS OF ALL EXISTING SERVICES (INCLUDING SERVICES IN CONCEALED SPACE), AND ALLOW FOR ANY RE-ROUTING OF EXISTING AND/OR NEW SERVICES AND EQUIPMENT, CUTTING AND PATCHING IN TENDER PRICE. FAILURE TO DO SO SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY. SUBMISSION OF A TENDER CONFIRMS THAT THE CONTRACT DOCUMENTS AND EXISTING PROJECT CONDITIONS ARE COMPLETELY UNDERSTOOD, CONFIRMED AND ACCEPTED BY THE CONTRACTOR.

.5 REPORT TO THE ENGINEER ALL AMBIGUITIES, DISCREPANCIES, OMISSIONS, ERRORS, DEPARTURES FROM BUILDING BYLAWS AND/OR FROM GOOD PRACTICE PRIOR TO TENDER CLOSING.

.6 DRAWINGS ARE DIAGRAMMATIC, SHOW GENERAL PERFORMANCE AND ARRANGEMENT OF WORK, AND DO NOT SHOW STRUCTURAL AND RELATED DETAILS. REFER TO ARCHITECTURAL AND/OR INTERIOR DESIGNER'S DRAWINGS. TAKE INFORMATION INVOLVING ACCURATE MEASUREMENT OF BUILDING. MAKE, WITHOUT ADDITIONAL CHARGE, ANY NECESSARY CHANGES OR ADDITIONS TO WORK OR EQUIPMENT LOCATIONS TO ACCOMMODATE STRUCTURAL CONDITIONS. EQUIPMENT LOCATIONS MAY BE ALTERED BY ENGINEER WITHOUT EXTRA CHARGE PROVIDED CHANGE IS MADE BEFORE INSTALLATION AND DOES NOT NECESSITATE MAJOR MATERIAL.

.7 PROVIDE ALL WORK IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING AUTHORITIES, LOCAL BY-LAWS, LATEST EDITIONS OF APPLICABLE CODES, STANDARDS, AND REGULATIONS.

.8 APPLY FOR, OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED PRIOR TO COMMENCEMENT OF CONSTRUCTION. INCLUDE ALL PROVINCIAL AND GENERAL SALES TAXES.

.9 'SUPPLY' SHALL MEAN FURNISHING TO SITE IN LOCATION REQUIRED OR DIRECTED COMPLETE WITH ACCESSORY PARTS. 'INSTALL' SHALL MEAN SET IN PLACE AND SECURED OR AFFIXED TO BUILDING STRUCTURE AS NOTED OR DIRECTED. 'PROVIDE' SHALL MEAN SUPPLY AND INSTALL AND INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, TOOLS, CONNECTIONS, TESTING AND INSPECTION AS EACH IS DESCRIBED.

.10 PROVIDE WORK IN SUCH A MANNER AS TO LEAVE EACH OF THE SYSTEMS COMPLETE AND IN SATISFACTORY OPERATION CONDITION. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE SATISFACTORY COMPLETION OF ALL WORK BEARING UPON THIS TRADE, INCLUSIVE OF ALL INSTALLATIONS ACCEPTABLE TO ARCHITECT.

.11 ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE APPROVED SCHEDULE TO MEET THE PROJECT COMPLETION DATE AND ALL SPECIFIED INTERIM SCHEDULES. COMPLY WITH THE GENERAL CONTRACTOR'S CONSTRUCTION SCHEDULE.

.12 PROVIDE ALL CUTTING, PATCHING, FLASHING WORK AND CLEAN-UP OF FLOORS, WALLS, CEILINGS, ETC.

.13 PROVIDE PROPER SHOP DRAWINGS OF ALL SPECIFIED PRODUCTS AND SUBMIT FOR REVIEW TO THE ARCHITECT AND ENGINEER IN ACCORDANCE WITH GENERAL REQUIREMENTS. SHOP DRAWINGS SHALL BE REVIEWED, STAMPED, AND CORRECTED BY CONTRACTOR PRIOR TO SUBMISSION.

.14 REVIEW OF SHOP DRAWINGS BY CONSULTANT IS FOR SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH GENERAL DESIGN CONCEPT. THIS REVIEW SHALL NOT MEAN THAT ARCHITECT OR ENGINEER APPROVES DETAIL DESIGN INHERENT IN SHOP DRAWINGS, RESPONSIBILITY FOR WHICH SHALL REMAIN WITH CONTRACTOR AND SUCH REVIEW SHALL NOT RELIEVE CONTRACTOR OF HIS RESPONSIBILITY FOR MEETING ALL REQUIREMENTS OF CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS TO BE CONFIRMED AND CORRELATED AT SITE. FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION AND INSTALLATION AND FOR CO-ORDINATION OF WORK WITH ALL TRADES.

.15 SUBSTITUTE PRODUCTS WILL ONLY BE CONSIDERED WHEN TENDERED PRODUCTS BECOME UNOBTAINABLE AND WRITTEN PROOF IS SUBMITTED. THE QUALITY AND PERFORMANCE CHARACTERISTICS OF SUBSTITUTE PRODUCTS SHALL BE EQUAL TO THE SPECIFIED PRODUCTS. IMPLEMENTATION OF SUBSTITUTE PRODUCTS IS SUBJECT TO THE REVIEW OF PROPERLY SUBMITTED SHOP DRAWINGS TO THE ARCHITECT AND ENGINEER. CONTRACTOR TO BE FULLY RESPONSIBLE FOR CAPABILITIES AS WELL AS PHYSICAL FIT OF SUBSTITUTED MATERIALS.

.16 ASSUME RESPONSIBILITY AND PAY FOR ANY ADDITIONAL INSTALLATION COSTS INCURRED BY ALL DIVISIONS RESULTING FROM THE ALTERNATES AND/OR SUBSTITUTIONS. MAKE REVISIONS TO RECORD DRAWINGS INCORPORATING ALL ALTERNATES AND/OR SUBSTITUTIONS AND ALL RELATED CHANGES.

.17 ALL MATERIAL AND EQUIPMENT USED SHALL BE NEW AND OF UNIFORM PATTERN AND CSA APPROVED. WHERE MANUFACTURER IS NOT SPECIFIED, PRODUCTS SHALL BE OF HIGH COMMERCIAL QUALITY. ALL EQUIPMENT, MATERIALS AND ASSOCIATED CONTROLS NOT USED IN THIS CONTRACT SHALL BE RETURNED TO OWNER.

.18 SUPPLY JOB SITE OFFICE, WORKSHOP, TOOLS, SCAFFOLDS AND MATERIAL STORAGE TO COMPLETE THE WORK OF THIS DIVISION. LOCATION OF TEMPORARY BUILDING, USE OF SPACE ON SITE OR WITHIN BUILDING SHALL BE TO LATER DIRECTION.

.19 PROVIDE ALL MISCELLANEOUS METALS AS NECESSARY FOR MECHANICAL WORK.

.20 TEMPORARY OR TRIAL USAGE OF ANY EQUIPMENT OR MATERIALS SHALL NOT BE CONSTRUED AS EVIDENCE OF ACCEPTANCE OF SAME AND NO CLAIM FOR DAMAGE SHALL BE MADE FOR INJURY TO OR BREAKING OF ANY PART OF SUCH WORK WHICH MAY BE SO USED.

.21 PROVIDE A COMPLETE BREAKDOWN OF MATERIALS, EQUIPMENT AND LABOUR WITH EACH ITEM OF EACH SUBMISSION FOR EXTRA OR DELETED WORK.

.22 ADJUST THE LOCATION OF MATERIALS AND/OR EQUIPMENT AS DIRECTED WITHOUT ADJUSTMENT TO CONTRACT PRICE, PROVIDED THAT THE CHANGES ARE REQUESTED BEFORE INSTALLATION AND DO NOT AFFECT QUANTITY OF MATERIALS.

.23 IDENTIFY ALL SYSTEMS AND LABEL ALL EQUIPMENT WITH LAMACOID LABELS. IDENTIFY REMOTE CONTROLS FOR ALL PERTINENT EQUIPMENT INCLUDING ALL ASSOCIATED DISCONNECTS. THE IDENTIFICATION AND LABELS SHALL MEET BASE BUILDING STANDARDS.

.24 PRIOR TO COMPLETION REVIEW/INSPECTION, MECHANICAL CONTRACTOR SHALL SUBMIT A LETTER CONFIRMING THAT ALL MECHANICAL WORK IS COMPLETED AS PER MECHANICAL TENDER DOCUMENT. CONTRACTOR IS RESPONSIBLE FOR THE COST OF THE SECOND COMPLETION REVIEW/INSPECT IF ITS REQUIRED.

.25 PROVIDE THE OWNER WITH A WRITTEN WARRANTY, FOR ALL LABOUR, MATERIALS, AND EQUIPMENT IN THIS CONTRACT, FOR A PERIOD OF TWO YEAR COMMENCING AT SUCH TIME AS THE OWNER, OR HIS REPRESENTATIVE, DEEMS THE WORK ACCEPTABLE.

.26 CONTRACTOR SHALL OBTAIN CLEAN SET OF PRINTS FROM CONSULTANT AT START OF CONTRACT WORK AND SHALL KEEP THESE PRINTS UP-TO-DATE AT JOBSITE, ACCURATELY RECORDING ALL CHANGES MADE ON PROJECT AND LOCATING ALL SERVICES, EQUIPMENT, ETC. WHICH MAY HAVE BEEN SHOWN ONLY DIAGRAMMATICALLY ON CONTRACT DOCUMENTS. UPON COMPLETION OF CONTRACT WORK, SUBMIT THREE (3) PRINTS SETS AND ONE (1) CD CONTAINING ACAD FILES OF AS-BUILT DRAWINGS.

.27 ASSEMBLE THREE (3) MANUALS, EACH CONTAINING DATA SHEETS, BROCHURES, OPERATING, MAINTENANCE, RECOMMENDED SPARE PARTS, AND LUBRICATING INSTRUCTIONS AND A COMPLETE SET OF REVIEWED SHOP DRAWINGS AND BIND IN HARD COVER. IDENTIFY COVER "OPERATION AND MAINTENANCE MANUAL". MANUALS SHALL BE SEPARATED WITH DIVIDERS IN LOGICAL SECTIONS AND VOLUMES. PRESENT ONE (1) COPY FOR REVIEW BY CONSULTANT. MAKE ALL CORRECTIONS REQUESTED BY THE CONSULTANT AND RESUBMIT FOR REVIEW.

.28 PROVIDE SLEEVES FOR ALL NEW PIPING THROUGH EXISTING SLAB, BEAMS, SLAB TO SLAB WALL, ETC. WHERE INDICATED AND/OR REQUIRED. OBTAIN BASE BUILDING STRUCTURAL ENGINEER'S APPROVAL PRIOR TO COMMENCEMENT OF WORK.

.29 ALL WALL AND FLOOR OPENINGS SHALL BE PACKED AND SEALED WITH AN APPROVED FIRE RESISTANT INSULATION TO 25 MM (1") FROM END SIDE OF OPENING ON BOTH SIDES OF FLOOR OR WALL. REMAINING PORTION SHALL BE SEALED WITH AN APPROVED FIRE STOP SUBSTANCE EQUAL TO 'DOW CORNING' #3-6548 SILICON RTV FOAM PENETRATION SEALANT. TO CAN4-S115 AND ULC LISTED.

.30 IN ALL AREAS REQUIRING CORE DRILLING THROUGH EXISTING FLOOR SLAB FOR MECHANICAL SERVICES, ETC. ALLOW FOR ALL NECESSARY RADIOGRAPHY TO LOCATE HIDDEN ELECTRICAL SERVICES, STRUCTURAL REINFORCING, ETC., AND INCLUDE ALL COSTS IN TENDER PRICE. CO-ORDINATE THIS WORK WITH LANDLORD AND/OR TENANT CO-ORDINATOR FOR TIME, DURATION AND LOCATIONS REQUIRED, AND ADHERE TO THE LANDLORD'S REQUIREMENTS. SUBMIT CORE DRILLING PLAN TO BASE BUILDING STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF WORK.

.31 PROVIDE ALL ACCESS DOORS WHERE SHOWN AND/OR REQUIRED BY SITE CONDITIONS, IN CEILINGS OR WALLS. ACCESS DOORS SHALL BE EQUAL TO MILCOR OR LEHAGE, AND MUST BE COMPATIBLE WITH CEILING/WALL TYPE AND FINISH. INSTALLATION TO COMPLY WITH INTERIOR DESIGNER'S APPROVAL. ACCESS DOORS IN RATED CEILINGS OR WALLS SHALL BE ULC APPROVED FOR THE APPLICATION.

.32 MECHANICAL CONTRACTOR SHALL CO-ORDINATE WITH GENERAL CONTRACTOR FOR SIZE, LOCATION AND INSTALLATION OF ACCESS PANELS IN DRYWALL CEILINGS TO EQUIPMENT WHERE INDICATED ON PLAN AND/OR REQUIRED FOR PROPER SERVICING OF EQUIPMENT. CEILING ACCESS PANELS SHALL BE SUPPLIED AND INSTALLED BY THE MECHANICAL CONTRACTOR. FINAL LOCATION TO COMPLY WITH THE INTERIOR DESIGNER'S AND/OR ARCHITECT'S APPROVAL.

.33 FLASH AND COUNTER-FLASH ALL PIPES AND DUCTS PASSING THROUGH ROOFS, OUTSIDE WALLS AND WATERPROOF FLOORS. ENSURE WATERPROOF INSTALLATION.

.34 SUPPLY AND LOCATE ALL BASES, SUPPORTS, SLEEVES, CURBS, ETC. REQUIRED FOR THIS WORK.

.35 SUPPLY PROPER STARTERS WITH OVERLOAD PROTECTION AND DISCONNECT SWITCHES FOR POWERED MECHANICAL EQUIPMENT AND HAND OVER TO ELECTRICAL CONTRACTOR FOR INSTALLATION. THIS DOES NOT INCLUDE ISOLATION SWITCHES, UNLESS STATED SPECIFICALLY.

.36 ALL POWER WIRING BY ELECTRICAL CONTRACTOR, CONTROL AND INTERLOCK WIRING BY MECHANICAL CONTRACTOR. CONTROL WIRING IN RETURN AIR CEILING SPACES SHALL BE FT-6 OR INSTALLED IN CONDUIT.

.37 ALL MATERIALS, INCLUDING BUT NOT LIMITED TO, PIPING, DUCTWORK AND CONDUITS IN CONCEALED SPACE USED AS A PLENUM SHALL HAVE A FLAME-SPREAD RATING NOT MORE THAN 25 AND A SMOKE DEVELOPED CLASSIFICATION NOT MORE THAN 50.

.38 FIRESTOP AND SMOKE SEAL AROUND MECHANICAL ASSEMBLIES PENETRATING RATED FIRE SEPARATIONS, WITH FIRE AND TEMPERATURE RATINGS SUITABLE FOR ASSEMBLY IN WHICH THEY ARE TO BE INSTALLED.

2. WORK IN EXISTING BUILDING

.1 EXAMINE THE SITE AND LOCAL CONDITIONS PRIOR TO TENDER SUBMISSION. SUBMISSION OF A TENDER CONFIRMS THAT THE CONTRACT DOCUMENTS AND SITE CONDITIONS ARE COMPLETELY UNDERSTOOD AND ACCEPTED UNLESS EXCEPTIONS ARE SPECIFICALLY INDICATED IN THE BID FORM.

.2 PRIOR TO COMMENCEMENT OF THE CONTRACT WORK, AND WITHIN ONE WEEK OF THE CONTRACT AWARDED, EXAMINE AND VERIFY ON SITE, THE COMPLETE EXISTING MECHANICAL SYSTEM, AND SUBMIT DETAILED EXISTING MECHANICAL SYSTEM DRAWINGS SHOWING COMPLETE AND ACCURATE EXISTING SYSTEM CONDITIONS, LOCATIONS OF ALL DEVICES, EQUIPMENTS, DUCTS AND PIPES OF HVAC, PLUMBING AND SPRINKLER SYSTEMS.

.3 DO NOT ORDER AND/OR FABRICATE MATERIALS (PIPING AND DUCTWORK) PRIOR TO A FULL REVIEW OF THE SITE CONDITIONS AND INTERFERENCES IN THE CEILING SPACE.

.4 CO-ORDINATE WITH OWNER FOR SCHEDULING OF WORKS REQUIRED TO BE DONE BEFORE/AFTER NORMAL OCCUPANCY HOUR, INCLUDING BUT NOT LIMITED TO: DRILLING THROUGH SLAB; POWER SHUTDOWN; INTERFERENCE TO LIFE SAFETY SYSTEM. ALL COST INVOLVED, INCLUDING WORK TO BE DONE BY OWNER, SHALL BE INCLUDED IN TENDER PRICE.

.5 INCLUDE COST OF PREMIUM TIME IN TENDER PRICE FOR WORK DURING NIGHTS, WEEKENDS OR OTHER TIME OUTSIDE NORMAL WORKING HOURS NECESSARY TO MAINTAIN ALL MECHANICAL SERVICES IN OPERATION, AND TO COMPLETE THE WORK.

.6 CHECK AND VERIFY ON SITE FOR ROUTING OF NEW DUCTWORK, PIPING AND LOCATION OF NEW EQUIPMENT AND INCLUDE IN TENDER PRICE FOR ANY RELOCATIONS OF EXISTING SERVICES OR ADJUSTMENTS OF NEW SERVICES OR EQUIPMENT AS REQUIRED TO SUIT SITE CONDITIONS. PROVIDE OFFSETS IN PIPING AND DUCTWORK AS REQUIRED TO AVOID INTERFERENCES.

.7 CHECK AND VERIFY LOCATION OF EXISTING MECHANICAL AND ELECTRICAL INTERFERENCES IN CEILING SPACE OF FLOOR BELOW AND/OR BELOW FLOOR SLAB IN ALL AREAS REQUIRING CORE DRILLING AND/OR CUTTING OF FLOOR SLAB ON GRADE AND ENSURE COMPATIBILITY OF AREA BELOW TO THE SATISFACTION OF THE LANDLORD.

.8 X-RAY OR ULTRASOUND OF EXISTING BUILDING FRAMED SLAB WHERE NEW HOLES ARE DRILLED FOR PIPING PENETRATIONS, AND FOR NEW BURIED PIPE LINES.

.9 MAINTAIN THE LIFE SAFETY SYSTEMS IN EXISTING BUILDING IN FULL OPERATION AT ALL TIMES DURING CONSTRUCTION, UNLESS OTHERWISE NOTED.

.10 MAINTAIN ALL SYSTEMS IN FULL OPERATION DURING NORMAL OCCUPANCY HOURS, UNLESS OTHERWISE NOTED. MAINTAIN ALL SYSTEMS ADJACENT TO CONSTRUCTION AREA IN FULL OPERATION AT ALL TIME DURING CONSTRUCTION, UNLESS OTHERWISE NOTED.

.11 PROTECT WORK OF THIS AND OTHER TRADES, EXISTING FINISHES, SYSTEMS AND SERVICES WHICH MUST REMAIN IN OPERATION. REPLACE AND/OR REINSTALL ANY EXISTING SERVICES WHICH ARE TO REMAIN THAT ARE IMPROPERLY INSTALLED OR MAY CREATE ANY INTERFERENCES WITH NEW CONSTRUCTION.

.12 ALL NOISE GENERATING WORKS THAT DISRUPT THE BUILDING OPERATIONS SHALL BE CARRIED OUT BEFORE/AFTER NORMAL OCCUPANCY HOURS.

3. HEATING, VENTILATION AND AIR CONDITIONING

.1 ALL DUCTWORK AND SUPPORTS SHALL BE FABRICATED IN ACCORDANCE WITH THE LATEST ASHRAE AND SMACNA RECOMMENDATIONS.

.2 MAKE GOOD ALL EXISTING INSULATION WHEN CONNECTING TO EXISTING SERVICES.

.3 PROVIDE DUCT ACCESS DOORS, MINIMUM 375 MM X 300 MM (15" X 12") SIZE FOR EQUIPMENT SUCH AS COILS (BOTH SIDES OF COIL), FIRE AND/OR SMOKE DAMPERS, CONTROL AND/OR BALANCING DAMPERS, HEAT AND/OR SMOKE DETECTORS, BACKDRAFT DAMPERS, ETC. AS REQUIRED FOR PROPER SERVICING.

