

FUNCTIONAL SERVICING REPORT

SHAYNE AVENUE

Town of Fort Erie,
Ontario

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Aug 2022

Shayne Avenue
Fort Erie, ON

Functional Servicing Report

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Attachments

- Sanitary Design Sheet
- 22003-STM-1 Sanitary Drainage Areas
- Storm Design Sheet
- 22003-SAN-1 Storm Drainage Areas
- PP-01
- PP-02
- G-1
- D-1

1.0 Introduction

This functional servicing report (FSR) serves to demonstrate how servicing of the subject development can be appropriately achieved and to provide a basis for detailed engineering. This FSR will discuss the following key aspects of municipal design:

- Water Supply and Distribution
- Sanitary Sewerage
- Drainage and Stormwater Management
- Roadway
- Utility Servicing
- Servicing Locations

2.0 Background

This proposal contemplates new road construction in the untraveled right-of-way of Shayne Avenue and the reconstruction of Evelyn Avenue in the Crescent Park area of Fort Erie, immediately south of Garrison Road. An aerial map highlighting the subject property is shown in Figure 1.

Neighbouring properties are predominately low density residential.

3.0 Development Proposal

The current proposal is to construct the Shayne Avenue right-of-way (ROW) to a urban cross-section standard complete with barrier curb and standard width gutter. As a pre-requisite to development, the existing roadway of Evelyn Avenue, from Parkdale to Daytona is to be reconstructed to the same urban cross-section. The untraveled ROW of Shayne is currently grassed with some ditch drainage. The construction of Shayne Avenue will provide servicing for twenty two (22) single-detached residential lots.

Figure 1

**Shayne Avenue Construction & Evelyn Avenue Reconstruction
 Fort Erie, Ontario**



Notes



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4.0 Water Supply and Distribution

It is proposed to install 150mm diameter PVC (DR-18 CL235) watermain on Shayne between Orchard and Evelyn, and on Evelyn, between Daytona and Parkdale. No dead ends or loops are required as all new watermain will interconnect with existing municipal watermain.

Two new fire hydrants will be required to provide adequate coverage on Shayne Avenue. The hose-path distance to the farthest principal entrance (i.e. front door of Lot 13) would be less than the OBC maximum of 90m.

5.0 Sanitary Drainage

New 200mm diameter sanitary sewer is proposed for Shayne Avenue, draining to Evelyn Avenue, east of Shayne. The sewer would connect to the existing 300mmØ sanitary sewer on Daytona Drive. The attached sanitary design sheet and storm drainage area plan demonstrates anticipated design flows. The sanitary sewage collection system will cater for peak domestic flows and potential infiltration and inflow. Sanitary flows will be collected from each domicile through 100mm diameter service pipes per Town engineering standards.

The connection structure will be a new maintenance hole set on the existing sewer on the east side of Daytona.

Based on the grading plan, full depth basements will gravity sanitary service will be feasible, some exceeding 2.44m of clear height.

Based on the preceding analysis, it is expected that there are no impediments to connecting this this development to the existing municipal sewage works.

6.0 Storm Drainage and Stormwater Management

Urbanization of the Shayne Avenue right-of-way requires storm drainage to replace the overland and open channel conveyance as currently exists. Shayne Avenue lands currently receives some drainage from limited external areas to the north. This has been included as shown on drainage area plan 22003-STM-1 (attached).

A storm design sheet is attached demonstrating adequate conveyance without surcharge.

Grading design precludes road and lot runoff negatively impacting adjacent developments. Perimeter swales capture external runoff and runoff from new lot development.

The piping has been sized to meet the 2-year return-period design storm defined in the Fort Erie Municipal Standards.

A second engineering consultant is currently preparing design for stormwater conveyance and stormwater management works south of the Evelyn Avenue right-of-way. These works will provide the necessary quantity control and quality treatment to meet municipal and regional standards.

7.0 Parking and Roadways

The servicing and road construction drawings are based upon a Town of Fort Erie Urban 20m R.O.W. cross-section. Edge of pavement radii of 10.25m are used.

Proposed curbs within all areas are standard width curb and gutter per OPSD 600.040, 500mm in width. Driveways will be minimally 2%, maximally 5%. Gutter fall will vary between 0.40% and 0.55%.

