



# PROPOSED PLAN OF SUBDIVISION – 13030 LUNDY’S LANE

*Preliminary*  
**Functional Servicing Report**

**Project Location:**

Highway 20 & Thorold Townline Road, Thorold, ON

**Prepared for:**

Rudanco Hospitality Corporation

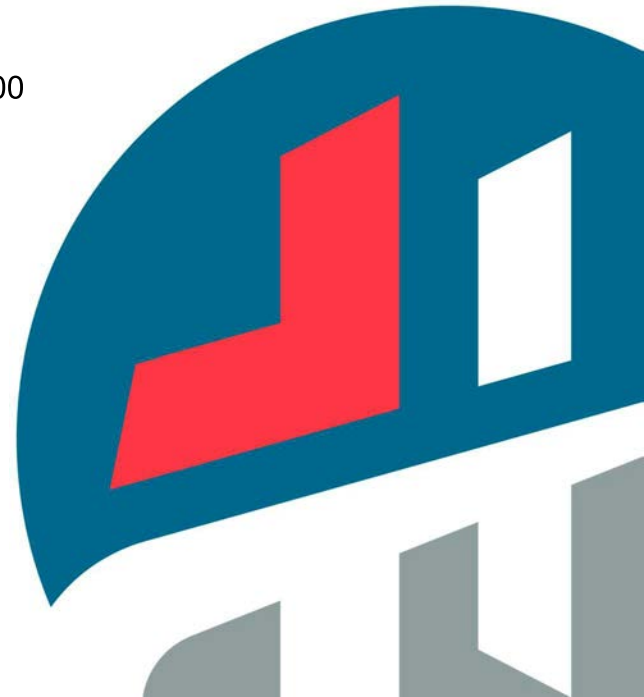
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# 1.0 INTRODUCTION

## 1.1 Overview

MTE Consultants Inc. (MTE) has been retained by Rudanco Hospitality Corporation to complete the Functional Servicing design in support of an application for Draft Approval of Plan of Subdivision for their 13030 Lundy's Lane (Highway 20) property in the City of Thorold. The property is referred to herein as the 'Subject Lands'.

The Subject Lands comprise two parcels north of Highway 20, west of Thorold Townline Road, immediately east of the Rolling Meadows Subdivision (including a small hold out lot, namely Part 1, Plan 59R-9206) and abutting the north and south sides of the existing Hydro Corridor. The Subject Lands are legally described as Parts 1 through 5 of Plan 59R-16622, City of Thorold. The two parcels are separated by lands owned by Hydro One, dedicated to the high voltage transmission towers, including a short north-south right-of-way across the hydro corridor (Part 5 of Plan 59R-16622). Urbanization of the Rolling Meadows Subdivision is occurring in different Phases and has begun, but the portion immediately adjacent to the Subject Lands has not yet been developed.