.4 PROVIDE FLEXIBLE CONNECTORS BETWEEN ALL FANS AND ADJACENT DUCTWORK CONSISTING OF A PREASSEMBLED UNIT WITH 75 MM (3") LONG GALVANIZED DUCT CONNECTOR AND 150 MM (6") WIDE HEAVY GLASS FIBRE FABRIC WITH ELASTOMER COATING EQUAL TO DURO DYNE 'DUROLON'.

.5 FLEXIBLE DUCTS SHALL BE OF SIZE EQUAL TO DIFFUSER NECK SIZE. USE GEAR CLAMPS FOR SECURING FLEXIBLE DUCTS TO RIGID DUCT CONNECTIONS SUCH AS SPIN_ON FITTINGS, ETC. AND NECKS OF DIFFUSERS AND SEAL AIR TIGHT WITH DUCT TAPE. ROUND FLEXIBLE DUCTS SHALL BE MAXIMUM 3.0 M (10') LONG AND REMAINDER SHALL BE ROUND RIGID SPIRAL DUCT.

.6 KITCHEN EXHAUST DUCTWORK SHALL BE 16 GA. WELDED CARBON STEEL. INSTALLATION, CLEARANCE AND FAN ARRANGEMENT SHALL BE IN ACCORDANCE WITH NFPA 96 AND OBC

.7 FINAL LOCATION OF NEW SUPPLY AIR DIFFUSERS, BOOTS, LIGHT TROFFERS, REGISTERS, RETURN AND EXHAUST AIR GRILLES SHALL BE CO_ORDINATED WITH THE LATEST ARCHITECTURAL REFLECTED CEILING PLANS.

.8 PROVIDE NEW BALANCING DAMPERS FOR ALL NEW DUCT BRANCHES, AND IN ALL LOCATIONS NECESSARY FOR BALANCING THE AIR SYSTEMS, WITH SUITABLE MEANS OF CEILING ACCESS. PROVIDE VOLUME DAMPERS FOR ALL NEW SUPPLY AIR DIFFUSERS AND REGISTERS.

.9 IN PROJECT CONSTRUCTION AREA, REPAIR ALL EXISTING LEAKED OR BROKEN DUCT AND CONNECTION. RE-BRACE AND RE-STIFFEN ALL THE EXISTING DUCTS SO THAT THEY WILL NOT BREATHE, RATTLE, VIBRATE OR SAG. EXISTING FLEXIBLE DUCTS LYING ON SUSPENDED CEILING ARE NOT ACCEPTABLE.

.10 PROVIDE 25 MM (1") THICK INSULATION FOR ALL NEW SUPPLY DUCTWORK, 48.06 KG/M3 (3 LB DENSITY NEOPRENE FACED) FIBERGLASS INSULATION AND ALUMINUM FOIL VAPOUR BARRIER.

.11 WHERE SHOWN, DUCTWORK SHALL BE LINED INTERNALLY WITH 1" (25MM) FACED FLEXIBLE DUCT LINER. SHOWN SIZES ARE CLEAR INSIDE DIMENSIONS. INCREASE DUCT SIZE ACCORDINGLY.WHERE INDICATED SUPPLY AND RETURN DUCTS FROM ROOFTOP UNITS AND INDOOR AIR HANDLERS/HEAT PUMPS SHALL BE PROVIDED WITH SIMILAR ACOUSTIC LINING.

.12 ALL EXTERIOR DUCTWORK SHALL BE INSULATED WITH 2 LAYER OF 2" (50MM) THICK FLEXIBLE ELASTOMERIC INSULATION WITH FACTORY APPLIED COATING. PROVIDE SLOPED EXTRUDED POLYSTYRENE INSULATION SUPPORTED ON TOP OF DUCTWORK TO MAINTAIN SLOPE AT A MINIMUM OF 5% ALL FLANGES SHALL BE COVERED BY A MINIMUM OF 1/2" (12MM). DUCTWORK IN UNHEATED SPACE SHALL BE INSULATED TO R-12.

.13 EXHAUST DUCTWORK WITHIN 5 FT (1.5 M) OF EXTERIOR WALL OR ROOF, AND ALL OUTSIDE AIR INTAKE DUCTWORK, SHALL BE EXTERNALLY INSULATED WITH 1-1/2" (38MM) THICK FOIL FACES FLEXIBLE FIBREGLASS DUCT INSULATION. APPLY USING RECOMMENDED ADHESIVE AND TAPE ALL JOINTS USING VAPOUR BARRIER TAPE.

.14 PROVIDE '3M' DUCT SEALANT TO SEAL ALL JOINTS AND FITTINGS OF SUPPLY, RETURN AND EXHAUST AIR DUCTS.

.15 PROVIDE ALL CONTROLS, WIRING IN CONDUITS, RELAYS, APPURTENANCES AND CONNECTIONS NECESSARY FOR COMPLETE AND OPERATING SYSTEMS. NEW EQUIPMENT SHALL MATCH EXISTING BASE BUILDING STANDARD UNLESS NOTED OTHERWISE.

.16 FOR RELOCATION OF EXISTING THERMOSTATS, MODIFY (REMOVE, EXTEND AND PROVIDE NEW WHERE NECESSARY) THE EXISTING WIRING (POWER AND CONTROL) IN CONDUITS TO SUITE NEW LAYOUT.

.17 RECALIBRATE EXISTING THERMOSTATS THAT ARE NOTED TO BE RELOCATED. TEST AND COMMISSIONING ALL NEW AND RELOCATED THERMOSTATS AND SUBMIT WRITTEN REPORT TO ENGINEER.

.18 PROVIDE TESTING, BALANCE AND COMMISSIONING OF ALL AIR SYSTEMS. COMMISSIONING SHALL INCLUDE PUTTING INTO SERVICE, ADJUSTING, CALIBRATING AND VERIFYING ALL SYSTEMS, BOTH NEW AND EXISTING. THE WORK SHALL BE PROVIDED BY AN INDEPENDENT COMPANY APPROVED BY THE OWNER.

.19 PRIOR TO COMMENCEMENT OF THE CONTRACT WORK, TEST AND VERIFY ON SITE, THE SUPPLY AIR QUANTITY PRESENTLY AVAILABLE FROM MAIN AIR SUPPLY DUCTS, EACH FAN POWERED BOX/FAN COIL/HEAT PUMP, AND EACH SUPPLY AIR DIFFUSER WITHIN THE PROJECT SPACES. SUBMIT THE TEST RESULTS READING REPORT.

.20 MARK THE FINAL BALANCE POSITION ON ALL BALANCING DAMPERS AND ADJUSTABLE AIR TURNING DEVICES AND BALANCE FITTINGS.

.21 PROVIDE AIR BALANCE IN ACCORDANCE TO 10% OF DESIGN REQUIREMENTS, AND TO MEET BASE BUILDING STANDARDS.

.22 SUBMIT AIR SYSTEMS TEST AND BALANCE REPORT.

4. PLUMBING & DRAINAGE

.1 ALL WORK SHALL BE EXECUTED BY LICENSED PLUMBERS.

.2 ALL PLUMBING AND DRAINAGE WORK SHALL BE INSTALLED AS REQUIRED BY ONTARIO BUILDING CODE, REVISED TO DATE, AND SHALL MEET THE REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION.

.3 CONTRACT EXTENDS TO 5' (1.5M) OUTSIDE THE BUILDING.

.4 ALL ABOVE GROUND DOMESTIC WATER PIPING SHALL BE TYPE 'L' COPPER WITH CAST BRASS OR WROUGHT COPPER FITTINGS. WHERE PERMITTED BY OBC AND FIRE CODE, UPONOR #PEX-A PLUMBING SYSTEM ARE ALLOWED TO BE USED.

.5 BURIED DOMESTIC WATER PIPING SHALL BE TYPE 'K' COPPER OR CEMENT LINED DUCTTILE IRON, OR PVC (BY UPONOR) APPROVED FOR MUNICIPAL POTABLE WATER.

.6 ABOVE GROUND SANITARY AND STORM DRAINS, 75MM (3") DIA. AND UNDER SHALL BE COPPER DRAINAGE TUBE (DWV), CAST BRASS FITTINGS AND 50/50 SOLDER JOINTS. DRAINS 100MM (4") DIA. AND OVER SHALL BE STANDARD WEIGHT CAST IRON PIPE AND FITTINGS WITH MECHANICAL JOINTS. WHEN PVC IS USED, THE PIPING AND FITTINGS SHALL HAVE THE PHYSICAL, CHEMICAL, AND OTHER PROPERTIES FOR SEWER AND DRAINAGE APPLICATIONS AND SHALL MEET THE QUALITY ASSURANCE TEST REQUIREMENTS OF THIS STANDARD WITH REGARD TO PRESSURE RATING, MATERIAL, WORKMANSHIP, BURST PRESSURE, FLATTENING, IMPACT RESISTANCE, AND EXTRUSION QUALITY. THE PIPING AND FITTINGS SHALL MEET OBC AND FIRE CODE.

.7 ALL BURIED STORM AND SANITARY DRAINAGE PIPING SHALL BE PVC SDR 35 WITH SOLVENT JOINTS. 8" (200MM) AND OVER USE GASKETTED JOINTS.

.8 PROVIDE ISOLATING BALL VALVES ON MAIN AND/OR BRANCH LINES AND FOR ALL EQUIPMENT SERVED WITH HOT AND COLD WATER LINES. ALL VALVES SHALL BE SUITABLE FOR THE OPERATING PRESSURE OF THE SYSTEM IN WHICH THEY ARE INSTALLED. MAKE AND MODEL SHALL BE AS PER BASE BUILDING STANDARDS AND SPECIFICATIONS, UNLESS NOTED OTHERWISE.

.9 FINAL LOCATION OF ALL NEW PLUMBING FIXTURES SHALL BE CO-ORDINATED ON SITE WITH ALL TRADES. REFER TO ARCHITECTURAL DRAWINGS AND DETAILS FOR EXACT LOCATION OF PLUMBING FIXTURES.

.10 PROVIDE NEW PLUMBING FIXTURES WHERE INDICATED ON PLAN OF MAKE AND MODEL AS SPECIFIED. ALL FIXTURES SHALL BE OF FIRST QUALITY, BEST GRADE OBTAINABLE, CLEANED AND IN PERFECT CONDITION FOR THE TENANT OWNER TAKEOVER. FIXTURES SHALL BE PIPED COMPLETE IN A FIRST CLASS MANNER WITH ALL NECESSARY APPURTENANCES FOR A COMPLETE FIXTURE IN EVERY RESPECT. INSTALL ALL COMPONENTS IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

.11 DISCONNECT AND CAP ALL EXISTING DRAIN, VENT, HOT AND COLD WATER PIPES NOT USED IN THIS CONTRACT AT FLOOR, WALL OR CEILING.

.12 PROVIDE ACCESS DOORS TO ALL PLUMBING EQUIPMENT WHERE INDICATED AND/OR REQUIRED OF SIZE TO SUIT CONVENIENT MAINTENANCE REQUIREMENTS.

.13 CLEANOUTS SHALL BE INSTALLED AS REQUIRED BY CODE AND WHERE SHOWN AND SHALL SUIT FLOORING MATERIAL.

.14 COVER ALL HOT AND COLD WATER AND CONDENSATE DRAIN PIPING WITH 25 MM (1") PRE-MOULDED LOW PRESSURE GLASS FIBRE INSULATION. FOR COLD WATER PIPING USE A VAPOUR BARRIER JACKET ADHERED AT LONGITUDINAL LAPS AND JOINTS. SEAL STRIPS WITH A SUITABLE VAPOUR BARRIER LAP CEMENT. RECOVER ALL INSULATION IN "EXPOSED" AREAS (AREAS WITHOUT CEILINGS) WITH 250 GM/SQ.M (6 OZ/SQ.YD.) CANVAS.

.15 COVER ALL FITTINGS, VALVES, WATER METERS AND APPURTENANCES CONNECTED TO HOT AND COLD WATER PIPING AND CONDENSATE DRAIN PIPING WITH 25 MM (1") INSULATION CEMENT OR AEROCOR. SEAL INSULATION FOR COLD WATER FITTINGS WITH A VAPOUR BARRIER ADHESIVE AND REINFORCE WITH GLASS OPEN WEAVE FIBRE TAPE AND FINISH SMOOTH WITH A COAT OF MASTIC. RECOVER FITTINGS AND APPURTENANCES IN "EXPOSED" AREAS (AREAS WITHOUT CEILINGS) WITH 250 GM/SQ.M (6 OZ/SQ.YD.) CANVAS.

.16 ALL HORIZONTAL SANITARY AND STORM PIPING AND FITTINGS SHALL BE COVERED WITH 25 MM (1") THICK FIBERGLASS DUAL TEMPERATURE INSULATION, 88.10 KG/M3 (5.5 LB DENSITY), FACTORY APPLIED, FIRE RESISTIVE FIBERGLASS REINFORCED KRAFT PAPER AND ALUMINUM FOIL VAPOUR BARRIER OR EQUAL. RECOVER PIPING IN "EXPOSED" AREAS WITH 250 GM/SQ.M (6 OZ/SQ.YD.) CANVAS.

.17 PROVIDE COMPLETE VENTING SYSTEM AS PER O.B.C. REQUIREMENT.

5. SUBMISSION

.1 PRIOR TO COMMENCEMENT OF THE CONTRACT WORK, SUBMIT:
- EXISTING MECHANICAL SYSTEMS DRAWINGS
- EXISTING AIR SYSTEM TEST REPORT

.2 SUBMIT SHOP DRAWINGS:
- PLUMBING FIXTURES
- HVAC SYSTEMS

.3 PRIOR TO COMPLETION INSPECTION/REVIEW, SUBMIT THE FOLLOWS:
- AIR BALANCE REPORT
- PLUMBING SYSTEM LETTER OF CERTIFICATE

.4 COMPLETION SUBMISSIONS:
- AS-BUILT DRAWINGS
- OPERATION MANUALS

HL ENGINEERING LTD
7725 BIRCHMOUNT RD, UNIT 46, MARKHAM,
ON L3R 9X3 905-713-0003 www.hlengineering.ca

LICENSED PROFESSIONAL ENGINEER
M. J. LI
AUG. 01, 2025
25029
PROVINCE OF ONTARIO

No.	Description	Date
1	Issued for 60% Review	2025-07-25
2	Issued for Building Permit	2025-08-01

288 KING STREET,
MIDLAND, ONTARIO

MECHANICAL SPECIFICATIONS

Project number	25029
Date	JULY 7, 2025
Drawn by	RC
Checked by	MY

M-21

Scale N.T.S.

July 18th, 2025

Natalie Murdock, Coordinator, Planning/Committee of Adjustment
The Corporation of the Town of Midland
575 Dominion Avenue
Midland, ON
L4R 1R2

Dear Natalie Murdock,

RE: Pre-Submission Review Request (PSUB-11-25)
288 King Street, ARN: 437401000300900
Town of Midland, County of Simcoe

Risk management staff of the Severn Sound Environmental Association (SSEA) has reviewed the following files pertaining to the Pre-Submission Review Request at 288 King Street ("*the property*").

- Inter-Office Memorandum, dated July 17, 2025, from the Planning Services Department at the Town of Midland
- Site Plan drawing, dated July 7, 2025, drawn by Julius Horvath Architect Inc.
- Town of Midland Planning Act Application Pre-Submission Review Request Form, regarding 288 King Street, signed by Julius Horvath, dated July 8, 2025

The following comments relevant to drinking water source protection are offered and are applicable to the application as it is presented in the above-mentioned files. The below comments may become null and void if changes to the application are made.

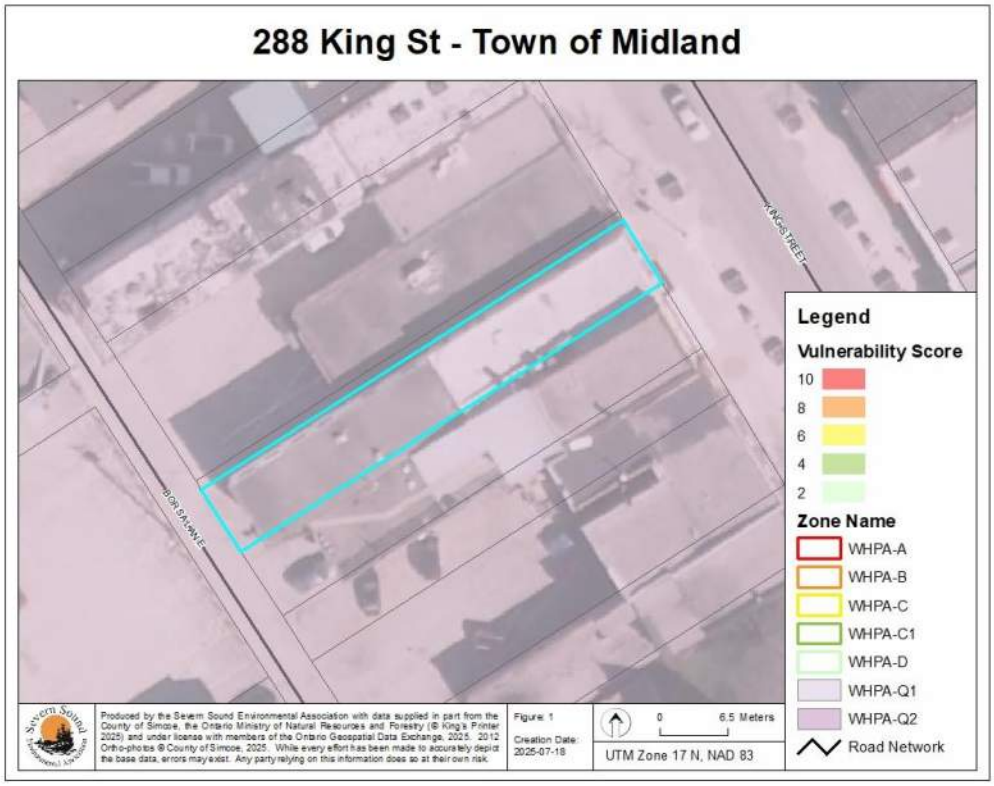
As noted in the above referenced inter-office memo, it is the SSEAs understanding that the Pre-Submission Review Request is to "change current use of the portion on the second floor that is used for business to residential units, creating maximum 4 units while keeping within the gross floor area of the ground floor per zoning requirements. Possibly extending ground floor and upper floors to rear lot line. Adding a new third floor with maximum 4 residential units, matching gross floor area of second floor portion within new unit areas."

Comments from the Town of Midland Risk Management Official

The property is not located within any of the Wellhead Protection Areas associated with water quality, within the Town of Midland. Therefore, neither Section 57 (Prohibition) nor Section 58 (Risk Management Plan) of the *Clean Water Act, 2006* apply to this application. As such, no additional notices, letters, or requirements from the Town of Midland Risk Management Official are required as the application is currently presented.

Comments from the Severn Sound Source Protection Authority

The property is located within the Wellhead Protection Area Q1 and Q2 (Figure 1 below) which is an area where a future reduction in recharge would significantly impact that area (SPP, 2015). However, as the property is already fully impervious, policies in the South Georgian Bay Lake Simcoe Source Protection Plan (approved: January 26, 2015; amended: April 30, 2025; effective: July 1, 2015) would not apply.



If you have any questions, please contact the undersigned.