8.0 Utility Servicing

Hydro, Enbridge Gas, Cogeco, and Bell services are all located in existing rights-of-way and rear yard easement. No impediments to service expansion for this proposal is anticipated.

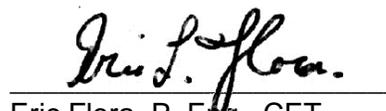
In summary, there are no impediments to providing utility servicing for the proposed development.

9.0 Service Locations

Drawing PP-01, PP-02 are attached which identifies the location of all existing and proposed municipal services for the development.

Prepared by:


John Prinzen, EIT, B.Eng
Project Designer


Eric Flora, P. Eng., CET
Senior Civil Engineer



SANITARY SEWER DESIGN COMPUTATION SHEET



PROJECT: Shayne Avenue Subdivision **FILE #:** 20003 **DATE:** 4-Aug-22 **COMPUTED BY:** JRP **CHECKED BY:** EF
DRAINAGE AREA PLAN: 22003-SAN-1 **REV #:** A **OUTFALL:** ex. 300mm dia. PVC Sanitary Sewer on Daytona Drive
EQUIVALENT AREA FACTORS: INDUSTRIAL: Persons/ha COMMERCIAL / INSTITUTIONAL: Persons/ha **MANNING'S 'n':** 0.013
POPULATION PER DWELLING: 2.15 **AVERAGE PER CAPITA DESIGN FLOW:** 320 L/capita/day **PEAKING FACTOR:** Babbitt, M = 5/(Pop./1000)0.2 **INFILTRATION RATE:** 0.286 L/ha/s

| LOCATION | AREA | FROM | TO | FLOW CALCULATION | | | | | | | | | | DESIGN | | | | | | | |
|-----------------------------------|------|------|------|------------------|-------|-------------|------------------|-----------------------|-------|--------------------------|----------------|--------------------------|----------------------------|------------------------|-------------|-----------|------------|------------|------------|------------------|---------|
| | | | | AREA (ha) | | Land Use | # Dwelling Units | Equivalent Population | | Ave. Domestic Flow (L/s) | Peaking Factor | Peak Domestic Flow (L/s) | Peak Extraneous Flow (L/s) | Peak Design Flow (L/s) | PIPE Ø (mm) | SLOPE (%) | CAP. (L/s) | VEL. (m/s) | LENGTH (m) | INVERT ELEVATION | |
| | | | | Incremental | Total | | | Incremental | Total | | | | | | | | | | | US | DS |
| Evelyn Ave | 201 | MH4A | MH5A | 0.43 | 0.43 | Residential | 5 | 11 | 11 | 0.04 | 4.50 | 0.18 | 0.12 | 0.30 | 200 | 0.50 | 23.2 | 0.74 | 49.9 | 184.210 | 183.960 |
| Shayne Ave (incl. 3 future units) | 202 | MH3A | MH4A | 0.83 | 1.26 | Residential | 12 | 26 | 37 | 0.14 | 4.50 | 0.61 | 0.36 | 0.97 | 200 | 0.40 | 20.7 | 0.66 | 100.0 | 183.960 | 183.560 |
| Shayne Ave | 203 | MH2A | MH3A | 0.90 | 2.16 | Residential | 8 | 17 | 54 | 0.20 | 4.50 | 0.90 | 0.62 | 1.51 | 200 | 0.40 | 20.7 | 0.66 | 100.0 | 183.560 | 183.160 |
| Shayne Ave | 204 | MH1A | MH2A | 0.17 | 2.33 | Residential | 0 | 0 | 54 | 0.20 | 4.50 | 0.90 | 0.67 | 1.56 | 200 | 0.40 | 20.7 | 0.66 | 100.1 | 183.100 | 182.700 |
| Totals | | | | 2.33 | | | 25 | 54 | | | | | 1.6 | | | | | | 350 | | |