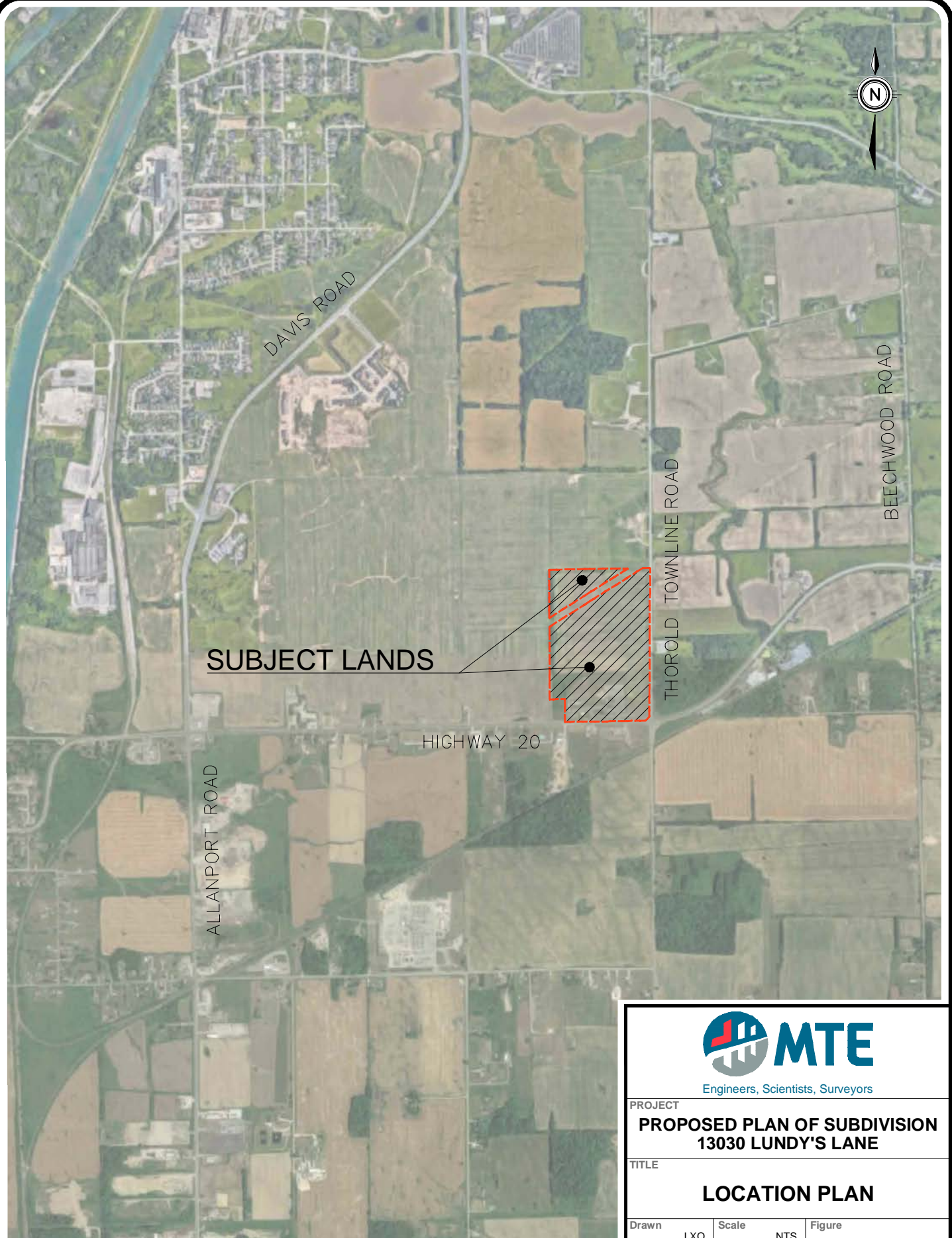
The total area of the Subject Lands is 23.0ha.

As illustrated in **Figure 1.1**, the Subject Lands are located at the northwest corner of Highway 20 and Thorold Townline Road. The Subject Lands extend from Thorold Townline Road at the east limits to Rolling Meadows Subdivision at the west and from Highway 20 at the south limits to north of the hydro easement where it is bound by agricultural lands. The majority of the site comprises vacant land with field crop vegetation. There is a closed motel and associated parking areas at the south end of the Subject Lands.

A Draft Plan of Subdivision has been prepared for the proposed development by Bousfield Inc. and forms the basis for the proposed servicing concepts. The Draft Plan of Subdivision includes single family detached residential lots, townhouse residential blocks, mixed-use commercial, mixed-use residential, condominium townhouse blocks, a pumping station block, park blocks, stormwater management block, a public lane and municipal rights-of-way. The Draft Plan is enclosed in **Appendix A**, along with a preliminary Master Site Plan and Master Plan Statistics prepared for the Mixed Use blocks by Giannone Petricone Associates.

The Draft Plan includes the following:

- Seven municipal roads (Streets A – G);
- Three Public Lanes (Lanes A – C);
- Single detached residential lots totaling 46 lots (Lots 1-46);
- On-Street Townhouse blocks (Blocks 47-65), including a total of 121 units;
- Rear Lane Townhouse blocks (Blocks 66-71), including a total of 24 units;
- Condominium Townhouse blocks (Blocks 72-73), including an estimated total of 119 units;
- Mixed-use Residential block (Block 74) including an estimated total of 1,330 apartment units;
- Mixed-use Commercial blocks (Blocks 75-76) including an estimated total of 422 apartment units plus 4,555,7 square metres of Retail space;



SUBJECT LANDS



PROJECT  
**PROPOSED PLAN OF SUBDIVISION  
 13030 LUNDY'S LANE**

TITLE  
**LOCATION PLAN**

Drawn	LXQ	Scale	NTS	Figure <b>1.1</b>
Checked	RSM	Project No.	49428-100	
Date	2023-10-06	Rev No.	0	

- Pumping station block (Block 77);
- Stormwater Management Pond block (Block 78);
- Park blocks (Block 79-81); and,
- Road Widening block (Block 82).

This report is to be read in conjunction with the Preliminary Stormwater Management Report – Highway 20 & Thorold Townline Road Subdivision (November 2023) prepared by MTE.

## 1.2 Purpose of Study

The purpose of this study is to demonstrate that development of the Subject Lands is technically feasible, with respect to road configuration as well as with respect to water, wastewater, and stormwater servicing, in order that Draft Approval of Plan of Subdivision for the project may be granted by the City of Thorold.