Kind regards,

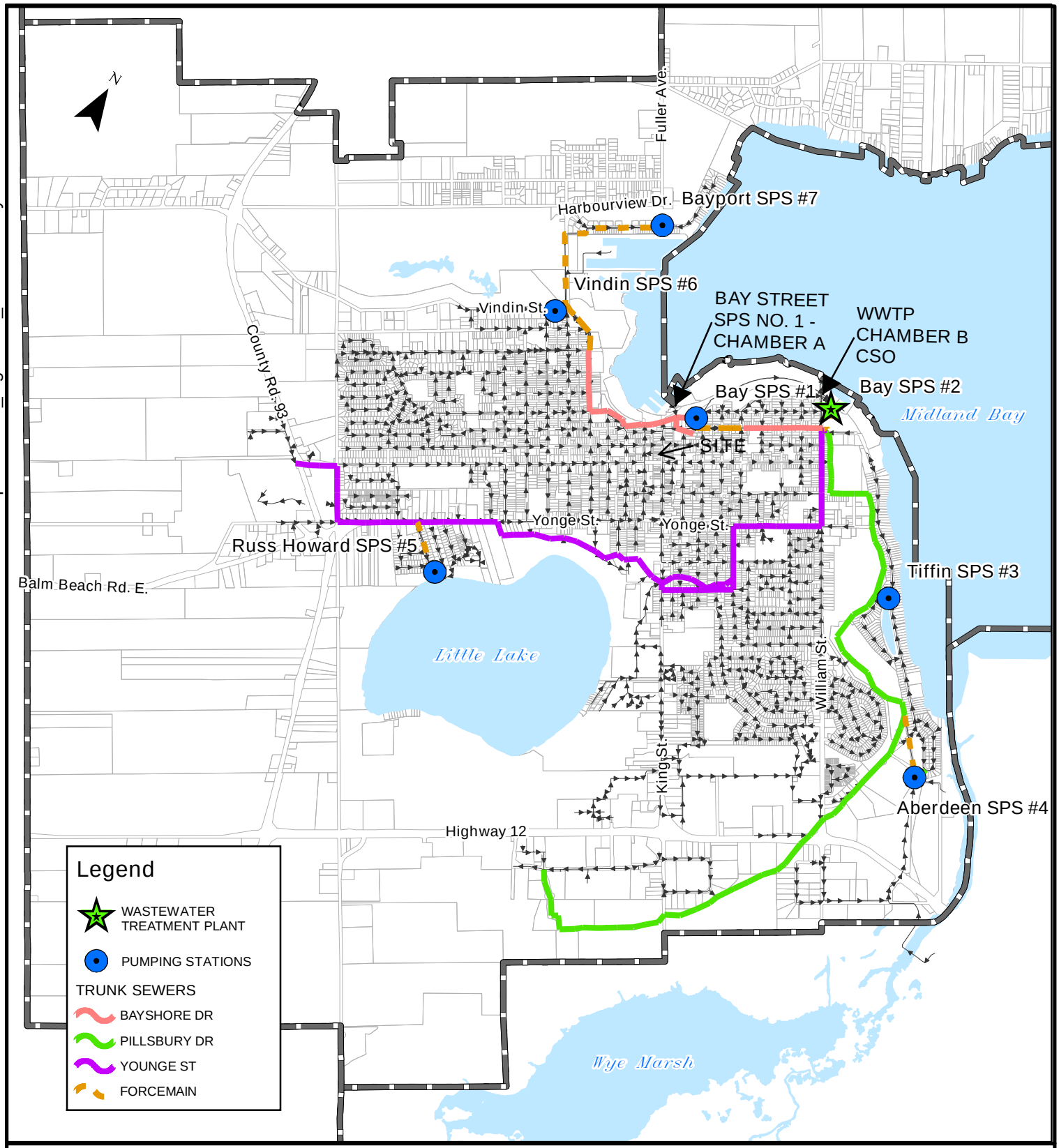
_____

Melissa Carruthers,
Risk Management Official / Inspector for the Town of Midland
Manager Source Water Protection
Severn Sound Environmental Association
mcarruthers@severnsound.ca

CC: Julie Cayley, Executive Director, SSEA
Michelle Hudolin, Manager Watershed Resilience, Wetlands & Habitat Biologist, SSEA

Appendix B

Sanitary (Wastewater) Servicing Information



PROJECT:

TOWN OF MIDLAND WASTEWATER MASTER PLAN

MIDLAND, ONTARIO

DRAWING:

OVERVIEW OF KEY WASTEWATER INFRASTRUCTURE

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS
www.jlrichards.ca

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DESIGN:	BP
DRAWN:	TB
CHECKED:	BP/JW
JLR #:	28243

DRAWING #:

FIGURE 1-2

File Location: P:\28000\28243-000 - Midland Wastewater Master Plan\3-Production\1-Civil\GIS\1 - Phase 1 Report\28243_Figure1-2_OverviewKeyInfrastructure.mxd

Plot Date: Monday, May 11, 2020 1:19:22 PM

7 Sanitary Drainage System

7.1 General

7.1.1 Required Systems

The sanitary sewer system is to be designed to carry domestic, commercial, and industrial sewage for each area or development under consideration. Flow is to be by gravity and pumping will be considered only where other alternatives are not possible and only with the approval of the Manager of Engineering.

If a pumping station is approved by the Town, it shall be designed in accordance with the MECP guidelines with standby power, separate dry well and Town of Midland Standard SCADA Controls all to the satisfaction of the Director of Environment and Infrastructure.

The sanitary drainage system is to be designed in accordance with MECP "Design Criteria for Sanitary Sewers, Storm Sewers, and Forecemains for Alterations Authorized Under Environmental Compliance Approval V1.1 July 28, 2022" in support of the Town CLI-ECA issued by the MECP.

7.1.2 Service Area

The system shall be designed to service all areas within the subdivision to their maximum future development in accordance with the Town's Official Plan. Allowance shall be made for inflows from the appropriate adjacent subdivisions or areas and shall meet with the approval of the Manager of Engineering. Discharges of the system are to be into appropriate sewers and are to be approved by the Town Engineer. The exact location for connecting to sewers in adjacent subdivisions or areas shall be as approved by the Director of Public Works.

7.1.3 Drains

All floor drains are to be connected to the sanitary sewer. Foundation drains, sump pumps and roof water leaders are not to be connected to the sanitary sewer.

7.1.4 Design Flows

The sewers are to be sized for maximum design flows plus an allowance for infiltration. Minimum velocities and slopes are to be determined for maximum design flows without infiltration.

The average daily domestic flow is to be taken as 450 L/day capita. Occupancy shall be taken as 3.0 persons per Single Family Dwelling, 2.5 persons per Townhouse Unit and 2.0 persons per Apartment Unit.

Other flow rates shall be as follows:

Commercial	-	2.5 L/day/m2 of floor area
School	-	100.0 L/day/student
Light Industrial	-	35.0 m3/day/Ha

Maximum design flows are to be determined using average daily flows and the Harmon Peaking Factor.

A wet weather infiltration rate of 20,000 litres/hectare/day = 0.23 litres per second per gross hectare is to be used. To satisfy self-cleaning requirements in sanitary sewers, assume dry weather infiltration reduces to zero for several days during dry months.

PARKER CONSULTING ENGINEERS LTD.

Project: Mixed-Use Site Plan
Location: 288 King Street, Town of Midland, County of Simcoe, Ontario
Client: Ervis Balliu

PCEL File No.: 2509001
Date: November 2025
Revision No.: 0

Subject: **Sanitary Servicing Calculations**
Proposed Sanitary Flow Rates - Town of Midland Criteria

Based on the architectural *Site Plan* , the commercial mix-use site has an area of 381.12 square meters and a proposed building area of 792.5 square meters (combined floors).

The Town's Engineering Development Design Standards (July 2025) specify two persons per apartment unit with a per capita daily flow rate of 450 litres. The standards also specify that the commercial flows are based on a rate of 2.5 litres per square meter of floor area and an extraneous wet weather infiltration flow rate of 0.23 liters per second per hectare.

The building has a design population of 16 persons (8 units x 2 persons).
The peak sanitary flow rate is calculated using the Harmon Peaking Formula as follows:

Peak Domestic Sewage Flow Equation: $Q_p = P \times q \times M / 86.4 + I \times A$

Where: Q_p *= peak residential sanitary sewage flow, including extraneous flow (L/s) , P = design population in thousands, q = average domestic flow per capita (litres/day/person), M = Peaking factor (no less than 2 and not greater than 4), I = Peak extraneous flow (litres/hectare/day), A = tributary area (hectares)*

Harmon Formula: $M = 1 + 14/(4 + P^{1/2})$

Where: M = ratio of peak flow to average flow, P = tributary population in thousands

Where: $M = 1 + 14/(4 + (16/1000)^{1/2})$
$M = 1 + 3.23$
$M = 4.49$ *however,* $2 <= M <= 4$
M = 4

Where: $Q_p = 16/1000 \times 450$ *L/p/day* $\times 4 \times 1 / 86.4 + 0.23$ *L/s/ha* $\times 0.0315$ *ha*
$Qp = 0.33 + 0.0073$ *L/s*
$Qp = 0.34$ *L/s*

Therefore the residential units and extraneous area will generate a peak sanitary flow of 0.34 liters per second. Note that this excludes the commercial flow rate.

The commercial floor area flow rate is calculated below.

Sewage Flow Equation: $Q_p = A \times Q \times 2$

Where: Q_p *= peak sanitary sewage flow, excluding extraneous flow (L/d) , Q = average commercial flow at 2.5L per day per square metre of floor area (litres/day/sq.m), A = commercial area (square metres), 2 = peaking factor for commercial developments*

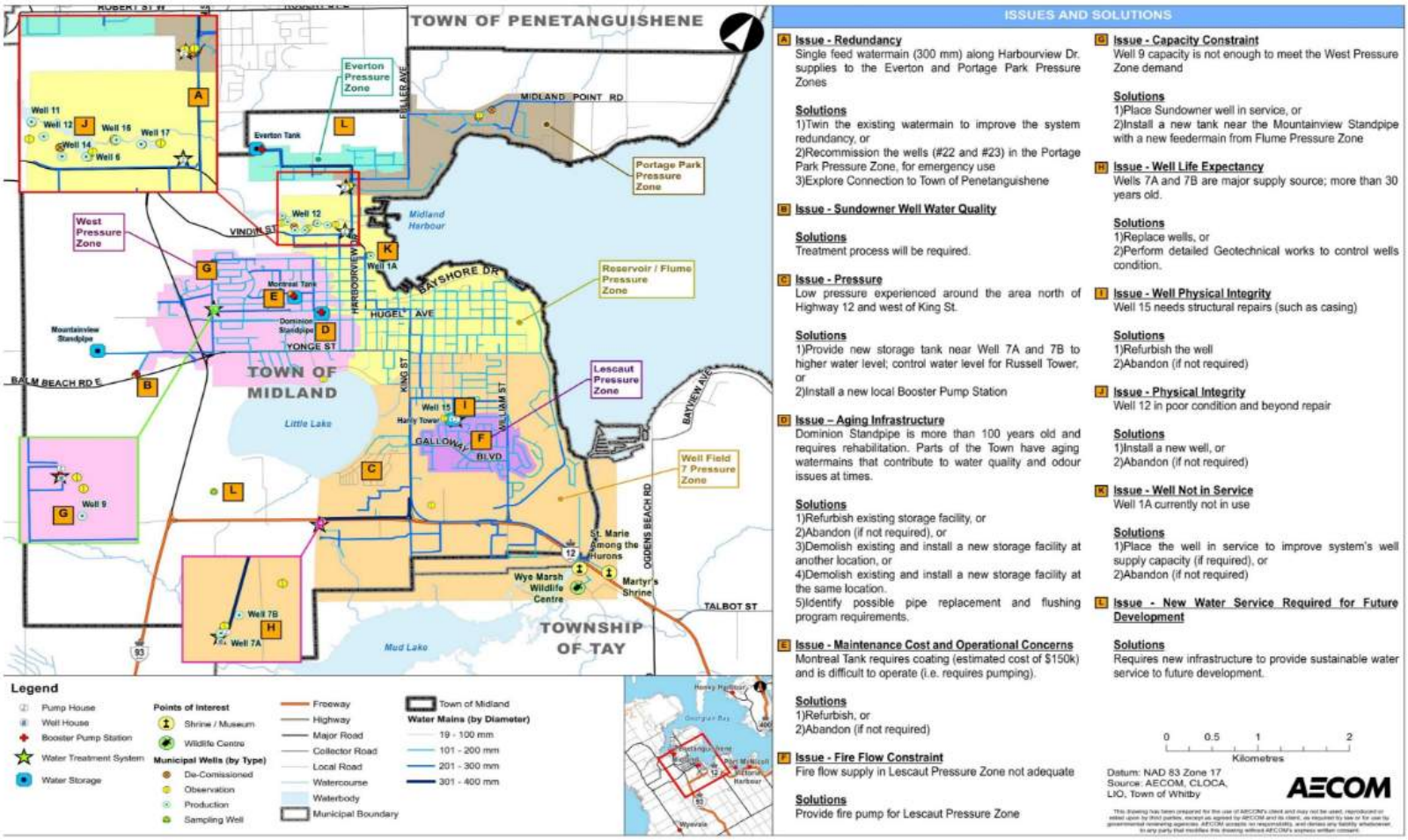
$Q_p = 315 \text{ sq.m} \times 2.5 \text{ L/d/sq.m} \times 1/86400 \times 2$

Qp = 0.0182 L/s

Therefore the site's proposed peak commercial sanitary flow rate is 0.0182 liters per second.
The site's total combined residential, commercial and extraneous flow rate is 0.3588 L/s.

Appendix C
Water Servicing Information

Figure 8: Summary of Issues and Potential Solutions



ISSUES AND SOLUTIONS

A Issue - Redundancy
Single feed watermain (300 mm) along Harbourview Dr. supplies to the Everton and Portage Park Pressure Zones

Solutions
1)Twin the existing watermain to improve the system redundancy, or
2)Recommission the wells (#22 and #23) in the Portage Park Pressure Zone, for emergency use
3)Explore Connection to Town of Penetanguishene

B Issue - Sundowner Well Water Quality

Solutions
Treatment process will be required.

C Issue - Pressure
Low pressure experienced around the area north of Highway 12 and west of King St.

Solutions
1)Provide new storage tank near Well 7A and 7B to higher water level; control water level for Russell Tower, or
2)Install a new local Booster Pump Station

D Issue – Aging Infrastructure
Dominion Standpipe is more than 100 years old and requires rehabilitation. Parts of the Town have aging watermains that contribute to water quality and odour issues at times.

Solutions
1)Refurbish existing storage facility, or
2)Abandon (if not required), or
3)Demolish existing and install a new storage facility at another location, or
4)Demolish existing and install a new storage facility at the same location.
5)Identify possible pipe replacement and flushing program requirements.

E Issue - Maintenance Cost and Operational Concerns
Montreal Tank requires coating (estimated cost of $150k) and is difficult to operate (i.e. requires pumping).

Solutions
1)Refurbish, or
2)Abandon (if not required)

F Issue - Fire Flow Constraint
Fire flow supply in Lescaut Pressure Zone not adequate

Solutions
Provide fire pump for Lescaut Pressure Zone

G Issue - Capacity Constraint
Well 9 capacity is not enough to meet the West Pressure Zone demand

Solutions
1)Place Sundowner well in service, or
2)Install a new tank near the Mountainview Standpipe with a new feedermain from Flume Pressure Zone

H Issue - Well Life Expectancy
Wells 7A and 7B are major supply source; more than 30 years old.

Solutions
1)Replace wells, or
2)Perform detailed Geotechnical works to control wells condition.

I Issue - Well Physical Integrity
Well 15 needs structural repairs (such as casing)

Solutions
1)Refurbish the well
2)Abandon (if not required)

J Issue - Physical Integrity
Well 12 in poor condition and beyond repair

Solutions
1)Install a new well, or
2)Abandon (if not required)

K Issue - Well Not in Service
Well 1A currently not in use

Solutions
1)Place the well in service to improve system's well supply capacity (if required), or
2)Abandon (if not required)

L Issue - New Water Service Required for Future Development

Solutions
Requires new infrastructure to provide sustainable water service to future development.

0 0.5 1 2
Kilometres

Datum: NAD 83 Zone 17
Source: AECOM, CLOCA, LIO, Town of Whitby

AECOM

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avoided. A minimum of 2 supply lines shall be installed between the water supply works and the distribution system.

8.3.2 Service Area

The system shall be designed to service all areas within the subdivision to their maximum future developments in accordance with the Town's Official Plan. Allowance shall be made for connection to appropriate mains in adjacent subdivisions or areas and shall meet the approval of the Town of Midland. The exact location for connecting to mains in adjacent subdivisions or areas shall be as approved by the Town.

8.3.3 Design Flows

Watermains shall be designed to carry maximum day demand plus fire flows based on the latest publication of the Public Fire Protection Survey, or peak hour flow whichever is greater.

The average daily demand is to be taken as 450 litres/capita/day.

The estimated populations and areas for the different neighbourhoods shall be in accordance with the Official Plan.

The maximum day and peak hour factors shall be determined from the current MECP design guidelines although the following are considered minimums:

- Maximum daily demand factor: 2.0
- Peak hourly demand factor: 4.5

Peak flows, other than domestic flows shall be determined on an individual basis.

8.3.4 Selection of Main Sizes and Pressures

The Hazen-Williams formula ($V = 0.85\ C\ R^{0.63}\ S^{0.54}$) shall be used for computing friction losses and subsequently sizing the watermains.

For new mains the values of "C" coefficient shall be 120 for 150 mm diameter PVC pipe and 110 for 200 mm diameter PVC pipe.

The minimum size of mains shall be 150 millimetres in diameter in residential subdivisions and 200 mm diameter industrial developments.

The minimum pressure during the peak hourly demand shall be 275 kPa (40 psi). The minimum pressure during maximum daily demand (MDD) shall be 345 kPa (50 psi).

The maximum pressure under static load or during the minimum hourly demand shall be 550 kPa.

The minimum fire flow in a residential area is to be 45 litres per second and the minimum fire flow in an industrial area is to be 75 litres per second. Watermains are to be sized accordingly.

The minimum pressure when the system is tested for fire flow in conjunction with the design maximum daily demand shall be 140 kPa.

A hydraulic network analysis of a water distribution system shall be carried out if design flow rates result in excessive head losses and main sizes greater than the minimum specified (150 mm) main sizes or when

requested by the Town of Midland. Hydraulic analysis shall include allowances for demands of adjacent areas anticipated to be met by transmission through the design area.

8.3.5 Oversizing

Oversizing of watermains will be provided as required to provide for adjacent areas where service is expected to be extended, and to provide fire flow requirements including oversizing of hydrants, openings, and leads as required.

8.3.6 Layout Details

a. Watermains

The Town will permit the use of Polyvinyl Chloride PVC (Class 150) or Ductile Iron (Class 52) watermains, 400 mm dia. Pipe size.

All PVC watermain shall be colour coded blue. Minimum cover of 1.8 m over the mains in urbanized areas and 2.2 m in rural areas.

Watermains shall be located on the opposite side of the road from the proposed hydro distribution and opposite to the sidewalk.

A minimum of 0.5 vertical clearance between the watermain and all utilities.

Metallic warning tape shall be used over all watermain.

Watermains shall generally be located as per standard detail drawing to the limits of the subdivision.

When watermains are located on easements the easement width shall be 4.0 m minimum.

A minimum cover of 1.8 metres or 1.9 metres below road centerline, whichever is deeper, is required.

Minimum clearances between other types of services (i.e.: sanitary) shall be provided in accordance with MECP guidelines. A minimum of 0.5m of vertical clearance shall be met.

b. Hydrants

Hydrants shall be located generally on lot lines and where practical, 1.5 metre minimum away from edge of driveways, walkway ramps and house service connections.

Hydrants shall also be located at the end of all 150 mm or larger dead end watermains.

The maximum spacing for hydrants shall be 150 metres for low density residential and 90 metres for higher density residential, industrial, commercial, and institutional or as approved by the Town Fire Department, with a maximum 120 metres fire hose length to the rear of all residential buildings.

Hydrant flange elevation should be set at a grade that will give a final flange elevation of 100 mm above final grade.

Maximum hydrant spacing is 152 m in residential areas and 92 m in General Services areas.

Painting of Hydrants will be completed by the Town of Midland.

c. Valves

PARKER CONSULTING ENGINEERS LTD.

Project: Mixed-Use Site Plan
Location: 288 King Street, Town of Midland, County of Simcoe, Ontario
Client: Ervis Balliu

PCEL File No.: 2509001
Date: November 2025
Revision No.: 0

Subject: Fire Underwriters Survey Calculations - Proposed Building

---

Fire flow demands for the FUS method is based on information and guidance provided in Part 2 of the "Water Supply for Public Protection" (Fire Underwriters Survey, 1999)

An estimate of the fire flow required is given by the following formula:

$$F = 220C\sqrt{A}$$

where:

F = the required fire flow in litres per minute

C = coefficient related to the type of construction

= 1.5 for wood frame construction (structure essentially all combustible).

= 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior)

= 0.8 for non-combustible construction (unprotected metal structural components, masonry or metal walls)

= 0.6 for fire-resistive construction (fully protected frame, floors, roof)

Note: For types of construction that do not fall within the categories given, coefficients shall not be greater than 1.5 nor less than 0.6 and may be determined by interpolation between consecutive construction types as listed above

A = Total floor area in square meters (including all storeys, but excluding basements at least 50% below grade) in the building being considere

Adjustments to the calculated fire flow can be made based on occupancy, sprinkler protection and exposure to other structures. The table below summarizes the adjustments made to the basic fire flow demand.