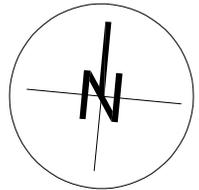
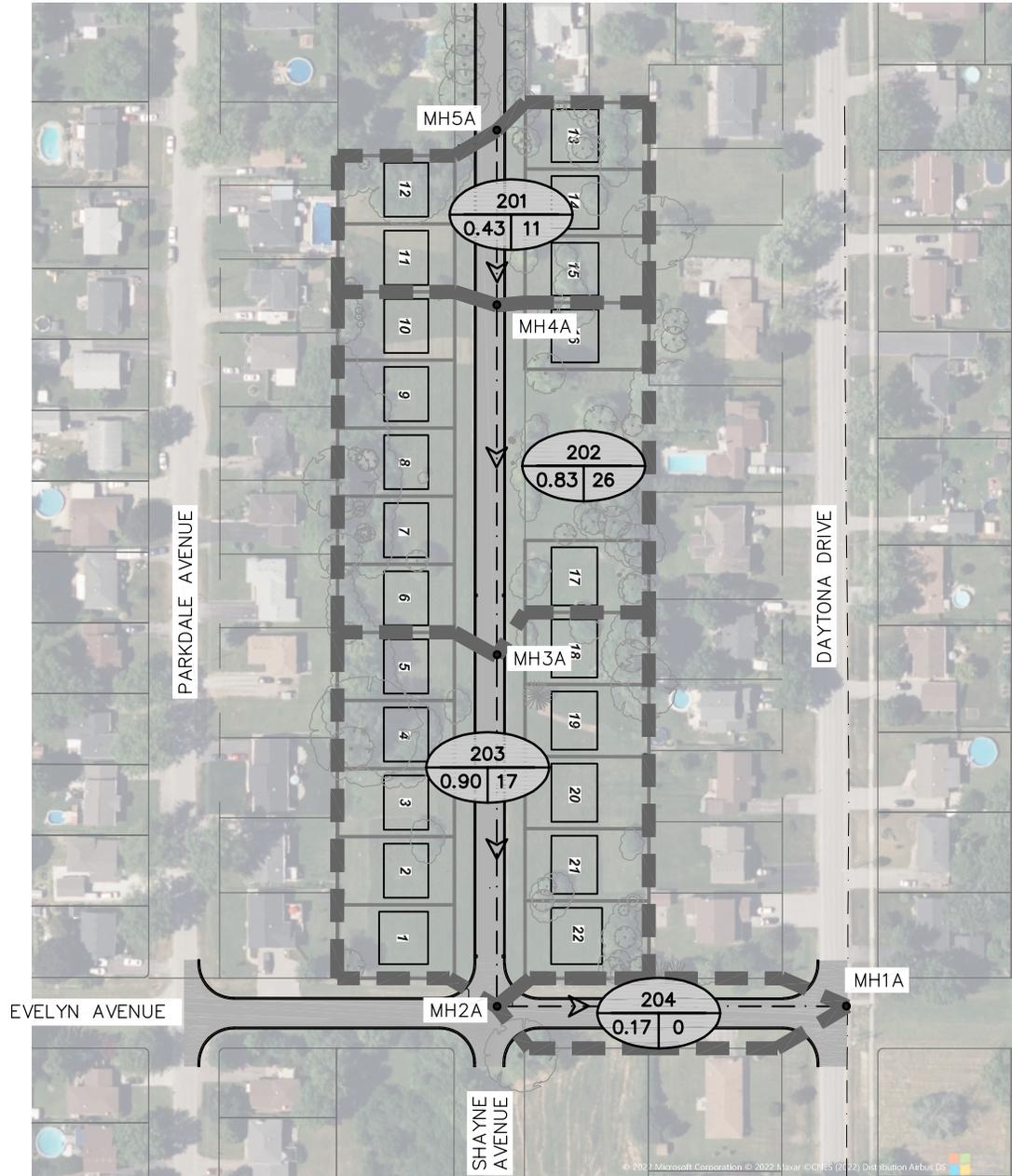
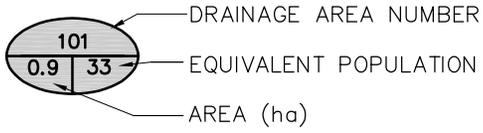
* Indicates that proposed pipe slope is greater than critical slope and pipe capacity and velocity are calculated using critical slope.