## 1.3 Background Documentation

A review of available documents was carried out prior to undertaking this Functional Servicing Report. Previous studies reviewed include the following reports:

- Ref. 1: *Preliminary Geotechnical Investigation Proposed Residential Development 13030 Lundy's Lane, Allanburg, Ontario, Soil-Mat Engineers & Consultants Ltd.* (July 23, 2021).
- Ref. 2: *Water Supply for Public Fire Protection*, Fire Underwriters Survey, 2020.
- Ref. 3: *Water-Wastewater Project Design Manual*, Niagara Region, August 2019.
- Ref. 4: *City Wide Water Service Master Plan*, City of Thorold, GM BluePlan (November 2019)
- Ref. 5: *Niagara Region 2016 Water and Wastewater Master Servicing Plan (MSP) Update*, Final Report, GM BluePlan (June, 2017).
- Ref. 6: *Official Plan of the City of Thorold*, City of Thorold (April 2016).
- Ref. 7: *City of St. Catharines Engineering Standards Manual*, City of St. Catharines, (June, 2015).
- Ref. 8: *Design Guidelines for Sewage Works*, Ministry of the Environment, 2008.
- Ref. 9: *Design Guidelines for Drinking-Water Systems*, Ministry of the Environment, 2008.
- Ref. 10: *MOE Stormwater Management Practices Planning and Design Manual*, Ministry of the Environment (March, 2003).
- Ref. 11: *Erosion and Sediment Control Guidelines for Urban Construction Greater Golden Horseshoe Conservation Authorities* (2006).
- Ref. 12: *Functional Servicing Report in Support of Zoning By-Law Amendment and Draft Plan Approval Upper's Grove Block Plan Residential Development*, Counterpoint Engineering, December 18, 2020.
- Ref. 13: *Erosion and Sediment Control Guide for Urban Construction*, Toronto and region Conservation Authority, 2019.

- Ref. 14: *13030 Lundy's Lane Proposed Plan of Subdivision Preliminary Stormwater Management Report*, MTE Consultants Inc., November 2023.
- Ref. 15: *Preliminary Master Site Plan and Master Plan Statistics*, Giannone Petricone Associates, October 30, 2023.
- Ref. 16: *Ontario Building Code*, May 12, 2023.

As directed by City of Thorold staff, the preliminary design included herein has been prepared in accordance with City of St. Catharines design criteria (Ref. 7).

## 2.0 SITE GRADING

### 2.1 Existing Topography

Suda & Maleszyk Surveying Inc. conducted a detailed topographical survey of the property which MTE received on August 08, 2021. Additional areas were surveyed to supplement the original drawing and were received on July 09, 2023. The existing topography of the Subject Lands is shown on MTE Drawing No. **Drawing 49428-100 P-ST1 Preliminary Pre-Development Storm Drainage Area Plan**, enclosed.

Much of the subject land is relatively flat with elevations ranging from 187.5 to 182.0m. The site mostly has an east-west drainage split which roughly coincides with the middle of the existing motel and extends north and west to a site high point just north of the Hydro Corridor. Approximately 3.2ha of the site near the north end including a portion of the Hydro Corridor drains towards the ditch within the west boulevard of Thorold Townline Road and into twinned existing 450mm culverts. Another large 14.7ha area of the site including a portion of the Hydro Corridor drains towards the ditch within the west boulevard of Thorold Townline Road and into an existing 600mm culvert. These culverts are labelled as Outlet #1 and #2 respectively. Outlet #1 crosses under Thorold Townline Road via two 450mm dia. culverts which discharge to a realigned, regular channel which flows through private lands to the north then east, eventually discharging into Beaverdams Creek. Outlet #2 crosses under Thorold Townline Road via a 600mm dia. culvert which discharges to a second realigned, regular channel which flows east and discharges to Beaverdams Creek approximately 450m east of the Subject Lands. There are four other existing outlets points which drain offsite to the west and north and are labelled as Outlets #4 through #7. Each of the drainage outlets is illustrated on enclosed **Drawing 49428-100 P-ST1 Preliminary Pre-Development Storm Drainage Area Plan**.

There is no minor or major storm drainage from Thorold Townline Road or Highway 20 conveyed through the Subject Lands. Thorold Townline Road drains to the north in the roadside ditches to the existing culverts as described above. Highway 20 also drains into roadside ditches and culverts, with an existing high point at the motel's entrance near mid-block. From this entrance, grades fall to the east on the east side into an existing 750mm culvert which passes under Thorold Townline Road and fall to the west on the west side.