			(1)		(2)		(3)		(4)		**Final Adjustment**	
Building	GFA (m²)	C	Fire Flow "F" (l/min)	(l/s)	Occupancy (%)	Adjusted Fire Flow (L/min)	Sprinkler %	Adjustment (L/min)	Exposure %	Adjustment (L/min)	**Fire Flow (L/min)**	**(L/s)**
	792.5	0.6	3,716	61.9	0	3,716	0	0	75.00	2,787	**6,503**	**108.4**

Note:

(2) Occupancy		**(3) Sprinkler**	**(4) Exposure**		
Non-Combustible	-25%	30% credit for adequately designed system per	0 to 3m	25%	
Limited Combustible	-15%	NFPA 13. Additional 10% if water supply standard	3.1 to 10m	20%	Calculate for all
Combustible	No Charge	for both the system and fire department hose lines required	10.1 to 20m	15%	sides. Maximum
Free Burning	15%	Additional credit of up to 10% given for a fully	20.1 to 30m	10%	charge shall not
Rapid Burning	25%	supervised system	30.1 to 45m	5%	exceed 75%

Calculations :

(1) Basic Required Fire Flow (F) = 62 L/s

(2) Building classified as limited combustible --------> No Charge 0 %

(3) No sprinkler system ----------> No Charge 0 %

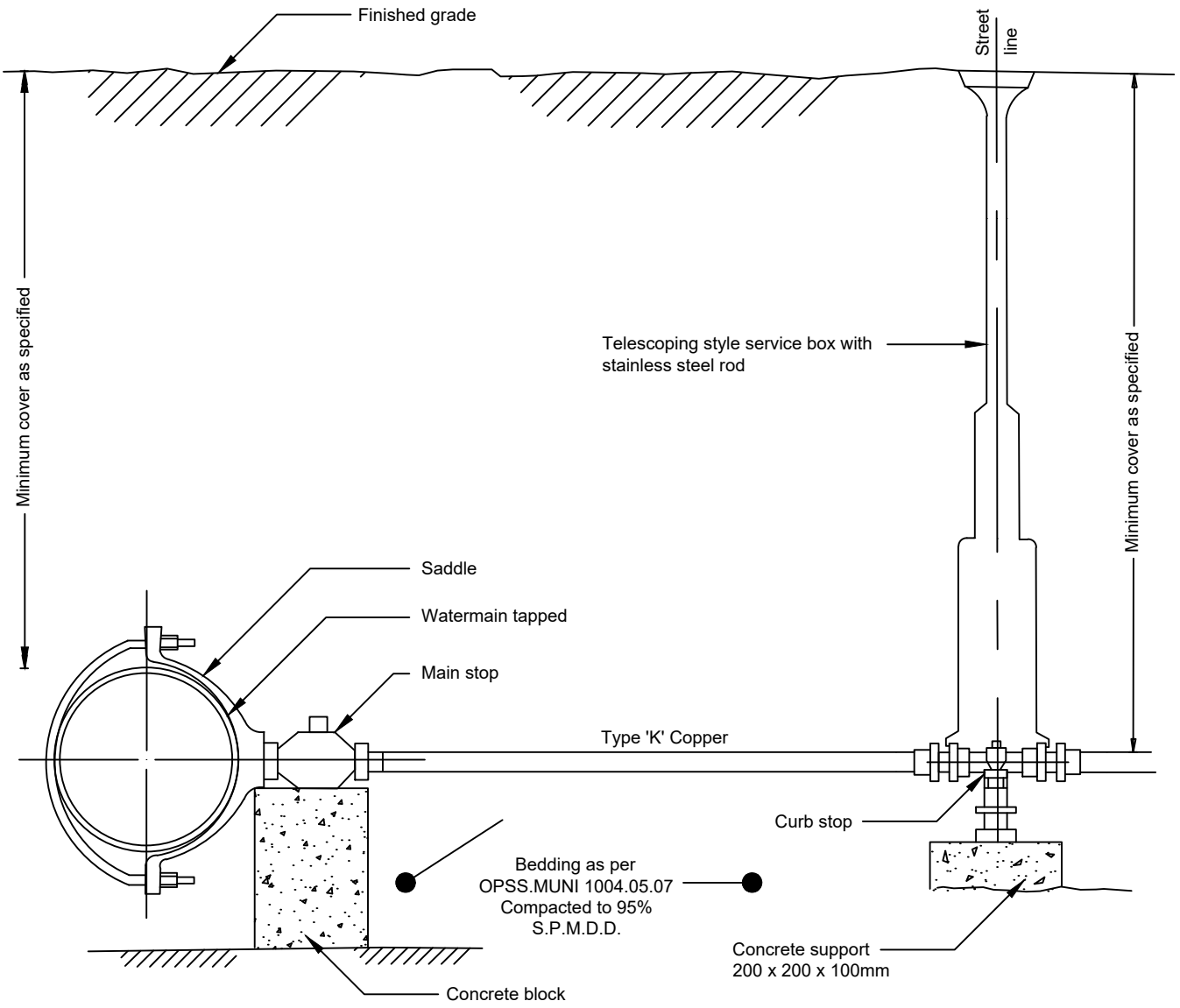
(4) Exposure to building:

	(m)	Charge %
North	2.4	25
South	0.0	25
East	24.0	10
West	18.0	15
Total	75.00	

Increase 75 %

Final Adjusted Fire Flow = Adjustment Flow from (2) + Sprinkler Adjustment (3) + Exposure Adjusment (3)

= **6,503** L/min or **108.4** L/s



Notes

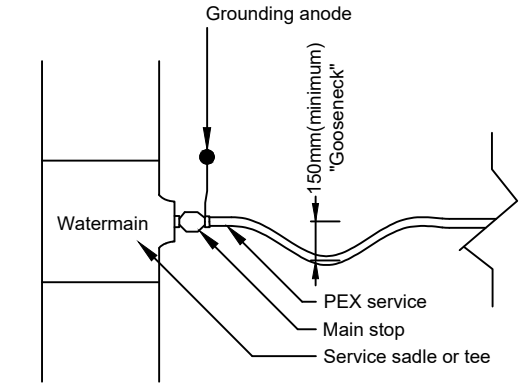
1. Any junction made in a service pipe between main stop and curb stop is to be made with approved couplings (for 50mm services only).
2. All water services are to be installed at a right angle to the watermain.
3. All tappings are to be at a 3 or 9 o'clock position only.
4. 915mm (36") stainless steel service box rod required.
5. See drawing W504 for 38mm and 50mm non-copper water services.
6. All dimensions are in millimetres unless otherwise shown.

Barrie

Water Service
Copper 38mm & 50mm

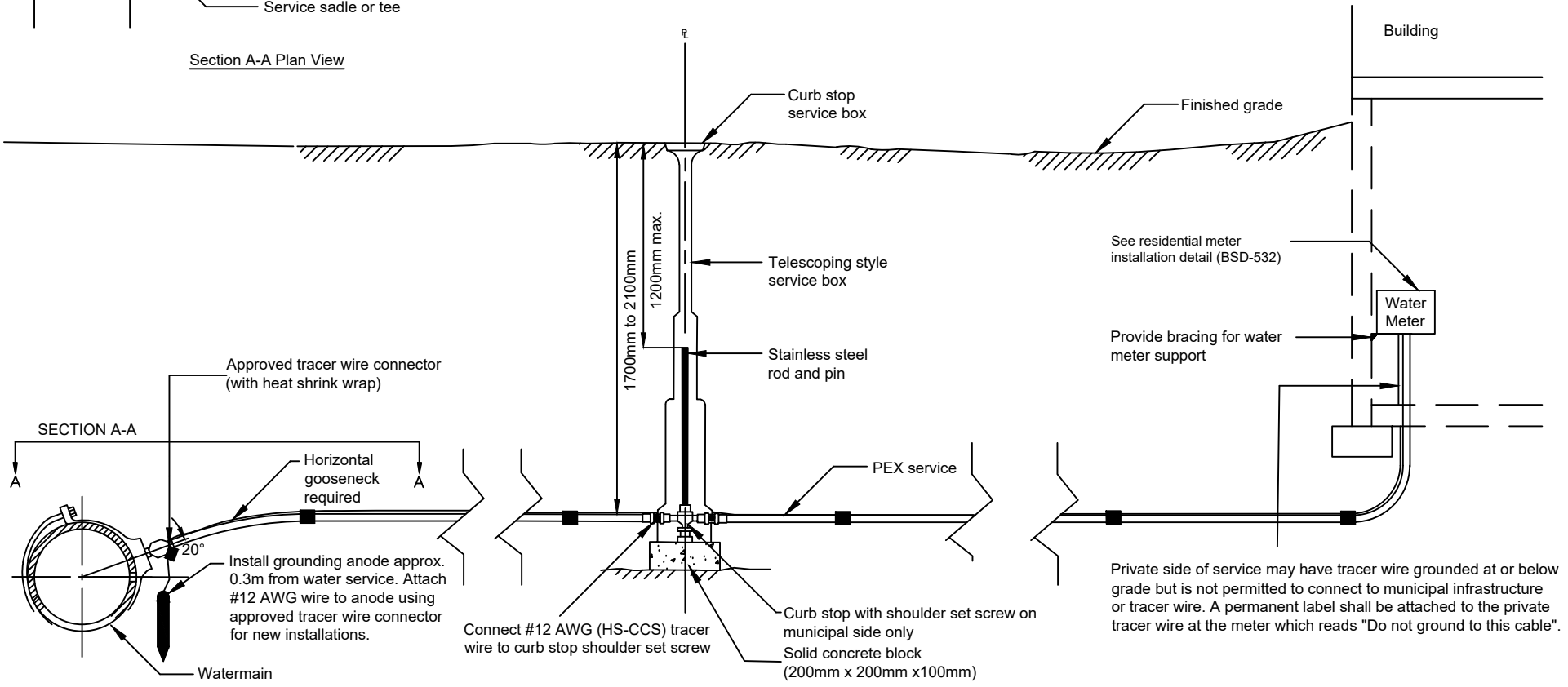
REV No.	DATE: Sept 2024
3	SCALE: N.T.S.

W503



Section A-A Plan View

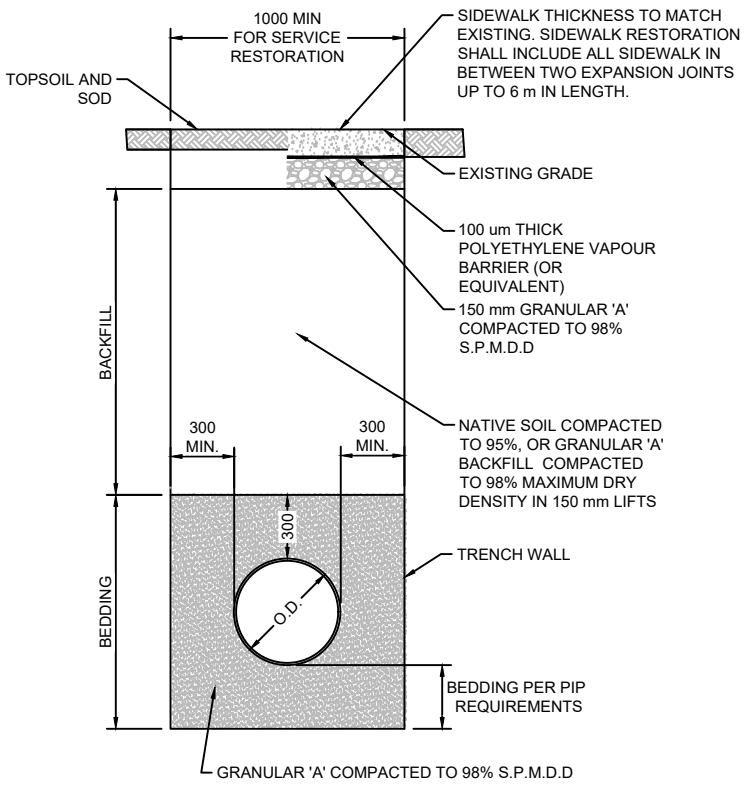
Notes:
1. To be interpreted in conjunction with the current Drinking Water Infrastructure Standards and the Verified Technologies for Drinking Water Systems list.
2. Water service unions will not be permitted.
3. Cross-linked polyethylene (PEX) water services will not be permitted in soils contaminated with hydrocarbons, chemicals or other possible hazards.
4. Any retrofit of a property utilizing City of Barrie water services as grounding potential must be outfitted with ground rods/plates as per current electrical safety code, standards and requirements and shall be inspected by the E.S.A. as part of the PEX standard.
5. #12 AWG high-strength copper clad steel (HS-CCS) tracer wire to be installed with continuity from watermain to curb stop. Tape tracer wire to water service at 3000mm minimum intervals.



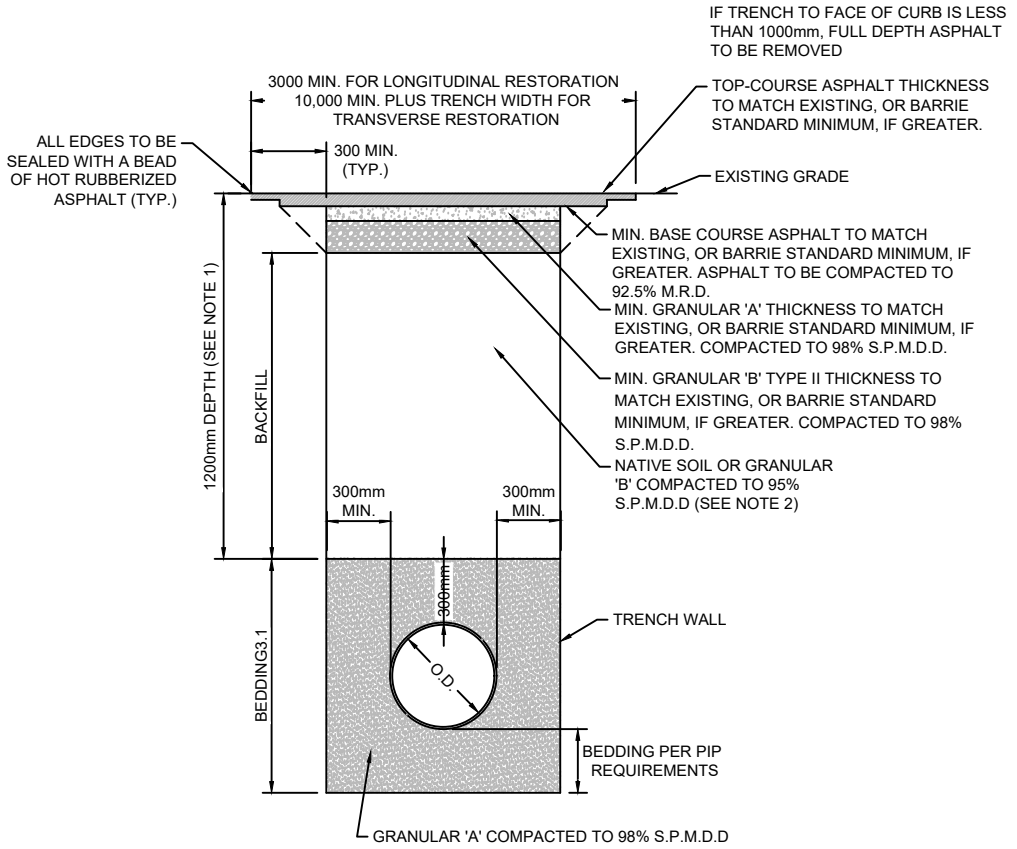
Barrie

Water Service
Cross-linked Polyethylene 25mm to 50mm

REV No.	DATE: APR 2024
5	SCALE: N.T.S
	W504



BOULEVARD



ROADWAY

NOTES:

1. FROST TAPER USED IF DEPTH IS LESS THAN 1200mm
2. UNSHRINKABLE FILL TO BE USED IN INTERSECTIONS AND ON HIGH VOLUME ARTERIAL/COLLECTOR ROADS.
3. ENHANCED TRENCH RESTORATION TECHNIQUES MAY BE REQUIRED BY THE APPLICABLE CITY OF BARRIE DEPARTMENT ABOVE AND BEYOND WHAT IS SHOWN ON THIS DRAWING.
4. ALL DIMENSIONS SHOWN IN MILLIMETRES UNLESS OTHERWISE NOTED.

Barrie

TRENCH RESTORATION

REV No.	DATE: AUG 2023
3	SCALE: N.T.S.
	R330

Appendix D

Stormwater Servicing Information

The normal maximum velocity shall be 5.00 metres per second at full flow for sewers and 1.50 metres per second for channels. Energy dissipaters at outlets will be designed to reduce velocities to 1.00 metre per second or less.

A sufficient drop shall be provided across each manhole to offset any hydraulic losses, the obverts of inlet pipes shall not be lower than obverts of outlet pipes and drop structures shall be used only when drops of more than 0.9 metres are necessary. Calculations for hydraulic losses shall be included with storm design information.

Except for special cases, the downstream pipe diameter shall always be greater than or equal to the upstream pipe diameter.

6.3.2 Runoff Calculations

Flow Calculations

Rainfall equations or curves and design storm hydrographs must be approved by the Director of Public Works.

When the Rational Method is used, an initial inlet time of 15 minutes shall be used except where the zoning requires the use of a coefficient of 0.6 m or higher in which case a 10-minute inlet time shall be used.

Run-off coefficients are to be determined from the most recent MECP Guidelines. A minimum run-off coefficient of 0.55 is to be used for undeveloped upstream area where future residential development is expected and 0.75, where future industrial, high-density residential or commercial development is expected.

Run-off coefficients for the Rational Method shall be as follows:

Category	Soil Type, Area or Medium	Coefficient	Category	Soil Type, Area or Medium	Coefficient
Lawns	Sandy soil, Flat, 2%	0.05-0.10	Industrial	Light Areas	0.50-0.80
	Sandy soil, average, 2-7%	0.10-0.15		Heavy Areas	0.60-0.90
	Sandy soil, steep%	0.15-0.20	Parks, Cemeteries		0.10-0.25
	Heavy soil, flat, 2%	0.13-0.17	Railroad Yard Areas		0.20-0.40
	Heavy soil, average 2-7%	0.18-0.22	Unimproved Areas		0.10-0.30
	Heavy soil, steep, 7%	0.25-0.35	Streets	Asphalt	0.70-0.95
Business	Downtown Areas	0.0-0.95		Concrete	0.80-0.95
	Neighborhood Areas	0.50-0.70		Brick	0.70-0.85
Residential	Single-Family Areas	0.30-0.50	Driveways and Walkways		0.75-0.85
			Roofs		0.75-0.95
	Multi-units Detached	0.40-0.60	Apartment Dwelling Areas		0.5-0.70

PARKER CONSULTING ENGINEERS LTD.

Project: Mixed-Use Site Plan
Location: 288 King Street, Town of Midland, County of Simcoe, Ontario
Client: Ervis Balliu

PCEL File No.: 2509001
Date: November 2025
Revision No.: 0

Subject: Stormwater Catchment Area Properties - Pre-Development

Based on the Pre-Development Storm Drainage Plan information, the property's existing stormwater catchment area runoff coefficient information is summarized below.

The catchment area runoff coefficients (C) are based on the Town's Engineering Development Design Standards (July 2025), Section 6 – Storm Drainage System, Subsection 6.3.2 Runoff Calculations, Runoff Coefficient Table

Table 1: Pre-Development Area Runoff Coefficients

		Runoff Coefficient "C"		
Catchment Area	**Total Area (ha) "A"**	**Asphal or Concrete (ha)**	**Building (ha)**	**Weighted Runoff Coefficient "R"**
		0.95	**0.95**	
101	0.01608		0.016	0.950
102	0.01604	0.0003	0.016	0.950
103	0.00264	0.003		0.950
Total Area:	**0.0348**	0.003	0.032	
Percentage:	100%	8.5%	91.5%	
			Weighted Runoff Coefficient:	**0.950**

Table 1 confirms that the site's pre-development runoff coefficient is 0.95 for catchment areas 101 - 103.

PARKER CONSULTING ENGINEERS LTD.

Project: Mixed-Use Site Plan
Location: 288 King Street, Town of Midland, County of Simcoe, Ontario
Client: Ervis Balliu

PCEL File No.: 2509001
Date: November 2025
Revision No.: 0

Subject: Stormwater Catchment Area Properties - Post-Development

Based on the Post-Development Storm Drainage Plan information, the property's proposed stormwater catchment area runoff coefficient information is summarized below.