San Design Sheet_Aug2022



LEGEND

SANITARY DRAINAGE AREA BOUNDARY

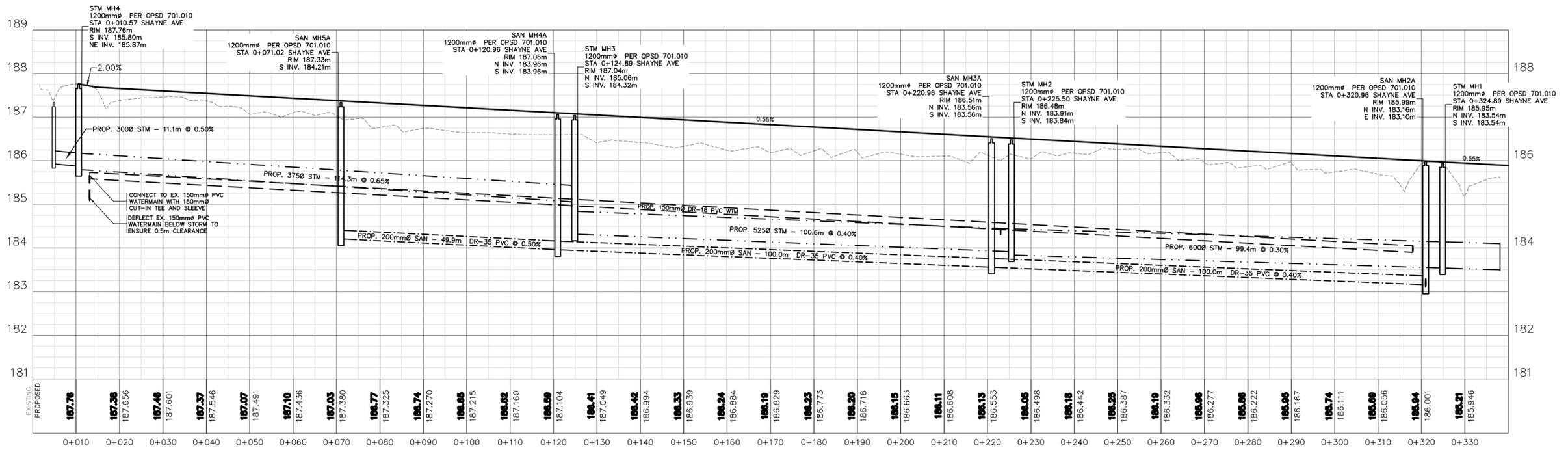
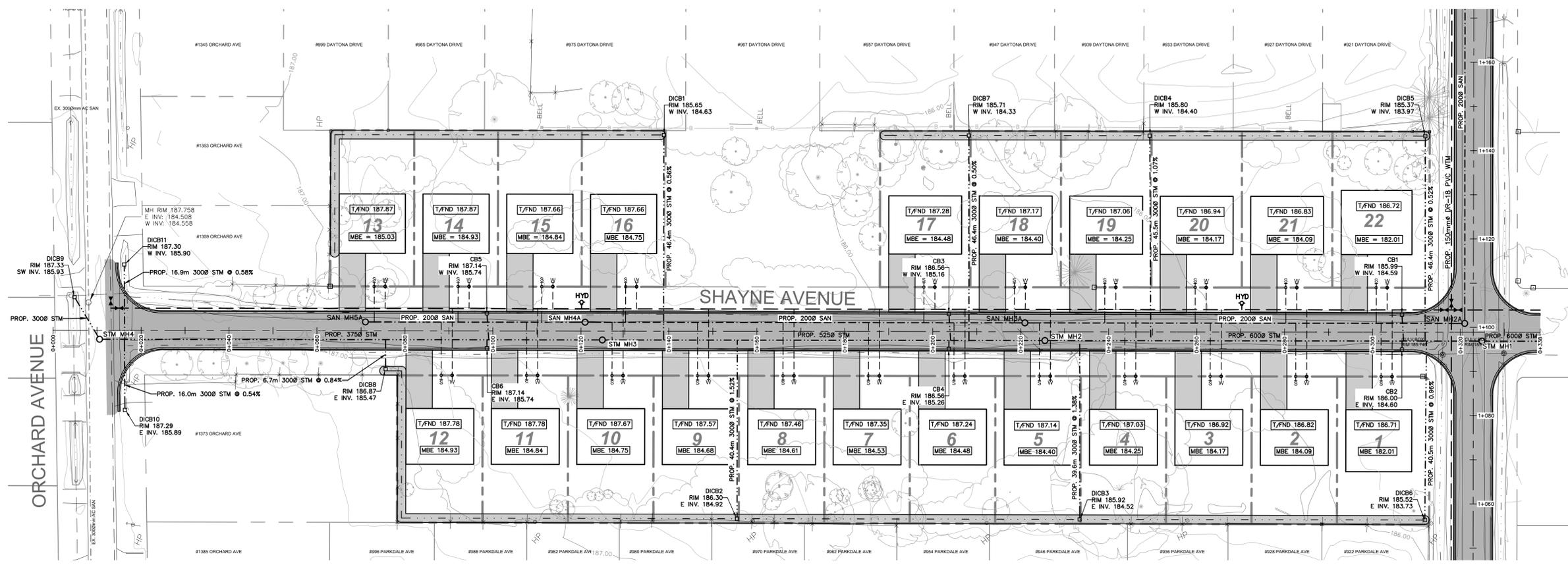