### 2.2 Proposed Grading

Preliminary grading of the Subject Lands has been designed to meet the following goals:

- To direct stormwater runoff from within the Subject Lands towards the proposed stormwater management (SWM) facilities within the development;
- To ensure adequate cover is provided on proposed storm and sanitary sewers;

- To ensure house foundations are vertically separated from the groundwater table; and
- To comply with City of Thorold lot grading and road criteria (using City of St. Catharines standards in absence of local ones).

The preliminary grading design for the Subject Lands generally tries to mimic the shape of the existing topography where practical. The proposed design includes longitudinal slopes for the proposed municipal roads and rear lane ranging from 0.5% to 8.0%. Preliminary block grading includes a mixture of back-to-front, split, walk out and look out drainage patterns. Proposed lot slopes vary from 2% - 5%, with lookout and walkout lots utilizing slopes at maximum of 3:1 H:V within the building footprint.

In areas of the Subject Lands, the groundwater table is relatively high, readings taken to date conservatively indicate a groundwater level at 1.5 to 2 meters below the existing grade, at an elevation of roughly 183.5 to 186.5 meters. The proposed grading design ensures that house foundations will remain at least 0.5m higher than the seasonally high groundwater elevation in all locations. In order to achieve this while still matching the existing Thorold Townline Road and Highway 20 profiles, transition road grade slopes near the Thorold Townline Road intersections with Streets A, B and C are proposed, as are 3:1 slopes for the majority of the east and south frontages. To match into the existing grades in the southwest corner, a retaining wall is proposed. The maximum height of the proposed retaining wall is approximately 2.15m. At this writing, proposed grading designs for the Rolling Meadows Subdivision have not been received, so our design uses walk out and look out lots to best match into existing grades along the west limit.

The preliminary grading plan for the project is illustrated on MTE Drawing No. **49428-100 P-AG1.1** enclosed.

## 3.0 MUNICIPAL SERVICING

### 3.1 Sanitary Servicing

Sanitary servicing to the Subject Lands will be provided by one connection to the existing municipal sanitary sewer along the Lundy's Lane frontage of the development and one connection to the 450mm dia. municipal sewer on Upper's Lane.

#### 3.1.1 Lundy's Lane

The existing Lundy's Lane sewer has an existing invert of 182.08m near the southwest corner of the Subject Lands. This sewer drains west towards the existing Blackhorse Sanitary Pump Station (SPS). Domestic wastewater generated from the western portion (approximately 17%) of the Subject Lands will be conveyed to this proposed connection with 200mm diameter gravity sewers. The Region's MSP (Ref. 5) contemplates servicing of the southern portion of the Subject Lands in this direction.

#### 3.1.2 Upper's Lane

Sanitary flow from the balance of the Subject Lands will be conveyed to the intersection of Street B and Thorold Townline Road via 200mm gravity sewers, then to the intersection of Upper's Lane and Barker Parkway along Thorold Townline Road and the undeveloped Upper's Lane road allowance via 375-450mm diameter gravity sewers. Note that the Upper Grove subdivision proposes to construct the downstream-most run connecting to Barker Parkway, and should that development be serviced before the Subject Lands, then the sewer extension

associated with the Subject Lands would start at the upstream limit of the Upper Grove sewer. Based on sanitary sewer design included in the Upper Grove FSR (Ref. 12), the sanitary obvert at the proposed connection point is sufficiently deep to provide a gravity connection to the Subject Lands at proper depth throughout. The Subject Lands are within the catchment area for which the existing sewer system was designed.

The proposed sanitary sewer network is shown on MTE Drawing No. **49428-100 P-GP1.1** enclosed and the corresponding drainage area plan on MTE Drawing No. **49428-100 P-SA1.1 Sanitary Drainage Area Plan**. Preliminary design of the external sanitary connection to Upper Grove is illustrated on **Figure 3.1**. Preliminary sewer design for the wastewater collection network has been carried out in accordance with City of Thorold design guidelines, using parameters from both the City of St. Catharines and Niagara Region standards. The proposed sanitary sewer will cross under the 825mm diameter storm sewer at the Street A/B intersection with approximately 2.2m vertical clearance. Typical depths of the sanitary sewers range from 2.6 – 6.5m. Proposed flows are divided by high points in the sewers which lie at the point of maximum achievable length of gravity sewer to the existing Highway 20 outlet while maintaining 2.60m of cover.