The catchment area runoff coefficients (C) are based on the Town's Engineering Development Design Standards (July 2025), Section 6 – Storm Drainage System, Subsection 6.3.2 Runoff Calculations, Runoff Coefficient Table

Table 1: Post-Development Area Runoff Coefficients

		Runoff Coefficient "C"		
Catchment Area	**Total Area (ha) "A"**	**Asphal or Concrete (ha)**	**Building (ha)**	**Weighted Runoff Coefficient "R"**
		0.95	**0.95**	
101	0.01608		0.016	0.950
102	0.01604	0.0003	0.016	0.950
103	0.00264	0.003		0.950
Total Area:	**0.0348**	0.003	0.032	
Percentage:	100%	8.5%	91.5%	
			Weighted Runoff Coefficient:	**0.950**

Table 1 confirms that the site's pre-development runoff coefficient is 0.95 for catchment areas 201 - 203.

Appendix E
Utility Provider Information

ParkerConsultingEngineers@outlook.com

From: solutions@on1call.com
Sent: November 19, 2025 7:43 AM
To: parkerconsultingengineers@outlook.com
Subject: Request 2025477017
Attachments: MapSelection_19112025_07370313.jpg; 2509001-BASE-KING-SS-1.jpg

LOCATE REQUEST CONFIRMATION

REQUEST #:	REQUEST PRIORITY:	REQUEST TYPE: REGULAR	WORK TO BEGIN DATE:
2025477017	**PLANNING**		**11/26/2025**
Update of Request #	**Project #:**	**Call Date: 11/19/2025 07:29:47 AM**	**Transmit Date: 11/19/2025 07:42:22 AM**

REQUESTOR'S CONTACT INFORMATION	
Contractor ID: 503514 **Contact Name:** JIM PARKER **Company Name:** PARKER CONSULTING ENGINEERS LTD. **Address:** 43 HIAWATHA DRIVE, PORT SYDNEY, ON, P0B 1L0 **Email:** parkerconsultingengineers@outlook.com **Primary Phone #:** (705) 796-7208 **Cell Phone #:**	**Contact Name:** JIM PARKER **Contact #:** (705) 796-7208

DIG INFORMATION		
Region/County: SIMCOE **Community:** **City:** MIDLAND **Address:** 288, KING ST **Intersecting Street 1:** ELIZABETH ST **Intersecting Street 2:** HUGEL AVE	**Reason for Work:** DESIGN AND PLANNING	**Work End Date:**

ADDITIONAL INFORMATION	QUALIFYING INFORMATION

OUR OFFICE IS WORKING ON A RE-DEVELOPMENT PROJECT AT 288 KING STREET IN THE TOWN OF MIDLAND. CAN YOU PLEASE PROVIDE A COPY OF THE EXITING UTILITY INFORMATION (ROGER, BELL, ENBRIDGE, HYDRO ONE) FOR KING STREET AND BORSA LANE? THE INFO IS REQUIRED FOR A COMPOSITE UTILITY PLAN THAT THE TOWN HAS REQUESTED AS PART OF THE SITES BUILDING PERMIT APPLICATION. CURRENTLY, IT IS ONLY PLANNED TO UPSIZE THE WATERMAIN CONNECTION AT KING STREET IN THE SPRING OF 2026, BUT AS PART OF THE TOWN'S REVIEW APPROVAL PROCESS, ALL OF THE UTILITIES AT THE FRONT AND REAR OF THE BUILDING NEED TO BE ILLUSTRATED ON THE CUP. THANKS FOR YOUR HELP.	

MEMBERS NOTIFIED: The following owners of underground infrastructure in the area of your excavation site have been notified.

Member Name	Station Code	Initial Status
BELL CANADA - PLANNING (BCPRE)	BCPRE	Notification sent
G-TEL FOR ENBRIDGE GAS PRE-ENGINEERING DISTRIBUTION (ENP50)	ENP50	Notification sent
VIANET (768812 ONTARIO INC) (VNET01)	VNET01	Notification sent
ROGERS COMMUNICATIONS - DESIGN & PLANNING (ROGSIMPL)	ROGSIM01	Notification sent

MAP SELECTION: Map Selection provided by the Excavator through Ontario One Call's Map tool or through agent interpretation by ph

Name: Utility request lim
Start Date: 2025/12/03
Unit / Lot #: Front - rear of bld
Area: 1432.28sq. m

ParkerConsultingEngineers@outlook.com

From: Markups (NT Power) <markups@ntpower.ca>
Sent: November 19, 2025 1:48 PM
To: ParkerConsultingEngineers@outlook.com
Cc: Kirby Fleury; Engineering; Operations Center
Subject: RE: 288 King Street-Hydro Info
Attachments: NT Power Mark-up Request - King St & Borsa Ln.pdf

Hi Jim,

Please see the attached layout for the requested area.

Please note that the information provided in the maps is a representation of our infrastructure in the field. Locates are required to determine the exact location of our infrastructure.

Thank you,

Kevin Windsor
GIS Technician
W: (289) 470-0630
C: (289) 383-0809
Powering with Purpose

From: Jim Parker <ParkerConsultingEngineers@outlook.com>
Sent: Wednesday, November 19, 2025 8:40 AM
To: Customer Service <customerservice@ntpower.ca>
Subject: 288 King Street-Hydro Info

You don't often get email from parkerconsultingengineers@outlook.com. Learn why this is important

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good morning.

Our office is working on a re-development project at 288 King Street in the Town of Midland. Can you please provide a copy of the exiting hydro information for King Street and Borsa Lane?

The site location is provided in the below Google screen shot, and I've attached a copy of the draft site servicing plan.

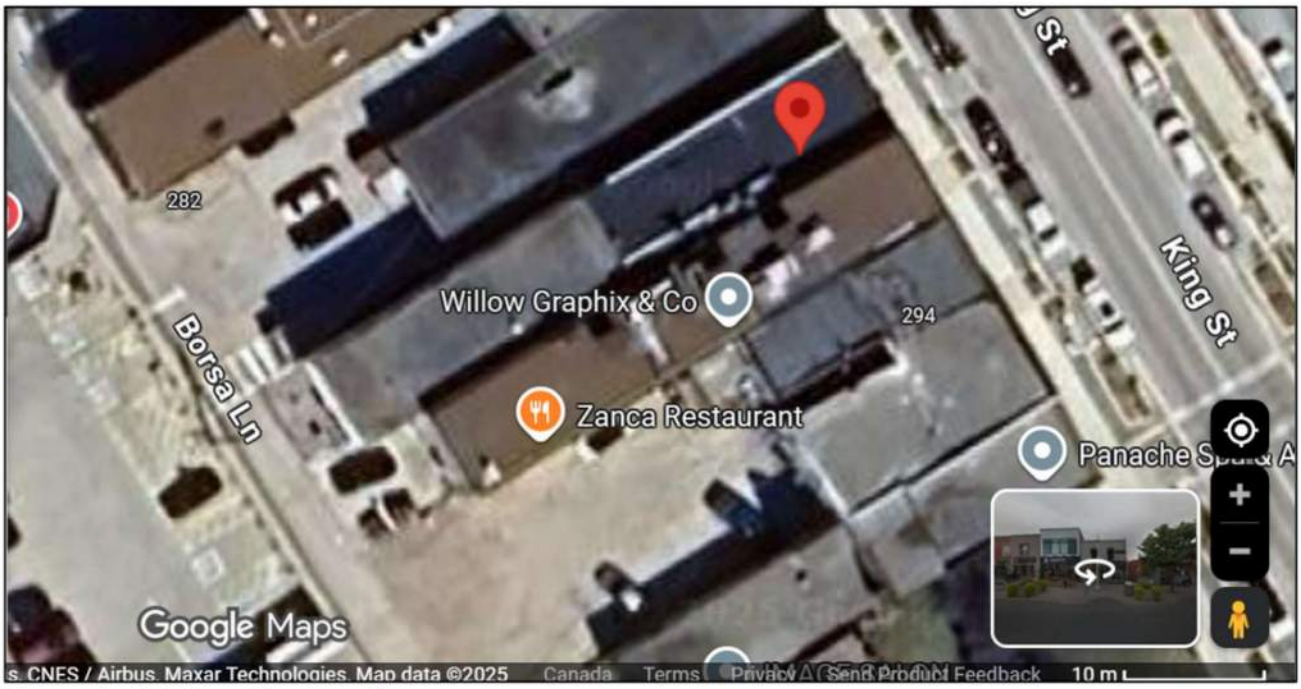


Figure 1: Existing Site Location

Let me know if you have any questions or comments.

Thanks, and have a nice day.

N

Legend

- Underground Conduit/ Utility Trench
- Abandoned Conductor
- Primary UG Conductor
- Secondary UG Conductor

Underground Structure

Subtype

- Manhole
- Handhole
- Vault
- Single Phase Foundation
- Three Phase Foundation
- Switchgear Foundation
- Junction Foundation
- Transformer Bank

Custom

- Third Party Owned
- NT Power Owned
- Mark Up Area

The information contained in this map is a representation of the assets in the field. Please arrange locates to determine the exact location of our plant prior to any work being performed.

Mark Up Request

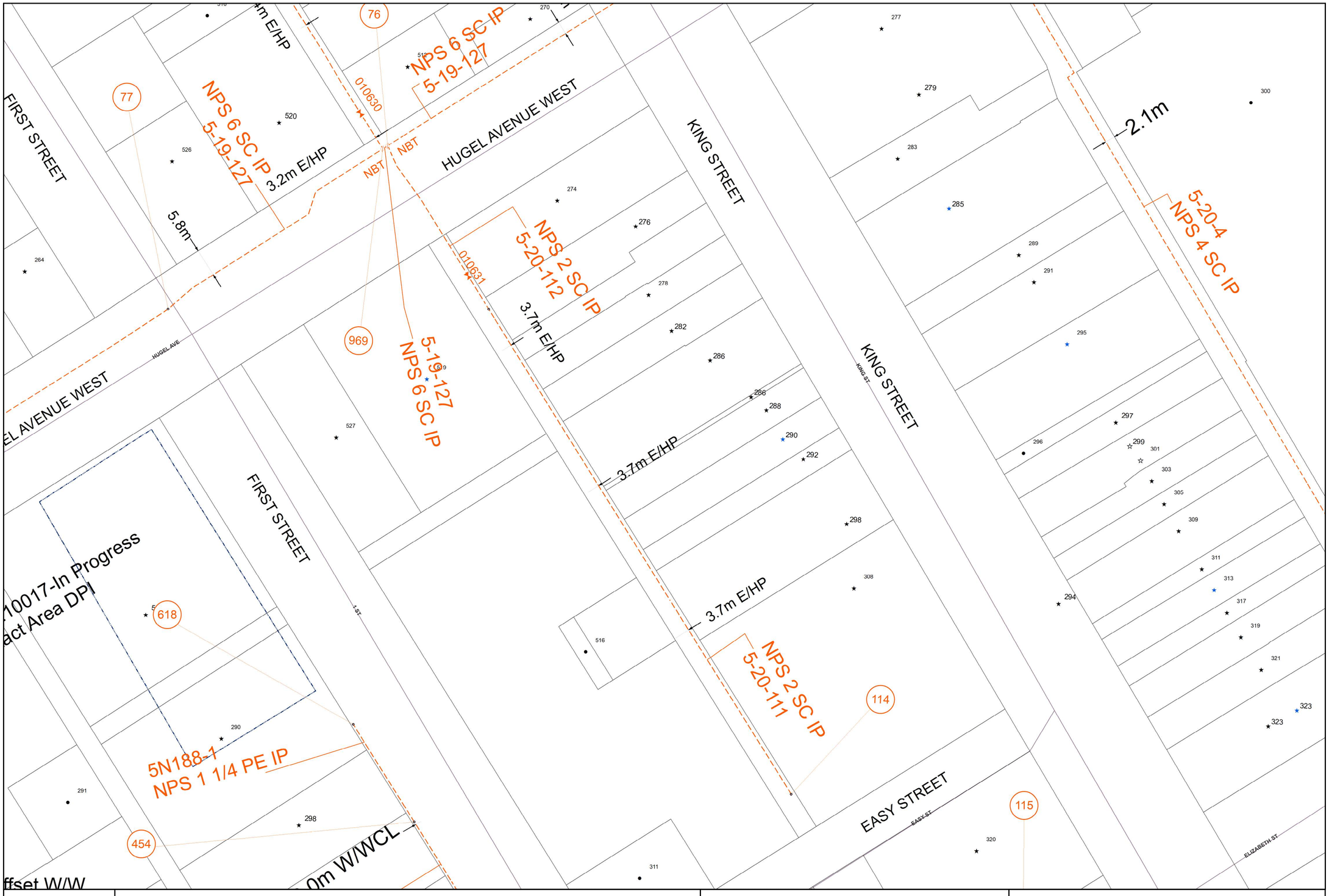
King Street and Borsa Lane

Requested By: Parker Consulting Engineers Ltd. (Jim

NT POWER

Date Exported: 11/19/2025 1:46 PM

Esri Community Maps Contributors, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada, Sources: Esri, Maxar, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, and the GIS user community



Note : Map is not to scale.

ParkerConsultingEngineers@outlook.com

From: bellmarkups@bell.ca
Sent: November 20, 2025 4:34 AM
To: parkerconsultingengineers@outlook.com
Subject: One-Call Ticket 2025477017: Your request is complete.
Attachments: 2025477017_markup_request_1.pdf; 2025477017_markup_request_1_quadrant_1.pdf; 2025477017_markup_request_1_quadrant_2.pdf; 2025477017_markup_request_1 _quadrant_3.pdf; 2025477017_markup_request_1_quadrant_4.pdf

Dear: JIM PARKER

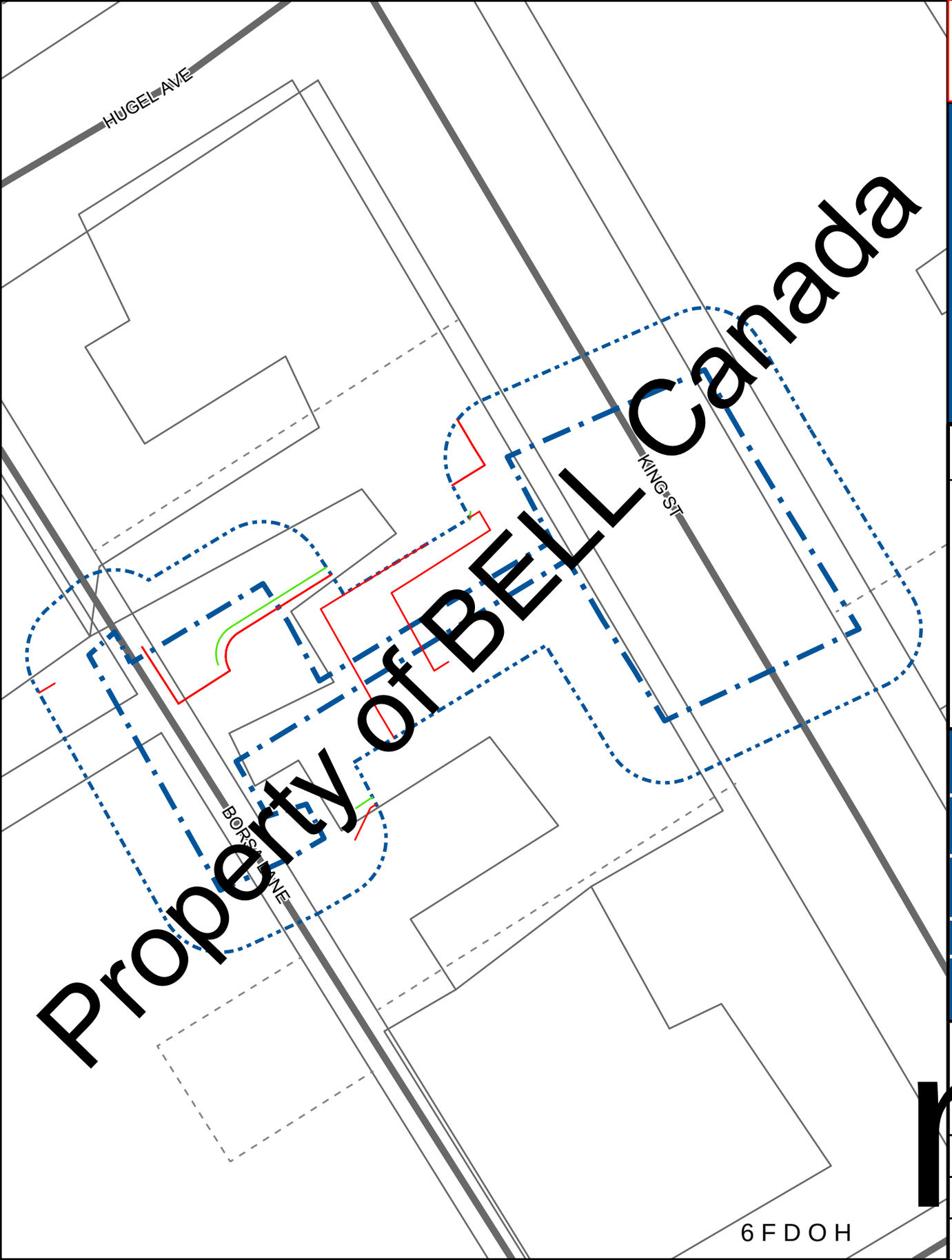
Attached is your Planning & Design request PDF. This ticket is for information only, to help in planning and design for future excavation. This is not a request for locates, and it's not valid for ground disturbance.
Prior to any ground disturbance please submit a new Ontario One Call locate request.

Here are your original Ticket Details:
Ticket ID: 2025477017
Attachment ID: 389111888
One-Call Center: ONOC
Center Code: BCPRE
Ticket Due Time: 2025-11-19 07:42:22

Address of Ticket: 288 KING ST
City: MIDLAND Province: CD
Location of Work: None
Excavator Name: PARKER CONSULTING ENGINEERS LTD.
Excavator Contact: JIM PARKER
Done For: None
Remarks: OUR OFFICE IS WORKING ON A RE-DEVELOPMENT PROJECT AT 288 KING STREET IN THE TOWN OF MIDLAND. CAN YOU PLEASE PROVIDE A COPY OF THE EXITING UTILITY INFORMATION (ROGER, BELL, ENBRIDGE, HYDRO ONE) FOR KING STREET AND BORSA LANE? THE INFO IS REQUIRED FOR A COMPOSITE UTILITY PLAN THAT THE TOWN HAS REQUESTED AS PART OF THE SITES BUILDING PERMIT APPLICATION. CURRENTLY, IT IS ONLY PLANNED TO UPSIZE THE WATERMAIN CONNECTION AT KING STREET IN THE SPRING OF 2026, BUT AS PART OF THE TOWN'S REVIEW APPROVAL PROCESS, ALL OF THE UTILITIES AT THE FRONT AND REAR OF THE BUILDING NEED TO BE ILLUSTRATED ON THE CUP. THANKS FOR YOUR HELP.

If there are any questions, please send an email back to bellmarkups@bell.ca Digital Markups (DGN/DWG format) can be provided for a fee. All request should be sent to Bell.moc@telecon.ca

Thank You for using your local Dial / Click Before You Dig process!



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Bell

Municipal Operations Department

Floor 2, 100 Wynford Drive
Toronto, Ontario, M3C 4B4

Email: bellmarkups@bell.ca

7KLV SODQ RU GUDZLQJ LV WKH SURSHUW
FRS\ULJKW RI ZKLFK LV RZQHG E\ %HOO
GUDZLQJ PD\ QRW EH FRSLHG RU XVHG E
ZULWWHQ FRQVHQW RI %HOO &DQDGD ZKL
&DQDGD V GLVFUHWLRQ

Bell Canada Legend Info

- BELL Infrastructure
- Existing Conduit
- One Call Center - Dig Area
- Dig Area Buffer (10.0m)

Digital Markups (DGN/DWG format) can be provided for a fee.
All requests should be sent to Bell.moc@telecon.ca

CALL FOR LOCATES
1-800-400-2255

HAND DIG
If within 1m of Bell plant

HAND DIG
when crossing Bell plant

Maintain clearance of 0.6m

If further details required
you must acquire Locates or Test Pits

Ticket request date:
19-11-2025 07:43:01
[illegible] date:
20[illegible]-202[illegible]04:30:57

0 D[illegible] N X S

' Z[illegible]

/ R F D W L R Q . , 1 * 6 7

6 F D O H

ROGERS

Rogers Communications Canada Inc.
Wireline Access Networks
1 Sperling Dr.
P.O. Box 8500
Barrie, ON L4M 6B8

Markup Response Form

Application Date	November 19, 2025	**Applicant:**	Parker Consulting Engineers Ltd
Date Returned:	November 27, 2025		
Rogers Ref. No.:	S252340	**Applicant Ref. No.:**	2025477017
Location / Municipality:	288 King St/Midland		

Rogers Communications has reviewed your drawing(s) as requested.
Our comments follow below with an "X" indicating Rogers' stance on your proposed plan.