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project title
**SHAYNE AVENUE
 SUBDIVISION**
 Fort Erie, ON

drawing title
**SANITARY DRAINAGE
 AREAS**

| | |
|-------------------------------|---------------------|
| drawn by JRP | designed by JRP |
| scale 1:2000 | date 04 AUG 2022 |
| job number 22003 | issue A |
| drawing number 22003-SAN-1 | |



P:\2022\Projects\22003\Shayne Avenue\22003-BP.dwg

| APPROVALS | DATE | INITIALS |
|-----------|-------------|----------|
| JRP | 05 AUG 2022 | JRP |

Do not scale drawings. Report any discrepancies to Quartek Group Inc. before proceeding.
 Drawings must be sealed by the Architect and / or Engineer prior to the use for any building permit applications and / or government approval. Seals must be signed by the Architect and / or Engineer before drawings are used for any construction.
 All construction to be in accordance with the current Ontario Building Code and all applicable Ontario regulations.
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approved by:
APPROVED BY
 date:
 14 MAR 2022
 CAD file:
 22003-BP.dwg

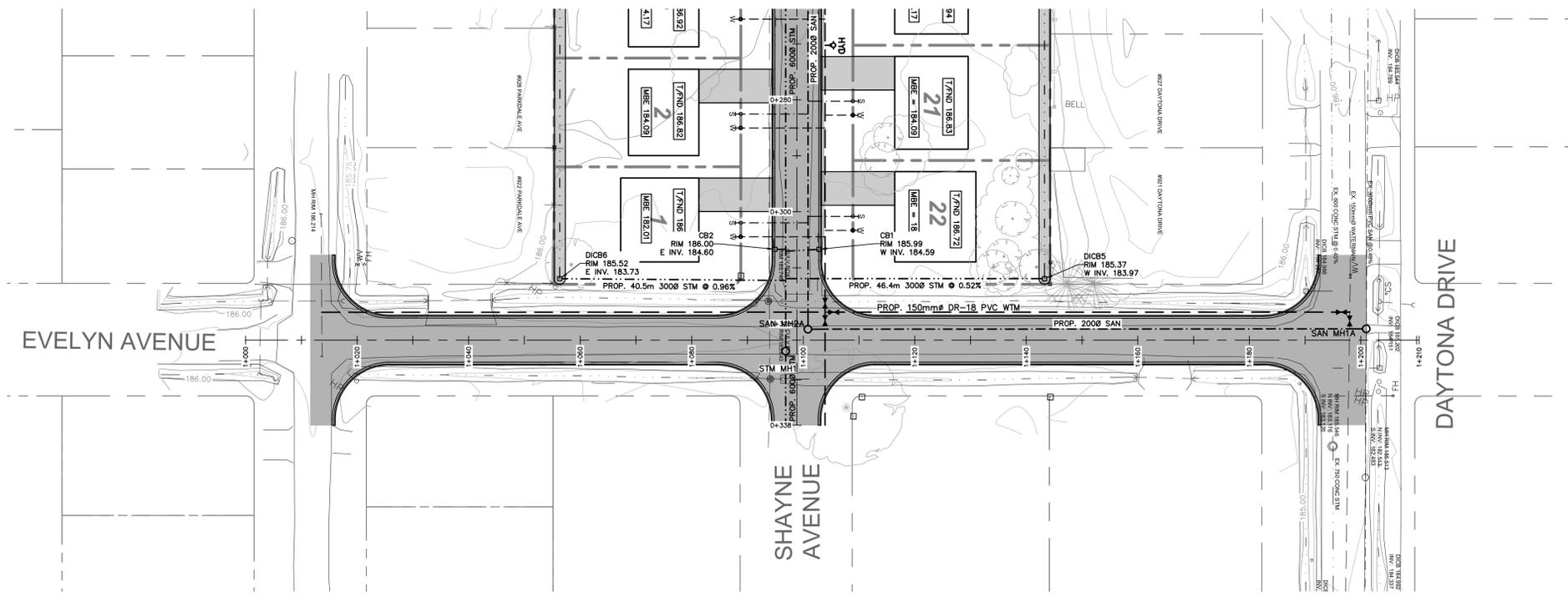