An alternative sanitary servicing design has been considered in place of the external connection to the Upper Grove development, which would include a Sanitary Pumping Station (SPS) at the north end of Street B and a forcemain along Street B from the SPS discharging to the gravity sewer on Street E just west of Street B. Although this alternative is technically feasible, it is not proposed due to its higher cost of construction and perpetual operation and maintenance costs. Nevertheless, the alternative is presented on **Drawing 49428-100 SA1.2 – Sanitary Alternative Design – Pump Station and Forcemain**.

The preliminary sanitary sewer design sheet is included in **Appendix B**.

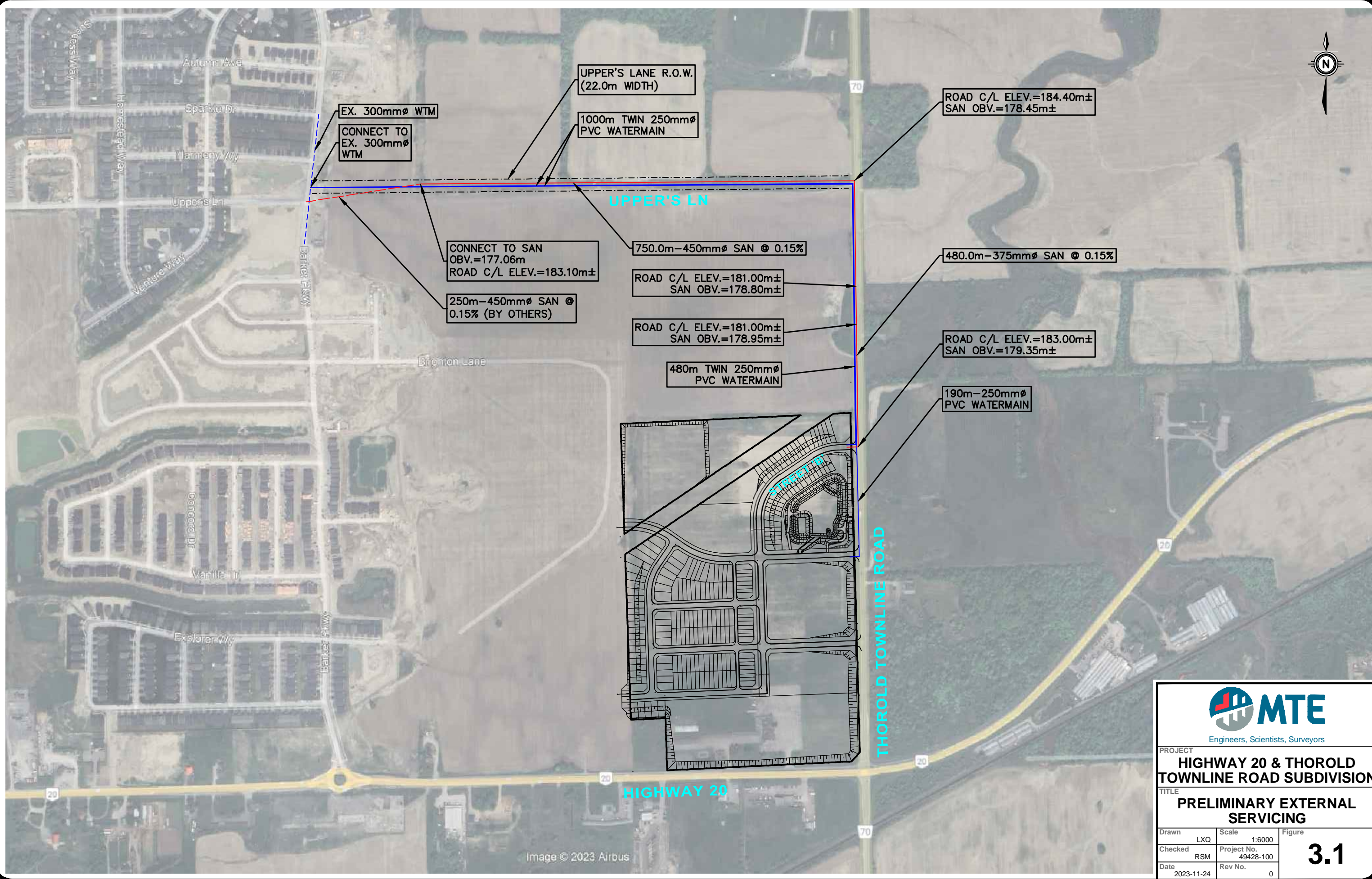
### 3.2 Blackhorse Sanitary Pumping Station

Ultimately wastewater from both the Lundy's Lane system and the Upper's Lane system flows to the Blackhorse Sanitary Pumping Station (SPS). The MSP indicates that upgrade to the Blackhorse SPS is planned, in order to provide additional pumping capacity at the SPS as well as additional conveyance capacity to the downstream wastewater treatment plants. The MSP indicates the timing of these upgrades are to be in service in the 2022-2031 time frame.