Markup Response is valid for 6 months from the date issued.

Please inform Rogers Communications a minimum of 6 - 12 months in advance of the proposed construction schedule in order to coordinate our plant relocation.

Contact Ontario One Call at 1-800-400-2255 or www.on1call.com at least 5 business days before beginning work to obtain utility locates.
Hand dig / Vac truck when crossing, or within 1.0m of existing Rogers plant.
Plant is to approximation.

Comments:

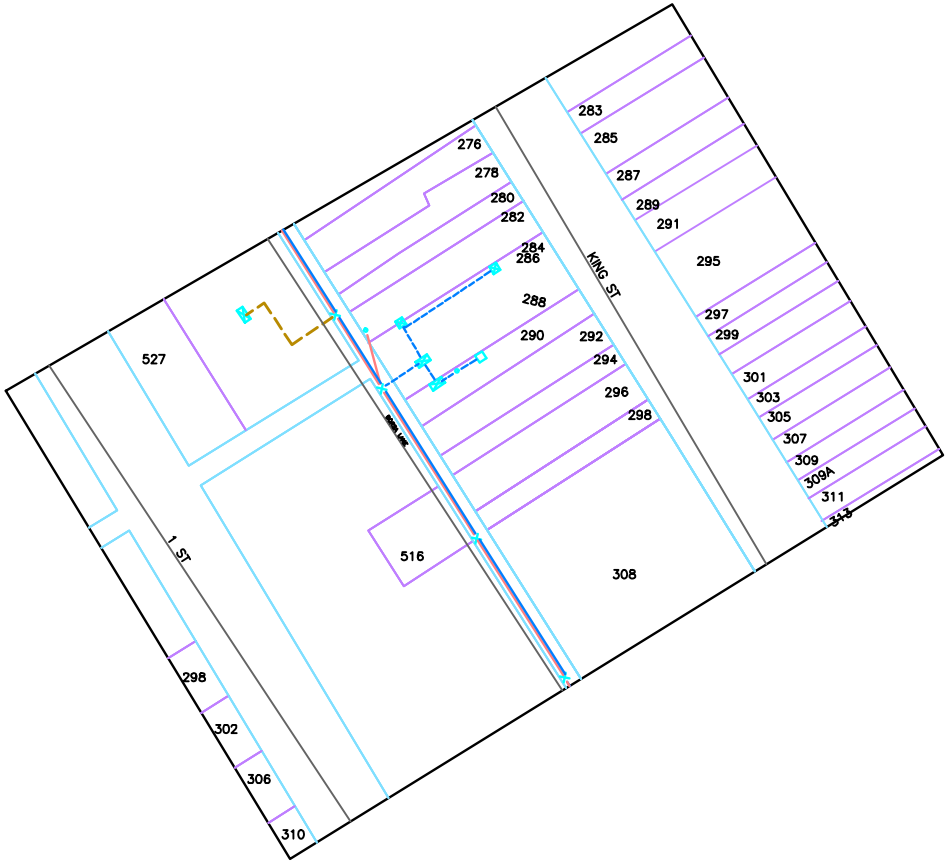
[X]	**Markup Only**	Not for PUCC Approval
[ ]	**No Plant**	Rogers Communications currently does not possess existing plant in the area indicated on your attached plans
[X]	**For your Reference**	Rogers Communications currently has existing plant as marked on your drawing. Our standard depth in this municipality is: 1m Please ensure you maintain clearances of 0.3m vertically and 0.6m horizontally
[ ]	**No Conflict**	Meets with Approval
[ ]	**CONFLICT**	Your proposed construction appears to encroach within existing Rogers Communications plant. Please ensure you maintain clearances of 0.3 m vertically and 0.6 m horizontally. For hand dig maintain 0.6 m and for directional bore maintain 1.0 m horizontally. Please relocate your proposed construction to allow adequate clearance

CAUTION NOTES:

[ ]	Use vactruck and expose ducts, maintain minimum of 0.6m clearance
[X]	Rogers Communications has aerial plant in this area, as it is indicated on the attached plans
[ ]	Fiber Optic Cable is present in the area of your proposed construction. Please obtain locates and maintain minimum 1.0m/1.0m clearance
[ ]	Proposed Fiber Optic Cable in a joint use duct structure
[X]	Plant currently under construction

Ayeshkanta Sahoo
Rogers.MOC@telecon.ca

November 27, 2025
DATE



ROGERS

telecon
design· build· connect

7777 WESTON RD
VAUGHAN, ONT, CANADA, L4L0G9
TEL: 905-569-2882

- Existing Conduit
- Existing Buried Coaxial cable
- Existing Aerial Coaxial cable
- Existing Aerial Fibre cable
- Existing Rogers Bldg Attachement
- Existing Rogers Pedestal
- Existing Hydro Pole
- Existing Telephone Pole

CAUTION

HAND DIG WHEN CROSSING ROGERS
HAND DIG IF WITHIN 1M OF ROGERS PLANT

CALL FOR LOCATES

1-800-400-2255

NOTE:

PLANT IS TO APPROXIMATION
PLAN NOT TO SCALE

Rogers File # - S252340

CAD Tech - Ayeshkanta Sahoo

Buried Utilities Primary Locate Sheet

Phone: 249-879-0668

Ticket #: 2025477017

Revised Excavation Date:	Original Excavation Date:	Site Meet Appt. Date:	Received Date:	Request Type:
11/26/2025 8:00:00AM	11/26/2025 8:00:00AM		19-Nov-25	Planning

Requested By:	Company:	Phone:	Email:
PARKER CONSULTING ENG	PARKER CONSULTING ENG	7057967208	parkerconsultingengineers@outlook.com

Address:	City:
288 KING ST	MIDLAND

Type of Work:	Depth	Contract Type:
DESIGN AND PLANNING		OTHER

Callers Remarks:

OUR OFFICE IS WORKING ON A RE-DEVELOPMENT PROJECT AT 288 KING STREET IN THE TOWN OF MIDLAND. CAN YOU PLEASE PROVIDE A COPY OF THE EXITING UTILITY INFORMATION (ROGER, BELL, ENBRIDGE, HYDRO ONE) FOR KING STREET AND BORSA LANE? THE INFO IS REQUIRED FOR A COMPOSITE UTILITY PLAN THAT THE

Located Area: Excavator shall not work outside the located area without obtaining another locate.

Important Notice to Excavators

Vianet Fibre All Clear

VIANET FIBRE IS CLEAR WITHIN THE REQUESTED AREA AS PER CALLERS REMARKS ON ONTARIO ONE CALL REQUEST

IF YOU REQUIRE EXCAVATION OUTSIDE THE REQUESTED AREA PLEASE CONTACT ONTARIO ONE CALL FOR A NEW LOCATE.

Comments to Excavator:

Method of Field Markings:	☐ Paint ☐ Stakes ☐ Flags ☐ Offset Stakes ☐ Chalk ☐ Other:
Material Types:	☐ Fiber ☐ Co-axial

Locates provided are valid for 60 Days from when the Locate Date and Time is issued. The markings may disappear or be misplaced. This is based on information given at the time. Any changes to location or nature of work require a new locate. The Excavator must not work outside the indicated Located Area without a further locate by Vianet. The contractor is responsible for maintaining the locate marks for the 60 day validation period.

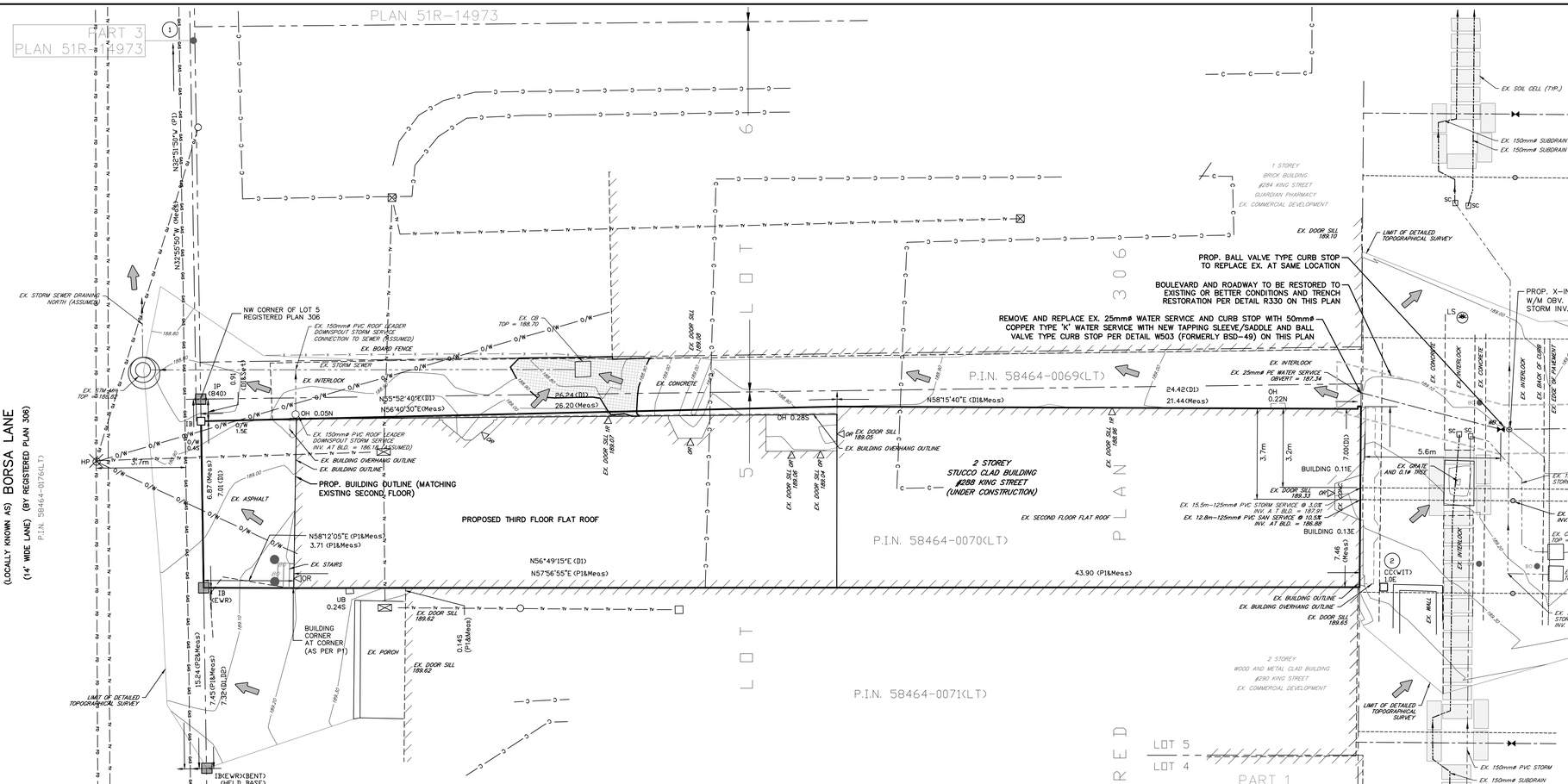
Located by:	Accepted By:
Shawn R.	

Completion Date and Time:		
19-Nov-2025 7:47 am	☐ Mark and Fax	☐ Left on Site
	☑ Mark and Email	☐ Put in Mailbox

A copy of the Primary Locate Sheet and the Auxiliary Locate Sheet must be on site and in the hands of the machine operator during the work operations. Should sketch and markings not coincide, a new locate must be obtained.

Appendix F

Civil-Municipal Engineering Plans



GENERAL NOTES:

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.
2. THE DETAILED TOPOGRAPHIC SURVEY INFORMATION FOR 288 KING STREET HAS BEEN PROVIDED BY DELPH & JENKINS NORTH LTD., DATED OCT. 9, 2024.
3. THE LEGAL SURVEY INFORMATION HAS BEEN TAKEN FROM THE SURVEYOR'S REAL PROPERTY REPORT OF PART OF LOT 5 (WEST SIDE OF KING STREET), REGISTERED PLAN 306, TOWN OF MIDLAND, COUNTY OF SIMCOE, PREPARED BY DELPH & JENKINS NORTH LTD., DATED OCT. 9, 2025.
4. THE EXISTING SERVICING INFORMATION HAS BEEN TAKEN FROM THE TOWN OF MIDLAND KING STREET REJUVENATION AS-BUILT DRAWING SET PREPARED BY TATHAM ENGINEERING, DATED APRIL 2022, AND THE 288 KING STREET SERVICE RECORD SHEET, DATED MARCH 2021, AND IS ONLY APPROXIMATE.

SURVEY BENCHMARK INFORMATION:

1. VERTICAL DATUM: DETERMINED BY REALTIME CAN-NET NETWORK OBSERVATIONS (CANADIAN GEODETIC DATUM (CGVD), 1928, 1978 ADJUSTMENT).
2. OBSERVE REFERENCE POINTS UTM (NAD83, CSRS 2010)
   2.1. PLAN COORDINATE 1 – N 4955711.031, E 588197.433
   2.2. PLAN COORDINATE 2 – N 4955710.862, E 588255.427
3. BEARING ARE UTM GRID AND ARE DERIVED FROM OBSERVED REFERENCE POINTS 1 AND 2 BY REAL TIME CAN-NET NETWORK OBSERVATIONS AND REFERRED TO THE 6° UTM COORDINATE SYSTEM, ZONE 17, CENTRAL MERIDIAN 81° WEST LONGITUDE (NAD 83, CSRS 2010).

No.	REVISIONS	DATE	INITIAL
0	FIRST SUBMISSION	NOV 2025	JP

LICENSED PROFESSIONAL ENGINEER
A.M. PARKER
100146408
2025/11/27
PROVINCE OF ONTARIO

MIXED-USE SITE PLAN DEVELOPMENT
288 KING STREET
TOWN OF MIDLAND, SIMCOE COUNTY

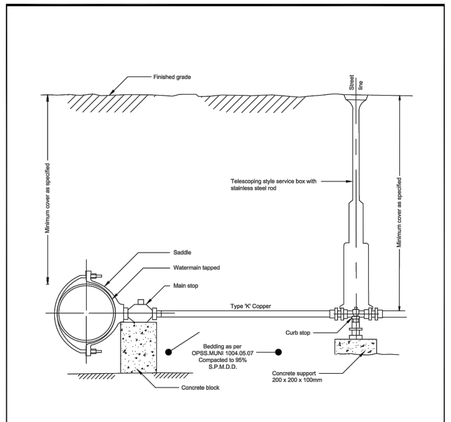
SITE SERVICING PLAN

PARKER CONSULTING ENGINEERS LTD.
ADDRESS: 43 HIAWATHA DRIVE, PORT SYDNEY, ONTARIO, P0B 1L0
TELEPHONE: (705) 796-7208 EMAIL: ParkerConsultingEngineers@Outlook.com

DESIGN: JP	SCALE: 1:100	DATE: NOVEMBER 2025	
DRAWN: PCEL-CAD	PROJECT No: 2509001	DRAWING No: SS-1	
CHECKED: JP			

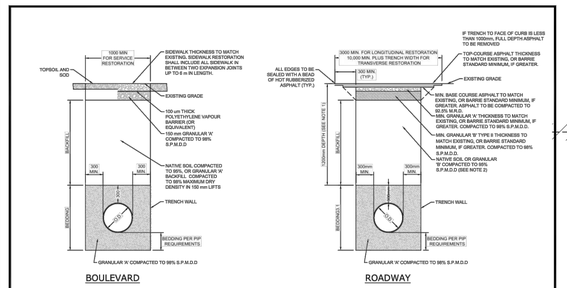
LEGEND

PROPERTY LINE	
IB IP	EXISTING LEGAL IRON BAR / IRON PIPE
WV	EXISTING WATERMAIN VALVE
OR	EXISTING ENTRANCE / DOOR AND RISERS
BO	EXISTING BOLLARD
LS	EXISTING LIGHT STANDARD
	EXISTING OVERLAND FLOW DIRECTION
44.50	EXISTING CONTOUR AND ELEVATION
X X X X X X	EXISTING FENCE
HP O/W O/W	EXISTING OVERHEAD HYDRO AND POLE
H H	EXISTING UNDERGROUND HYDRO
GAS GAS GAS	EXISTING GAS MAIN
C C	EXISTING BELL CABLE / CONDUIT
TV FO	EXISTING ROGERS BURIED CABLE, OVERHEAD FIBER, PEDESTAL, AND BUILDING CONNECTION
EX. CB4	EXISTING CATCH BASIN
EX.STM1	EXISTING STORM MAINTENANCE HOLE, SEWER AND FLOW DIRECTION
SC	EXISTING STORM CLEANOUT, SUBDRAIN AND FLOW DIRECTION
	EXISTING SANITARY CLEANOUT, SERVICE AND FLOW DIRECTION
SAN MH1A	EXISTING SANITARY MAINTENANCE HOLE, SEWER AND FLOW DIRECTION
	EXISTING PONDING LIMITS



Notes
1. Any junction made in a service pipe between main stop and curb stop is to be made with approved couplings (for 50mm services only).
2. All water services are to be installed at a right angle to the watermain.
3. All tappings are to be at a 3 or 9 o'clock position only.
4. 9150mm (36") stainless steel service box rod required.
5. See drawing W504 for 38mm and 50mm non-copper water services.
6. All dimensions are in millimetres unless otherwise shown.

		REV No.	DATE: Sept 2024
	Water Service Copper 38mm & 50mm	3	SCALE: N.T.S.
			W503



NOTES:
1. FROST TAPER USED IF DEPTH IS LESS THAN 1200mm
2. UNSHRINKABLE FILL TO BE USED IN INTERSECTIONS AND ON HIGH VOLUME ARTERIAL/COLLECTOR ROADS.
3. ENHANCED TRENCH RESTORATION TECHNIQUES MAY BE REQUIRED BY THE APPLICABLE CITY OF BARRIE DEPARTMENT ABOVE AND BEYOND WHAT IS SHOWN ON THIS DRAWING.
4. ALL DIMENSIONS SHOWN IN MILLIMETRES UNLESS OTHERWISE NOTED.