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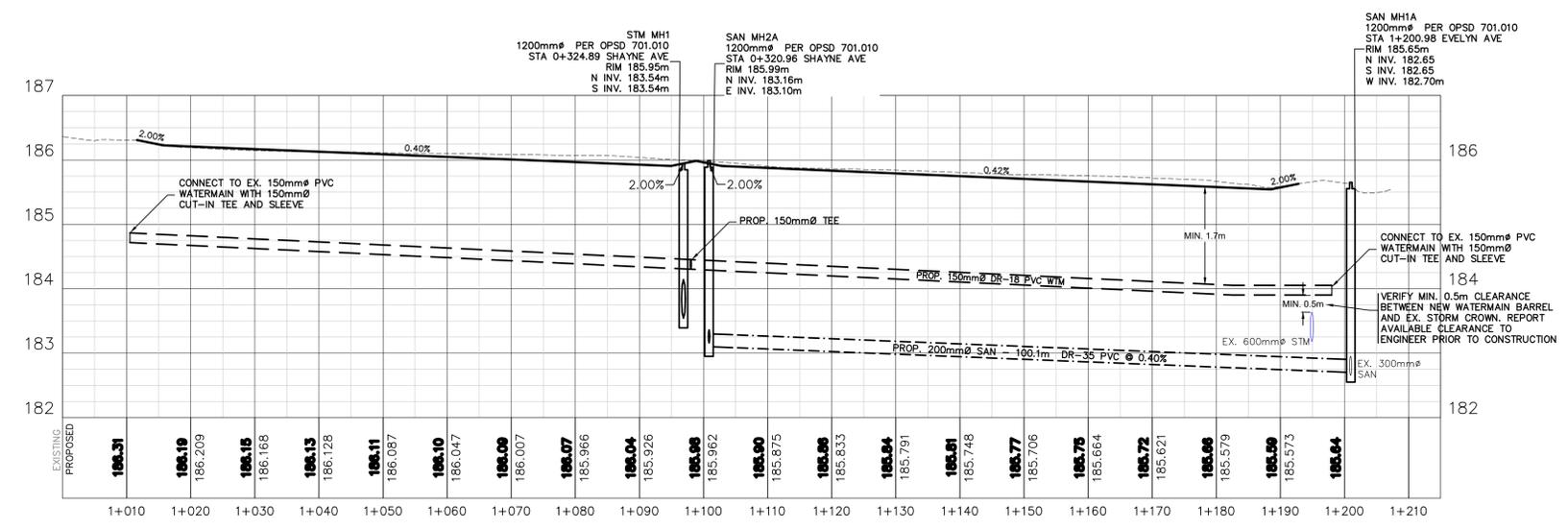
project title
SHAYNE AVENUE SUBDIVISION
 Shayne Avenue
 Fort Erie, ON

drawing title
SHAYNE AVENUE

| drawn by | designed by |
|----------------|-------------|
| JRP | JRP |
| scale: | date |
| 1:500 | 18 MAR 2022 |
| 1:50 | issue |
| job number | A |
| 220033 | |
| drawing number | PP-01 |



RECONSTRUCTION DESIGN OF
EVELYN AVENUE TO BE
COORDINATED WITH OTHERS



| APPROVALS | date | init. |
|-----------|-------------|-------|
| A | 05 AUG 2022 | JRP |
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approved by:
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date:
14 MAR 2022
CAD file:
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project title
**SHAYNE AVENUE
SUBDIVISION**
Shayne Avenue
Fort Erie, ON

drawing title
**EVELYN AVENUE
RECONSTRUCTION**

| | | | |
|----------------|--------|-------------|-------------|
| drawn by | JRP | designed by | JRP |
| scale: | 1:500 | date: | 18 MAR 2022 |
| job number | 220033 | issue | A |
| drawing number | PP-02 | | |