### 3.3 Water Distribution

There are presently no municipal watermains adjacent to the Subject Lands. Extension of municipal watermains to the Subject Lands along proposed ROWs within Rolling Meadows is proposed by the proponent of the Rolling Meadows development. To service the Subject Lands, it is proposed to extend a network of 200mm dia. watermains from the connection points at Rolling Meadows throughout the Subject Lands along municipal ROWs.

The existing watermain along Lundy's Lane ends some 600m west of the west limits of the Subject Lands. The City Wide Water Master Service Master Plan (Ref. 4) indicates that extension of this municipal watermain is necessary, from its current terminus along the Lundy's Lane east through the frontage of Rolling Meadows then the Subject Lands to Thorold Townline Road, then north along Thorold Townline Road past the frontage of the Subject Lands. Because Lundy's Lane is an MTO road, MTO requires that proposed infrastructure be set back 14m from the road allowance, meaning that it must be installed within an easement on private property. As such, a section of the extension must pass through Rolling Meadows lands before reaching the Subject Lands. However, it is not apparent that this extension will be constructed



PROJECT  
**HIGHWAY 20 & THOROLD  
 TOWNLINE ROAD SUBDIVISION**

TITLE  
**PRELIMINARY EXTERNAL  
 SERVICING**

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by Rolling Meadows, and without this missing piece, further extension through the Subject Lands is not possible. Alternatively, it is proposed to extend the municipal watermain from the proposed internal roads of Rolling Meadows, through the Subject Lands along proposed road allowances to Thorold Townline Road at Street B, thus accommodating future extension of the watermain north of the Subject Lands along Townline Road.

In the event that development of the Subject Lands proceeds before Rolling Meadows (and therefore watermain connections to Rolling Meadows are not yet available), then extension of the municipal watermain from the intersection of Uppers Lane and Barker Parkway can be made. This extension would include approximately 1000m of watermain within the Upper's Lane road allowance from Barker Parkway east to Thorold Townline Road, then approximately 480m south along Thorold Townline Road to Street B. This alignment is shown on **Figure 3.1**. In order to ensure security of supply, twin 250mm diameter watermain are proposed within Thorold Townline Road and Upper's Lane to Barker Parkway.

Within the Subject Lands, a network of 200-250mm diameter watermain is proposed within municipal road allowances. Fire protection will be provided by hydrants spaced in accordance with relevant design standards. The preliminary water distribution design within the Subject Lands is plan is shown on MTE Drawing No. **49428-100 P-GP1.1**.

### 3.3.1 System Demands

Based on the proposed unit count within the development including conceptual retail area within the Mixed Use blocks, and using City of St. Catharines design criteria, domestic and fire water demands for the project are summarized in **Table 3.1**.

**Table 3.1 – Domestic Water Demands**

Land-use	Residential Units <sup>A</sup>	Pop. (pers.) <sup>B</sup>	Retail Gross Floor Area <sup>A</sup> (m <sup>2</sup> )	Avg. Demand (L/s) <sup>C, D</sup>	Max Day Demand (L/s) <sup>E</sup>	Peak Hour Demand (L/s) <sup>F</sup>	Fire Flow Demand (L/s) <sup>G</sup>
Single Detached	48	168		0.58	0.90	2.33	160.9
Street Townhomes	145	435		1.51	2.34	6.04	240.7
Retail (Blocks 75-76)			4,555.7	1.70	2.63	6.79	140.1
Apartments (Blocks 74 – 76)	1752	3,504		12.17	18.86	48.67	156.4
Condominium Townhomes	119	238		0.83	1.28	3.31	239.6
<b>Total</b>		<b>4,345</b>		<b>16.78</b>	<b>26.02</b>	<b>67.14</b>	<b>240.7</b>

<sup>A</sup> Unit counts and Retail GFA based on Master Plan Statistics (Ref. 15).  
<sup>B</sup> Population based on density of 3.5 persons per unit (PPU) for single detached homes, 3.0 PPU for street townhomes, 2.0 PPU for condo townhomes and apartments.  
<sup>C</sup> Residential Average demand based on 300 L/cap/day per Niagara Region MSP  
<sup>D</sup> Retail Avg Demand based on OBC, assuming 75% "Stores" and 25% "Restaurants (not open 24 hours)".  
<sup>E</sup> Max Day demand based on peaking factor of 1.55 per Niagara Region MSP Volume III (pg73/240)  
<sup>F</sup> Peak Hour demand based on peaking factor of 4 as per Niagara Region MSP  
<sup>G</sup> Fire Flow demand calculated using FUS method.