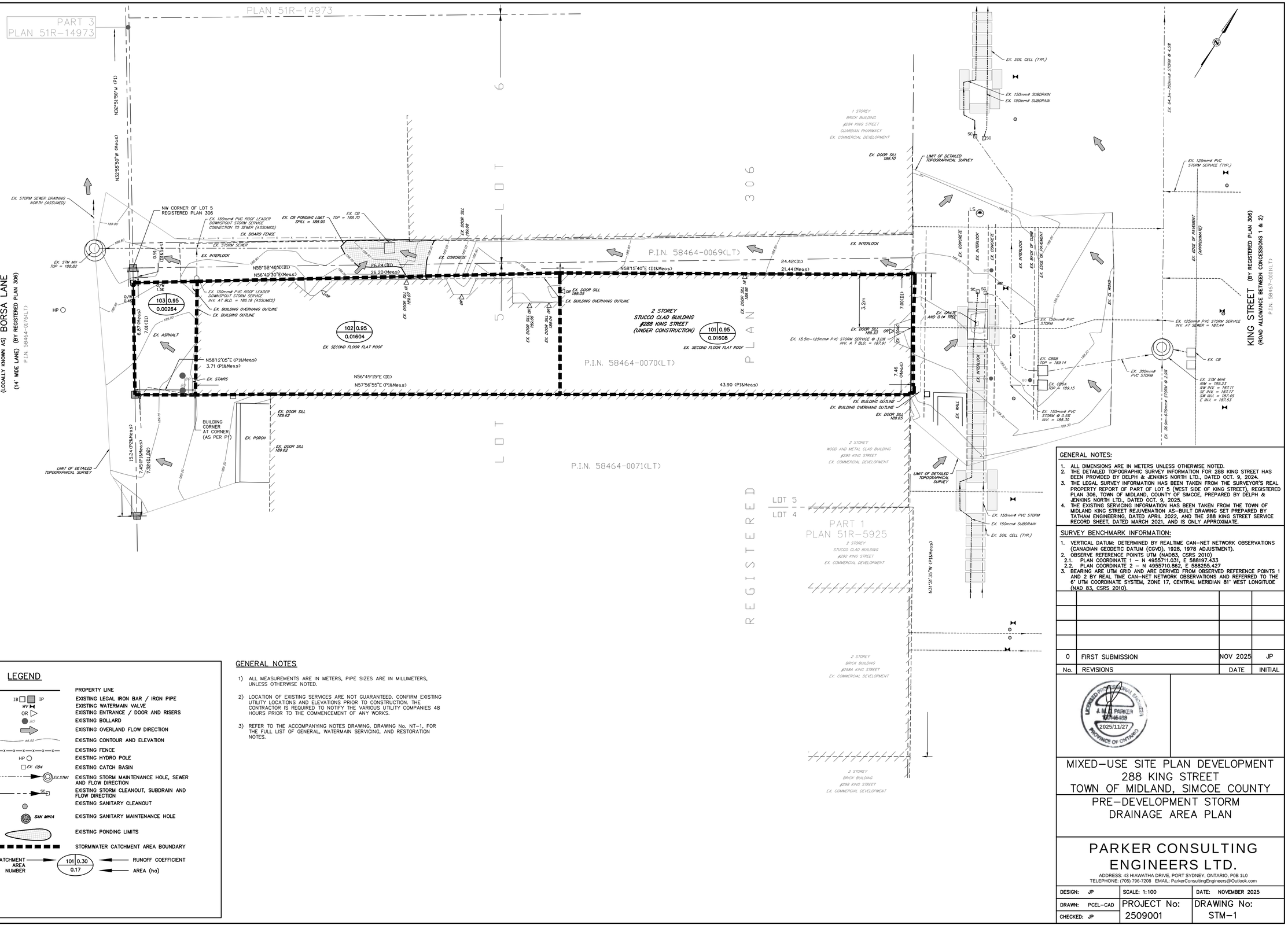
BOULEVARD ROADWAY

		REV No.	DATE: AUG 2023
	TRENCH RESTORATION	3	SCALE: N.T.S.
			R330

GENERAL NOTES

1) ALL MEASUREMENTS ARE IN METERS, PIPE SIZES ARE IN MILLIMETERS, UNLESS OTHERWISE NOTED.
2) LOCATION OF EXISTING SERVICES ARE NOT GUARANTEED. CONFIRM EXISTING UTILITY LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR IS REQUIRED TO NOTIFY THE VARIOUS UTILITY COMPANIES 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY WORKS.
3) ROAD OCCUPANCY PERMIT IS REQUIRED FROM THE TOWN OF MIDLAND PRIOR TO THE COMMENCEMENT OF WORK WITHIN ANY TOWN RIGHT-OF-WAY.
4) ORDER OF PRECEDENCE OF STANDARD DRAWINGS IS FIRSTLY TOWN OF MIDLAND ENGINEERING DEVELOPMENT DESIGN STANDARDS, SECONDLY THE ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD).
5) REFER TO THE ACCOMPANYING NOTES DRAWING, DRAWING No. NT-1, FOR THE FULL LIST OF GENERAL, WATERMAIN SERVICING, AND RESTORATION NOTES.

C:\Users\Parker\OneDrive\PCEL\Projects\2509001-288 King St\04-CAD\2509001-BASE-KING.dwg Layout:SS-1 Plotted Nov 27, 2025 @ 12:57pm by Parker



LEGEND

- PROPERTY LINE
- IB / IP — EXISTING LEGAL IRON BAR / IRON PIPE
- WV — EXISTING WATERMAIN VALVE
- OR — EXISTING ENTRANCE / DOOR AND RISERS
- BO — EXISTING BOLLARD
- EXISTING OVERLAND FLOW DIRECTION
- 44.50 — EXISTING CONTOUR AND ELEVATION
- EXISTING FENCE
- HP — EXISTING HYDRO POLE
- EX. CB4 — EXISTING CATCH BASIN
- EX.STM1 — EXISTING STORM MAINTENANCE HOLE, SEWER AND FLOW DIRECTION
- SC — EXISTING STORM CLEANOUT, SUBDRAIN AND FLOW DIRECTION
- EXISTING SANITARY CLEANOUT
- SAN MH1A — EXISTING SANITARY MAINTENANCE HOLE
- EXISTING PONDING LIMITS
- STORMWATER CATCHMENT AREA BOUNDARY
- CATCHMENT AREA NUMBER — 101 | 0.30 — RUNOFF COEFFICIENT
- 0.17 — AREA (ha)

GENERAL NOTES

1) ALL MEASUREMENTS ARE IN METERS, PIPE SIZES ARE IN MILLIMETERS, UNLESS OTHERWISE NOTED.
2) LOCATION OF EXISTING SERVICES ARE NOT GUARANTEED. CONFIRM EXISTING UTILITY LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR IS REQUIRED TO NOTIFY THE VARIOUS UTILITY COMPANIES 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY WORKS.
3) REFER TO THE ACCOMPANYING NOTES DRAWING, DRAWING No. NT-1, FOR THE FULL LIST OF GENERAL, WATERMAIN SERVICING, AND RESTORATION NOTES.

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.
2. THE DETAILED TOPOGRAPHIC SURVEY INFORMATION FOR 288 KING STREET HAS BEEN PROVIDED BY DELPH & JENKINS NORTH LTD., DATED OCT. 9, 2024.
3. THE LEGAL SURVEY INFORMATION HAS BEEN TAKEN FROM THE SURVEYOR'S REAL PROPERTY REPORT OF PART OF LOT 5 (WEST SIDE OF KING STREET), REGISTERED PLAN 306, TOWN OF MIDLAND, COUNTY OF SIMCOE, PREPARED BY DELPH & JENKINS NORTH LTD., DATED OCT. 9, 2025.
4. THE EXISTING SERVICING INFORMATION HAS BEEN TAKEN FROM THE TOWN OF MIDLAND KING STREET REJUVENATION AS-BUILT DRAWING SET PREPARED BY TATHAM ENGINEERING, DATED APRIL 2022, AND THE 288 KING STREET SERVICE RECORD SHEET, DATED MARCH 2021, AND IS ONLY APPROXIMATE.

SURVEY BENCHMARK INFORMATION:

1. VERTICAL DATUM: DETERMINED BY REALTIME CAN-NET NETWORK OBSERVATIONS (CANADIAN GEODETIC DATUM (CGVD), 1928, 1978 ADJUSTMENT).
2. OBSERVE REFERENCE POINTS UTM (NAD83, CSRS 2010)
   - 2.1. PLAN COORDINATE 1 – N 4955711.031, E 588197.433
   - 2.2. PLAN COORDINATE 2 – N 4955710.862, E 588255.427
3. BEARING ARE UTM GRID AND ARE DERIVED FROM OBSERVED REFERENCE POINTS 1 AND 2 BY REAL TIME CAN-NET NETWORK OBSERVATIONS AND REFERRED TO THE 6° UTM COORDINATE SYSTEM, ZONE 17, CENTRAL MERIDIAN 81° WEST LONGITUDE (NAD 83, CSRS 2010).

No.	REVISIONS	DATE	INITIAL
0	FIRST SUBMISSION	NOV 2025	JP

LICENSED PROFESSIONAL ENGINEER
J. M. PARKER
100146359
2025/11/27
PROVINCE OF ONTARIO

MIXED-USE SITE PLAN DEVELOPMENT
288 KING STREET
TOWN OF MIDLAND, SIMCOE COUNTY

PRE-DEVELOPMENT STORM DRAINAGE AREA PLAN

PARKER CONSULTING ENGINEERS LTD.
ADDRESS: 43 HIAWATHA DRIVE, PORT SYDNEY, ONTARIO, P0B 1L0
TELEPHONE: (705) 796-7208 EMAIL: ParkerConsultingEngineers@Outlook.com

DESIGN: JP	SCALE: 1:100	DATE: NOVEMBER 2025
DRAWN: PCEL-CAD	PROJECT No: 2509001	DRAWING No: STM-1
CHECKED: JP		

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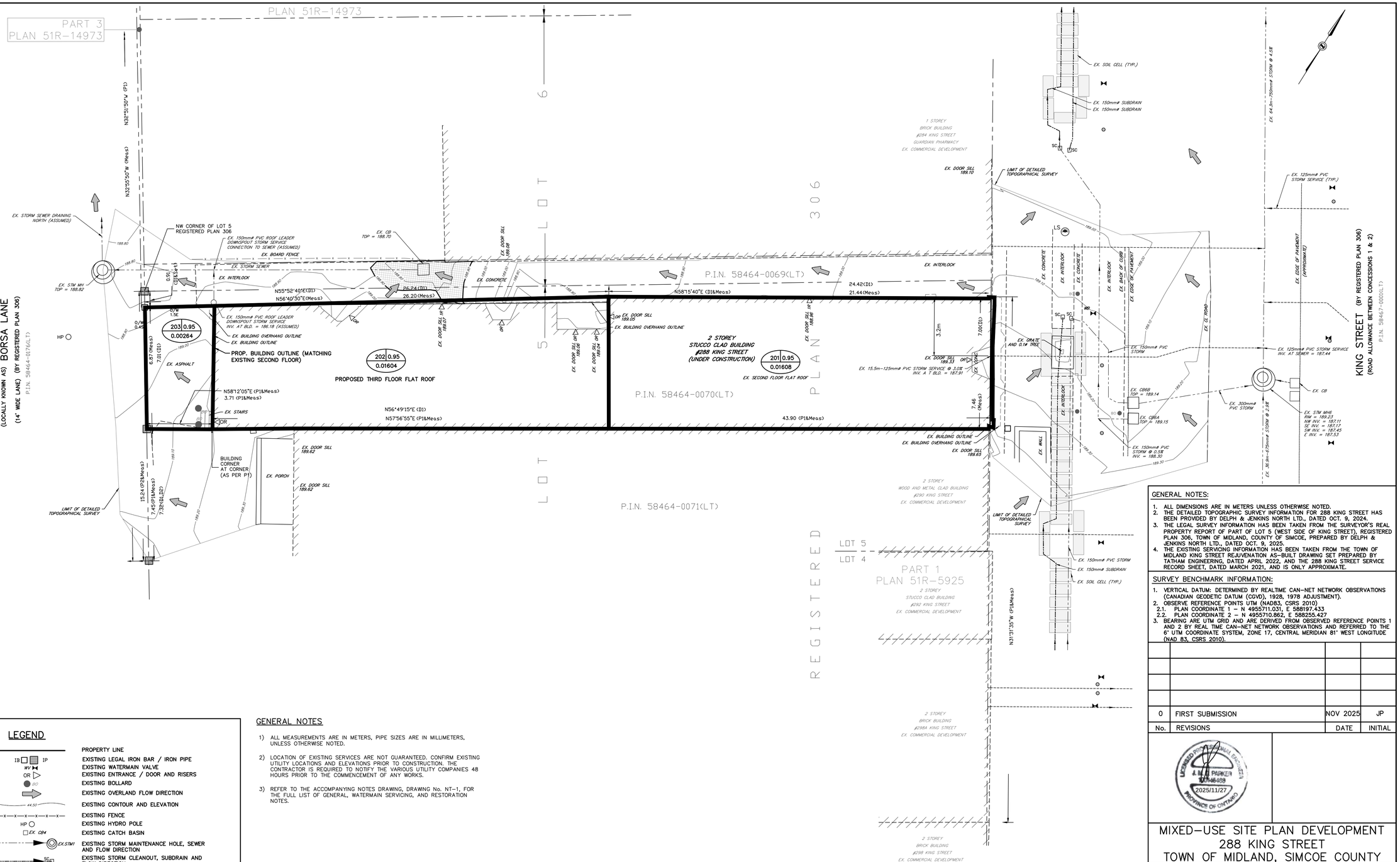

LEGEND

- PROPERTY LINE
- IB / IP — EXISTING LEGAL IRON BAR / IRON PIPE
- WV — EXISTING WATERMAIN VALVE
- OR — EXISTING ENTRANCE / DOOR AND RISERS
- BO — EXISTING BOLLARD
- EXISTING OVERLAND FLOW DIRECTION
- 44.50 — EXISTING CONTOUR AND ELEVATION
- EXISTING FENCE
- HP — EXISTING HYDRO POLE
- EX. CB# — EXISTING CATCH BASIN
- EX.STM1 — EXISTING STORM MAINTENANCE HOLE, SEWER AND FLOW DIRECTION
- SC — EXISTING STORM CLEANOUT, SUBDRAIN AND FLOW DIRECTION
- EXISTING SANITARY CLEANOUT
- SAN MH1A — EXISTING SANITARY MAINTENANCE HOLE
- EXISTING PONDING LIMITS
- STORMWATER CATCHMENT AREA BOUNDARY
- CATCHMENT AREA NUMBER: 101 | 0.30 — RUNOFF COEFFICIENT
- 0.17 — AREA (ha)

GENERAL NOTES

1) ALL MEASUREMENTS ARE IN METERS, PIPE SIZES ARE IN MILLIMETERS, UNLESS OTHERWISE NOTED.
2) LOCATION OF EXISTING SERVICES ARE NOT GUARANTEED. CONFIRM EXISTING UTILITY LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR IS REQUIRED TO NOTIFY THE VARIOUS UTILITY COMPANIES 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY WORKS.
3) REFER TO THE ACCOMPANYING NOTES DRAWING, DRAWING No. NT-1, FOR THE FULL LIST OF GENERAL, WATERMAIN SERVICING, AND RESTORATION NOTES.

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LICENSED PROFESSIONAL ENGINEER
J. M. PARKER
100146409
2025/11/27
PROVINCE OF ONTARIO

MIXED-USE SITE PLAN DEVELOPMENT
288 KING STREET
TOWN OF MIDLAND, SIMCOE COUNTY

POST-DEVELOPMENT STORM DRAINAGE AREA PLAN

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TELEPHONE: (705) 796-7208 EMAIL: ParkerConsultingEngineers@Outlook.com

DESIGN: JP	SCALE: 1:100	DATE: NOVEMBER 2025
DRAWN: PCEL-CAD	PROJECT No: 2509001	DRAWING No: STM-2
CHECKED: JP		

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TOWN OF MIDLAND GENERAL NOTES

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2) LOCATION OF EXISTING SERVICES ARE NOT GUARANTEED. CONFIRM EXISTING UTILITY LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR IS REQUIRED TO NOTIFY THE VARIOUS UTILITY COMPANIES 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY WORKS.

3) ONTARIO PROVINCIAL STANDARDS SPECIFICATIONS (OPSS), ONTARIO PROVINCIAL STANDARD (OPSD), AND THE TOWN OF MIDLAND'S STANDARDS SHALL APPLY TO ALL WORKS TAKING PLACE IN THE TOWN BOUNDARIES.

4) ORDER OF PRECEDENCE OF STANDARD DRAWINGS IS FIRSTLY TOWN OF MIDLAND ENGINEERING DEVELOPMENT DESIGN STANDARDS, SECONDLY THE ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD).

5) ROAD OCCUPANCY PERMIT IS REQUIRED FROM THE TOWN OF MIDLAND PRIOR TO THE COMMENCEMENT OF WORK WITHIN ANY TOWN RIGHT-OF-WAY.

6) CONTRACTOR SHALL COORDINATE HIS WORK SUCH THAT HE DOES NOT INTERFERE WITH WORK BEING UNDERTAKEN BY A UTILITY COMPANY.

7) UTILITIES CROSSING, WHERE REQUIRED, SHALL BE SUPPORTED AS PER OPSD 1007.01 AND ANY EXISTING STRUCTURES SHALL BE PROPERLY SUPPORTED.

8) DRIVEWAY ACCESS TO OCCUPIED RESIDENCES SHALL BE RESTORED AT THE END OF EACH WORKING DAY.

9) NATIVE MATERIAL SUITABLE FOR BACKFILL SHALL BE COMPACTED TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY, UNLESS OTHERWISE NOTED. ENGINEERED FILL (ON LOTS). SHALL BE COMPACTED TO 100% STANDARD PROCTOR MAXIMUM DRY DENSITY.

10) GRANULAR MATERIAL AND BEDDING MATERIAL SHALL BE PLACED IN LAYERS 150mm IN DEPTH AND COMPACTED TO 98% (ROAD GRAN "A" & GRAN "B") OR 98% (BEDDING AND COVER) STANDARD PROCTOR MAXIMUM DRY DENSITY OR AS DIRECTED BY THE SOILS CONSULTANT.

11) ALL DISTURBED AREAS WITHIN EXISTING MUNICIPAL RIGHT-OF-WAYS ARE TO BE REINSTATED TO THEIR ORIGINAL CONDITIONS OR BETTER AS DETERMINED BY THE TOWN OF MIDLAND (MIN.150MM TOPSOIL AND SOD). ALL OTHER DISTURBED AREAS TO BE TOPSOILED AND SEEDED PRIOR TO ACCEPTANCE.

12) ALL SILT CONTROL AND EROSION PROTECTION DEVICES ARE TO BE IN PLACE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL CONSTRUCTION IS COMPLETE, THE GRASS HAS ESTABLISHED GROWTH AND APPROVED BY TOWN ENGINEER.

13) ALL GRADING MUST BE CONFIRMED BY THE TOWN OF MIDLAND ENGINEERING DEPARTMENT.

14) ALL SIDEWALKS SHALL BE CONSTRUCTED ON A PROPERLY CONSTRUCTED FOUNDATION OF 150mm MINIMUM DEPTH OF GRANULAR "A" AND BE PAVED WITH CONCRETE FULL WIDTH. THICKNESS TO BE 200mm ACROSS COMMERCIAL AND INDUSTRIAL ENTRANCES. ALL CONCRETE MATERIALS AND WORK SHALL CONFORM TO OPSS USING THE TOWN OF MIDLAND CONCRETE MIX DESIGN.

15) CHAIN LINK FENCE INSTALLED AS PER OPSD 972.130 WITH TOP RAIL, KNUCKLED TOP EDGE FASTNERS, KNUCKLED BOTTOM EDGE AND NO. 9 GAUGE WIRE.

16) ALL SEWER SYSTEMS INCLUDING SERVICE CONNECTIONS TO THE PROPERTY LINE, MANHOLES AND CATCHBASINS SHALL BE THOROUGHLY FLUSHED AND/OR CLEANED OF DEBRIS AND ALL PIPES SHALL BE TESTED IN ACCORDANCE WITH OPS AND SHALL BE INSPECTED BY AN APPROVED VIDEO CAMERA TESTING COMPANY AND THE TOWN ENGINEER SHALL BE PROVIDED A COPY OF APPROPRIATE DATA UPON COMPLETION OF CONSTRUCTION AND PRIOR TO FINAL APPROVAL. ANY SECTION OF SEWER OR SERVICE CONNECTION THAT FAIL TO MEET THE REQUIREMENTS SHALL BE REPAIRED OR REPLACED AT THE DIRECTION OF THE TOWN ENGINEER. ONLY CHEMICAL PRESSURE GROUTING REPAIR TECHNIQUES WILL BE CONSIDER ACCEPTABLE.

TOWN OF MIDLAND WATERMAIN NOTES

1) A) WATERMAIN MATERIAL TO BE PVC(CLASS 235, DR-18) AND, SHALL SATISFY AWWA C900-16 SPECIFICATION.

   B) MECHANICAL JOINT FITTINGS MEETING AWWA SPECIFICATIONS C-907 AND CSA B137.2 SHALL BE USED WHERE APPLICABLE ON 150mm TO 400mmØ PVC WATERMAIN. SHOULD DUCTILE IRON MECHANICAL JOINT FITTINGS BE EMPLOYED THE CONTRACTOR SHALL INSTALL SACRIFICIAL CAPS ON EVERY NUTS ON EVERY BOLT. PVC JOINTS USING MECHANICAL JOINT FITTINGS ARE TO BE SQUARE CUT, NOT BEVELED.

   C) MINIMUM RESIDENTIAL SERVICE TO BE 25mm MUNICIPEX WITH TRACERWIRE.

2) A) WATERMAIN SHALL BE CONSTRUCTED WITH BEDDING AS PER OPSD 802.010 GRANULAR "A" FOR FLEXIBLE PIPES AS OPSD 802.030 OR 802.031 CLASS "B" , GRANULAR "A" BEDDING MATERIAL OR SELECT NATIVE COVER MATERIAL FOR RIGID PIPE UNLESS OTHER APPROVED BY THE TOWN OF MIDLAND.