Fire hydrants will be provided through the development at appropriate spacing in accordance with City of St. Catharines design requirements.

Complete domestic and fire flow demand calculations are included in **Appendix C**.

It is understood that the Region will undertake water flow and pressure analysis using their existing model, at the proponent's cost. As such, water pressure and flow calculations have not been completed in support of this report.

### 3.4 Storm Drainage

In general, the storm sewer system for the Subject Lands includes a storm sewer network designed to capture and convey runoff from the minor storm event (5-year storm event) and major overland flow routes along municipal roads to convey runoff from storms exceeding the capacity of the storm sewer towards the proposed stormwater management pond (Block 78), all in accordance with City of St. Catharines design guidelines.

Proposed pipe sizes vary from 300mm to 1200mm in diameter, with maximum slope of 1% and minimum slope of 0.5%. Minimum cover on the proposed storm sewers is 1.5m. discharge to the ditch within the west Thorold Townline Road R.O.W. and into the existing 600mm culvert. Small transition areas around the perimeter of the site which cannot be directed to the SWM facility due to grading constraints are discharged uncontrolled and have been accounted for in the hydrologic modelling. The uncontrolled portions of Streets A, B and C will drain into the roadside ditch of Thorold Townline Road via curb spillways to be shown at the detailed design stage. In order to convey discharge from the SWM facility to the receiving watercourses, culverts under the proposed intersections with Thorold Townline Road will be sized and shown in the detailed design stage as will any modifications to existing Outlets #1 or #2.

A preliminary storm servicing plan and corresponding drainage area plan are shown on MTE Drawing No. **49428-100 P-GP1.1** enclosed, and the corresponding drainage area plan's on **49428-100 P-ST1.1**.

The storm sewer design sheet is included in **Appendix D**.

### 3.5 Stormwater Management

As described in the Preliminary SWM report for the project (Ref. 14), the SWM requirements for the project are as follow:

- “Enhanced” water quality treatment as defined by MOE 2003;
- Attenuation of the post-development peak flows for the 20 to 100-year storm events to the pre-development (existing) peak flows. Thorold Townline road and Lundy's Lane shall not be negatively affected as a result of development; and
- Identify the feasible Low Impact Development/Green Infrastructure practices in order to mitigate impact on the downstream receiving creeks.

The SWM design for the Subject Lands includes construction of a wet pond SWM facility to provide the requisite Water Quality treatment and quantity control. As detailed in the preliminary SWM report for the project, all stormwater management targets for the project are met by the proposed SWM design.

## 4.0 ROAD NETWORK AND ROADWORKS

The road network through the Subject Lands has been prepared by Bousfields Inc. to best suit the physical boundary constraints while providing a logical layout with a mix of land uses.

Utilizing the proposed road layout, centreline road grades and associated lot grading have been designed to generally meet the following criteria:

- Match existing road grades at subdivision accesses;
- Match existing and proposed boundary grades around the perimeter of the site;
- Ensure adequate cover is provided over municipal services;
- Ensure “major” overland flow routes are directed to the downstream outlet, and;
- Comply with municipal standards for minimum and maximum road and lot grades.

Preliminary centreline road grades range from 0.5% (minimum) to 8.0% (maximum) along municipal roads and laneways, and generally slope from the site boundaries to the proposed downstream storm outlet at the southwest corner of the stormwater management pond (Block 78) as shown on MTE Drawing No. **45174-104 P-AG1.1 Preliminary Area Grading Plan**.

Municipal roadways will be constructed to a full urban cross-section including asphalt pavement, concrete curb and gutters, concrete sidewalks, roadway illumination and boulevard landscaping all in accordance with the City of Thorold standards. Sidewalk connections to the Street B Multi-Use Path, within the 24m wide portion of the Street B right-of-way will be shown at the detailed design stage.

Municipal right-of-way widths will be constructed to various widths as outlined in **Table 4.1**. Typical 18m, 20m and 24m ROW cross-sections have been prepared based on St. Catharines typical sections, modified to provide increased asphalt widths as required by the Official Plan of the City of Thorold, Section B.1.8.14.2. An additional 24m ROW section has been prepared for the portion of Street B from 130m north of Street A to Street F, in which a 6m widening has been added to the west boulevard of the typical 18m ROW section to accommodate a trail corridor. Lastly, a typical 6.5m wide Rear Lane ROW section has been prepared for Lanes A-C.

A typical cross-section for each right-of-way width is included in **Appendix E**.