   B) SERVICES 25mm TO 50mm IN DIAMETER SHALL BE EMBEDDED IN SAND OR "A" GRAVEL 100mm ABOVE AND BELOW TO CONFORM TO OPSS 1004.05.

3) CONTRACTOR SHALL INFORM THE TOWN OF MIDLAND A MINIMUM OF 48 HOURS IN ADVANCE IF THEIR INTENTIONS TO COMMENCE WORK.

4) CONTRACTOR TO BE RESPONSIBLE FOR INSTALLATION AND MATERIALS TO INSTALL ON INITIAL TIE-IN REQUIRED TO FACILITATE THE TESTING OF THE NEWLY INSTALLED DISTRIBUTION SYSTEM PRIOR TO CONNECTIONS TO THE EXISTING SYSTEM. WATERMAIN TO BE PRESSURE TESTED, SWABBED AND CHLORINATED BY THE CONTRACTOR, UPON SUCCESSFUL TEST RESULTS. THE FINAL TIE-IN TO BE COMPLETED BY CONTRACTOR WITH THE TOWN OF MIDLAND SUPERVISION AND ASSISTANCE WITH OPERATING THE EXISTING WATER SYSTEM FOR A WATER SYSTEM SHUT-OFF. RISER PIPES ARE TO BE INSTALLED AS PER STANDARD, AND REMOVED AS DIRECTED. SWABBING/TESTING SCHEDULE TO BE SUPPLIED BY THE CONTRACTOR TO THE TOWN OF MIDLAND TO REVIEW AND APPROVE.

5) THE CONTRACTOR IS RESPONSIBLE FOR THE SWABBING, PRESSURE TESTING, CHLORINATION AND FLUSHING BEYOND THE INITIAL PROCEDURE WILL BE AT THE CONTRACTORS EXPENSES AND AT THE DISCRETION OF THE TOWN OF MIDLAND. THE CONTRACTOR SHALL MAKE ALL CONNECTIONS TO THE EXISTING WATERMAINS INCLUDING EXCAVATION, BACKFILLING, AND MATERIALS AS REQUIRED, UNDER THE TOWN OF MIDLANDS SUPERVISION.

6) CONTRACTOR TO USE THE TOWN OF MIDLAND WATERMAIN COMMISSIONING PROCEDURE. GENERAL INSTALLATION AND TESTING WATERMAIN AND APPURTENANCES TO BE IN ACCORDANCE WITH OPSS 421.MUNI, OPSS 411 AND TOWN WATERMAIN COMMISSIONING PROCEDURE.

   A) ALL WATERMAINS ARE TO BE SWABBED USING A MINIMUM OF 2 CLEAN NEW MARKED SWABS 2" LARGER THAN THE PIPE DIAMETER AND FLUSHED BY THE CONTRACTOR'S ENGINEER AND THE TOWN'S REPRESENTATIVE TO BE PRESENT DURING THE TESTING.

   B) WATERMAINS SHALL NOT BE CONNECTED TO THE EXISTING WATERMAIN UNTIL BACTERIOLOGICAL TESTING HAS BEEN SUCCESSFULLY COMPLETED.

   C) THE TOWN AND ENGINEER TO RECEIVE A MINIMUM 72 HOURS NOTICE PRIOR TO TESTING OF THE WATERMAINS.

7) ALL NEW SERVICE BOXES TO BE LOCATED ON PROPERTY LINE AND OUT OF THE DRIVEWAY AND SIDEWALKS.

8) NO WATERMAIN IS TO BE LAID ON FILL UNTIL THE DENSITY REPORT HAS BEEN SUBMITTED TO AND APPROVED BY THE ENGINEER. FILL TO BE PLACED TO 0.6m MINIMUM ABOVE THE TOP OF THE WATERMAIN GRADED AND COMPACTED AS PER OPSS 501. TESTS SHALL BE TAKEN ALONG THE CENTER LINE OF THE WATERMAIN AND 2.5m EITHER SIDE OF THE WATERMAIN AT A MAXIMUM INTERVAL OF 30m FOR EACH 0.6m LIFT. ALL TEES, HORIZONTAL BENDS, AND BRANCH VALVES IN FILL AREAS TO BE TIED WITH TIE RODS IN ADDITION TO CONCRETE BLOCKING ACCORDING TO NOTE 8.

9) A) THRUST BLOCKING: CONCRETE THRUST BLOCKS ARE TO BE INSTALLED AT ALL TEES, BENDS, ENDS OF MAINS AND CONNECTIONS 100mm AND LARGER AS PER OPSD 1103.010 AND 1103.020 AND THE TOWN OF MIDLAND STANDARD DRAWINGS STD-R13. AT ALL THRUST BLOCK LOCATIONS RESTRAINING DEVICES ARE REQUIRED IN ADDITION TO STANDARD CONCRETE THRUST BLOC: KING.

   B) ALL SEGMENTS OF THE FITTING AND THE WATERMAIN AT THE THRUST BLOCK LOCATION SHALL BE RESTRAINED AT LEAST 10m EACH SIDE OF THE THRUST BLOCK WHERE THE DEFLECTION ANGLE AT THE THRUST IS MORE THAN 11-1/4". TIE RODS AND CLAMPS SHALL BE GIVEN TWO COATS OF BITUMASTIC PAINT.

   C) IMPORTED GRANULAR FILL (OPS GRANULAR "A" OR EQUIVALENT) IS TO BE USED BEHIND THE THRUST BLOCK AND FOR A MINIMUM DISTANCE OF 2m EACH SIDE OF THE THRUST BLOCK. THIS IMPORTED GRANULAR FILL IS TO BE COMPACTED TO A MINIMUM OF 100% STANDARD PROCTOR MAXIMUM DRY DENSITY. PRIOR TO CONSTRUCTION OF THE THRUST BLOCKS THE CONTRACTOR SHALL OBTAIN THE WRITTEN APPROVAL OF THE BACKFILL FROM A QUALIFIED GEOTECHNICAL ENGINEER.

10) ROMAC GRIP RINGS TO BE USED ON ALL MECHANICAL FITTINGS.

11) CONTRACTOR TO PERFORM CONSTRUCTION SUCH THAT WATER SERVICE IS MAINTAINED AT ALL TIMES.

12) TRACING WIRE TO BE INSTALLED ON TOTAL LENGTH OF PVC WATERMAIN (#12 TWU STRANDED COPPER FOR OPEN CUT CONSTRUCTION OR #8 TWU FOR DIRECTIONAL BORING INSTALLATION), BROUGHT TO SURFACE AT ALL WATER VALVE BOXES AND COILED UNDER THE VALVE BOX CAPS.

13) INSULATE WATER SERVICES WITH HI-40 INSULATION WHERE 0.5m SEPARATED FROM OTHER UTILITIES CANNOT BE MAINTAINED. INSULATION TO EXTEND 0.5M BEYOND OUTSIDE DIAMETER OF BOTH PIPES.

14) WHERE WATER SERVICES CONFLICT WITH OTHER UTILITIES, DEFLECT SERVICE SO AS TO PROVIDE A MIN. 0.5m CLEARANCE. MAINTAIN MIN. DEPTH OF COVER AT ALL TIMES.

15) SERVICE CONNECTIONS SHALL BE PLACED AT A MINIMUM SEPARATION OF 1.0m AND A MINIMUM OF 0.6m FROM JOINTS. (ENDS OF PIPE).

16) MINIMUM HORIZONTAL CLEARANCE BETWEEN WATERMAIN AND SEWERS TO BE 2.5 METERS.

17) A) FIRE HYDRANT TO BE CANADA VALVE CENTURY/PREMIERE MODEL OPENING COUNTER CLOCKWISE, AWWA C502 WITH STORTZ PUMPER ATTACHMENTS (SEE TOWN OF MIDLAND, TYPICAL HYDRANT AND VALE INSTALLATION DETAIL ON STD-R6)

   B) VALVES: MUELLER RESILIENT SEAT AWWA C509

   C) VALVE BOXES: BIBBY

   D) SADDLES: ROCKWELL 371 & 372

   E) MAIN STOP: MUELLER AWWA C800

   F) CURB STOP: MUELLER AWWA C800

   G) SERVICE BOXES: MUELLER WITH STAINLESS STEEL RODS

18) FIRE HYDRANT TO BE OFFSET 0.3m FROM ANY PROPERTY LINE, AND 1.5m FROM ANY DRIVEWAY.

19) MINIMUM DEPTH OF COVER OVER WATERMAIN TO BE 1.8m AS SHOWN IN THE TOWN OF MIDLAND STANDARD DETAILS.

20) WHERE 25mm SERVICE CANNOT MAINTAIN 1.7m DUE TO ELEVATIONS OF UTILITIES, THE CONTRACTOR SHALL INSTALL 4.0m OF 100MM PVC SDR28 LINER A MINIMUM OF 0.5m BELOW THE UTILITY.

21) WHERE WATERMAIN CONFLICTS WITH SEWER PIPES, DEFLECTION WATERMIAN OVER SEWERS. DO NOT USE BENDS IF POSSIBLE. PROVIDE A MINIMUM OF 0.5m CLEARANCE BETWEEN WATERMAIN AND SEWERS. MAINTAIN MINIMUM DEPTH OF COVER OF 1.7m AT ALL TIMES.

22) MINIMUM HORIZONTAL SEPARATION BETWEEN WATERMAIN AND SEWERS TO BE 2.5m.

23) ALL VALVES TO BE RESILIENT CLOW CANADA F6100 SEAT GALE VALVES.

24) PRESSURE REDUCING VALVES SHALL BE CLA-VAL MODEL 90-48 (OR EQUIVALENT) COMPLETE WITH DURTLYN SLEEVES AND PRESSURE GAUGES IN 1500 VALVE CHAMBER OPSD 1101.010 C/W SUMP.

25) DOUBLE CHECK VALVES (FOR FUTURE PRIVATE SITE PLAN WORKS) SHALL BE 150mm WATTS SERIES 909 OR APPROVED EQUIVALENT.

26) VALVES IN EXC ESS OF 1.7m IN DEPTH SHALL REQUIRE A VALVE STEM EXTENSION.

27) RISER PIPES ARE TO BE INSTALLED AS PER STANDARD, AND REMOVED DIRECTED.

28) CATHODIC PROTECTION OF ALL WATERMAIN FITTINGS AND APPURTENANCES TO BE PROVIDED AS PER TOWN STANDARD. THE ANODE SHALL BE CONNECTED USING THE "CADWELD" METHOD INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. ALL "CADWELDS" ARE TO BE COVERED WITH ROYSTON HANDY CAMP PATCH. THE ANODE SHALL BE CONNECTED TO MAIN STOP AND CURB STOP IN CONJUNCTION WITH AN ELECTRICAL BRASS GROUNDING CLAMP. ALL FITTING BOLTS ARE TO BE FITTED WITH 19mm SACRIFICIAL ZINC CAPS.

TOWN OF MIDLAND ROAD NOTES

1. SUBGRADE AND BOULEVARD MATERIAL TO BE COMPACTED TO BE COMPACTED TO A DRY DENSITY OF AT LEAST 95% OF THE MATERIAL'S SPMDD.

2. GRANULAR A AND B TO BE COMPACTED TO A DRY DENSITY OF AT LEAST 100% OF THE MATERIAL'S RESPECTIVE SPMDD.

3. CURB AND GUTTER TO BE BARRIER CURB AS PER OPSD 600.010 (COMMERCIAL, MULTI-RESIDENTIAL, RESIDENTIAL) IN ALL ROADS. CURBS TO BE SINGE STAGE ONLY, UNLESS APPROVED BY TOWN OF MIDLAND.

4. ROAD WORKS TO CONFORM TO STD-R1 TO STD-R5, R.O.W 20m, 26m, AND 30m.

5. ROADS SHALL BE KEPT CLEAN DURING CONSTRUCTION AT THE CONTRACTOR'S EXPENSE.

6. SIDEWALKS TO COMPLY WITH OPSD 310.010 AND ARE TO BE 1.5M WIDE. MINIMUM THICKNESS AS FOLLOWS:
   A) RESIDENTIAL DRIVEWAY 150mm
   B) COMMERCIAL/INDUSTRIAL DRIVEWAY 200mm (REINFORCEMENT AS PER OPSS IF REQUIRED)

7. NATIVE SUBGRADE SHALL HAVE A CROSSFALL OF 3% AND THE MATERIAL SHALL BE APPROVED BY A GEOTECHNICAL CONSULTANT.

8. ROAD SURFACE TO HAVE AN CROSS FALL OF 2%.

9. ALL CURB RADII TO BE MINIMUM OF 10.0 METERS AT THE EDGE OF ASPHALT.

10. CURBS TO BE DEPRESSED AT INTERSECTION FOR SIDEWALKS PER OPSD 310.030.

11. NATIVE SUBGRADE TO BE COMPACTED TO MINIMUM 98% STANDARD PROCTOR MAXIMUM DRY DENSITY AND SHALL BE TESTED BY THE GEOTECHNICAL CONSULTANT.

12. THE ROAD AND CROSS SECTION SHALL INCORPORATE 150mm B SUBDRAIN WITH FACTORY INSTALLED FILTER FABRIC (OPSD 216.021) AS REQUIRED.

13. GRADE AND CROSS FALL ADJUSTMENT OF MAINTENANCE HOLE AND CATCHBASIN FRAMES SHALL BE MADE USING PRODUCTS SPECIFICALLY MANUFACTURED FOR THAT PURPOSE. CAST IRON ADJUSTMENT UNITS SHALL BE USED FOR ALL MAINTENANCE HOLE AND CATCH BASIN GRATES TO BE SET AT PROPER GRADES FOR SURFACE COURSE ASPHALT ONLY. ALL OTHER ADJUSTMENTS UNITS FOR ALL MAINTENANCE AND CATCHBASIN FRAME AND GRATES SHALL BE CONCRETE (PER OPSD 704.010). ALL MAINTENANCE, CATCH BASINS, ETC SHALL HAVE A MAX OF 300MM OF ADJUSTMENT TO ALLOW FOR FUTURE ADJUSTMENT UP OR DOWN.

14. ADJUSTMENT UNITS SHALL BE CERTIFIED TO MEET ALL PERTINENT OPS, CSA, ASTM, AND MTO-DSM LIST, OR OTHER INDUSTRY GUIDELINES FOR MATERIALS, PERFORMANCE AND USE AS APPLICABLE.

15. ADJUSTMENT UNITS AND JOINTS SHALL BE SEALED AND OR PARGED IN COMPLIANCE WITH MANUFACTURERS SPECIFICATIONS AND GUIDELINES.

16. MORTAR SHALL BE USED FOR LEVELING PRECAST UNITS ONLY, THE THICKNESS OF MORTAR SHALL BE 10mm TO FILL ALL VOIDS CREATED BY IRREGULARITIES IN THE PRECAST UNITS TO ENSURE AN EVEN SURFACE ONLY.

17. NON-COMPRESSIBLE BACKFILL SHALL BE USED DURING REBUILDING, ADJUSTING, OR ANY OTHER APPLICABLE CATCHBASIN OR MAINTENANCE HOLES WORKS.

18. DRIVEWAY APRONS TO BE CONSTRUCTED
   A) RESIDENTIAL – MIN 50mm HL3 ON MIN. 200mm GRAN "A".
   B) COMMERCIAL – MIN 50mm HL3 ON MIN. 250mm GRAN "A" AND MIN 300mm GRAN "B".

19. UNDERGROUND CONDUIT:
   THE CONTRACTOR SHALL SUPPLY AND INSTALL 100MM "HEAVY-WALLED" RIGID PVC CONDUIT, SCEOTRE/CANRON TYPE 2 OR APPROVED EQUIVALENT AS PER CSA STANDARDS C22. NO. 212.2 ALL COUPLINGS, ELBOWS, ETC. SHALL BE BONDED WITH ADHESIVES RECOMMENDED BY THE CONDUIT MANUFACTURER IN A MANNER THAT PREVENTS THE ENTRY OF MOISTURE AND BACKFILL MATERIAL, ETC. THE CONDUIT SHALL BE INSTALLED IN LOCATIONS, AS NOTED ON THE CONTRACT DRAWINGS, AT A MINIMUM DEPTH F 0.6m BELOW FINISHED GRADE. BACKFILL SHALL CONFORM TO THE REQUIREMENTS OF PSS FORM 1010, GRAN "A" AND GRAN "B" TYPE 1 AND SHALL BE COMPACTED TO 100% MAXIMUM DRY DENSITY. EARTH BACKFILL SHALL BE COMPACTED TO 98% MAXIMUM DRY DENSITY.

20. A 400N TEST STRENGTH NYLON ROPE "FISH LINE" SHALL BE PLACED WITHIN EACH RUN OF CONDUIT WITH 1.5M OF EXCESS ROPE LEFT COILED WITHIN THE CHAMBERS AT EACH END OF THE CONDUIT.

21. CONCRETE ELECTRICAL HANDHOLES:
   HANDHOLES SHALL INCLUDE CAST IRON COVERS, SONO TUBES AND CONCRETE. THE INSIDE DIAMETER SHALL BE 0.46M. OAKS PRECAST OR APPROVED EQUIVALENT HANDHOLES THAT CONFORM TO OPSD 211.02 MAY BE USED. CAST IN PLACE HANDHOLES MUST HAVE INSIDE CHAMBERS SONO TUBE REMOVE WHEN CONCRETE HAS HARDENED. THE NUMBER AND ORIENTATION OF CHAMBER ENTRY SLEEVES SHALL BE IN ACCORDANCE WITH THE CONTRACT DRAWINGS. THE TOP OF THE JUNCTION BOX SHALL BE SET TO AN ELEVATION THAT CONFORMS TO THE SURROUNDING ELEMENTS (E.G. CURBS, SIDEWALK, ETC.). ALL HANDHOLES SHALL HAVE LIDS FASTENED AND LIFT RINGS REMOVED.

22. EACH CHAMBER SHALL PROVIDE FOUR (4) SPARE AND CAPPED ENTRY SLEEVES SPACED EVENLY AT NINETY DEGREE INTERVALS AROUND THE CIRCUMFERENCE OF THE CHAMBER IN ADDITION TO THE ENTRY POINTS FOR THE ROAD CROSSING CONDUITS.

23. DURING INSTALLATION OF UNDERGROUND CONDUIT AND CONCRETE ELECTRICAL HANDLES FOR THE TRAFFIC SIGNALS, A REPRESENTATIVE FROM THE TOWN OF MIDLAND PUBLIC WORKS DEPARTMENT IS TO BE PRESENT

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SURVEY BENCHMARK INFORMATION:

1. VERTICAL DATUM: DETERMINED BY REALTIME CAN-NET NETWORK OBSERVATIONS (CANADIAN GEODETIC DATUM (CGVD), 1928, 1978 ADJUSTMENT).
2. OBSERVE REFERENCE POINTS UTM (NAD83, CSRS 2010)
   2.1. PLAN COORDINATE 1 – N 4955711.031, E 588197.433
   2.2. PLAN COORDINATE 2 – N 4955710.862, E 588255.427
3. BEARING ARE UTM GRID AND ARE DERIVED FROM OBSERVED REFERENCE POINTS 1 AND 2 BY REAL TIME CAN-NET NETWORK OBSERVATIONS AND REFERRED TO THE 6° UTM COORDINATE SYSTEM, ZONE 17, CENTRAL MERIDIAN 81° WEST LONGITUDE (NAD 83, CSRS 2010).

No.	REVISIONS	DATE	INITIAL
0	FIRST SUBMISSION	NOV 2025	JP

LICENSED PROFESSIONAL ENGINEER
J. M. PARKER
100146489
2025/11/27
PROVINCE OF ONTARIO

MIXED-USE SITE PLAN DEVELOPMENT
288 KING STREET
TOWN OF MIDLAND, SIMCOE COUNTY

NOTES

PARKER CONSULTING ENGINEERS LTD.
ADDRESS: 43 HIAWATHA DRIVE, PORT SYDNEY, ONTARIO, P0B 1L0
TELEPHONE: (705) 796-7208 EMAIL: ParkerConsultingEngineers@Outlook.com

DESIGN: JP	SCALE: 1:100	DATE: NOVEMBER 2025
DRAWN: PCEL-CAD	PROJECT No: 2509001	DRAWING No: NT-1
CHECKED: JP		

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