**Table 4.1 – Proposed Right-of-Way Widths**

Street Name	Width (m)
Street A	24.0 (from Thorold Townline Rd to Street B) 20.0 (from Street B to the site west limit)
Street B	18.0m (from 130m north of Street A to Thorold Townline Road) 24.0m (from 130m north of Street A to Street F)
Street C	24.0 (from Thorold Townline Rd to Street B) 18.0 (from Street B to Street G)
Street D	18.0
Street E	18.0
Street F	18.0
Street G	18.0
Lanes A - C	6.5

In accordance with the geotechnical investigation for the proposed development, the proposed pavement structure is summarized in **Table 4.2**.

**Table 4.2 – Proposed Pavement Structure**

<b>Pavement Structure</b>	<b>Local Roads (mm)</b>	<b>Site Plan Blocks Light duty (mm)</b>	<b>Site Plan Blocks Heavy duty (mm)</b>
Surface Course HL-3 Asphaltic Concrete	40	65	40
Binder Course HL-8 Asphaltic Concrete	65	-	80
Granular ‘A’ (or equivalent) Base	150	150	150
Granular ‘B’ Type II (or equivalent) Sub-base	300	300	450

## 5.0 EROSION & SEDIMENTATION CONTROL

The preliminary erosion and sedimentation control (ESC) design for the project includes the following aspects:

- siltation control fence along the portion of the site perimeter which drains off-site;
- temporary sediment basins (TSB);
- temporary swales to direct site runoff to the TSBs;
- rock check dams at 100m intervals along the temporary swales;
- a mud mat at the construction entrance to the project from Thorold Townline Road; and
- double row siltation control fence surrounding topsoil stockpile areas.

The preliminary ESC measures listed above are illustrated on MTE Drawings **45174-104 P-ES1.1 - Preliminary Erosion and Sediment Control Plan** and **45174-104 P-ES1.2 - Preliminary Erosion and Sediment Control Plan Notes & Details**.

## 6.0 UTILITY SERVICING

Utility servicing (electrical, natural gas, telephone, cable TV) will be provided through connection to and extension of existing services on Thorold Townline Road, Highway 20 and extension through the neighbouring future development of Rolling Meadows along municipal roads.

## 7.0 COST SHARING

Future development lands adjacent to the Upper’s Lane corridor will benefit from the installation of the proposed watermain and sanitary sewer along Upper’s Lane. It is anticipated that the proponent of the Subject Lands will share pro rata costs of this installation with benefitting third parties, either through developer-to-developer cost sharing, or through Development Charge credits. It is recommended that the Subdivision Agreements for the Subject Lands and for other benefitting developments be written to include mechanisms for cost sharing.

## 8.0 CONCLUSIONS AND RECOMMENDATIONS

The analysis and discussion included in this report lead to the following conclusions with respect to the proposed 13030 Lundy's Lane development:

- i. Proposed grading of the Subject Lands has been designed in accordance with City of Thorold standards; to convey storm runoff to a SWM facility for treatment;
- ii. The south and west portion of the Subject Lands can be serviced through the extension of existing gravity sanitary sewers from Lundy's Lane through the Subject Lands along a proposed easement and proposed municipal roads. The remainder of the Subject Lands can be serviced through the extension of existing gravity sanitary sewers from the Upper Grove development northwest of the Subject Lands along Upper's Lane and Thorold Townline Road to the limit of the Subject Lands then through the Subject Lands along proposed municipal roads.
- iii. Storm drainage will be collected and conveyed to a proposed wet pond stormwater management facility within the Subject Lands which will treat stormwater prior to discharging to existing roadside ditch on Thorold Townline Road.
- iv. Water supply for the proposed can be provided by connecting to proposed watermains within the Rolling Meadows development adjacent to the Subject Lands. Should the Subject Lands proceed before these connections are available, then water supply can be provided through extension of the existing municipal watermain from Barker Parkway to the Subject Lands along Upper's Lane and Thorold Townline Road.
- v. All stormwater management criteria for the proposed development through incorporation of SWM measures as described in the Preliminary SWM report for the project.
- vi. Erosion & Sedimentation Controls can be implemented to ensure that site soils remain on site during grading and construction works.
- vii. The proposed development can be adequately serviced through the extension of existing utilities including hydro, gas, cable TV and telephone.
- viii. Water and sanitary infrastructure proposed along the Upper's Lane corridor will benefit future development lands outside of the Subject Lands. Cost sharing of this infrastructure with benefitting third parties is recommended.

Based on the above conclusions, it is recommended that approval be granted to the Rudanco Hospitality Corporation application for Draft Approval of Plan of Subdivision, in order that the proposed development may proceed to the next design stage.

All of which is respectfully submitted,

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:rsm



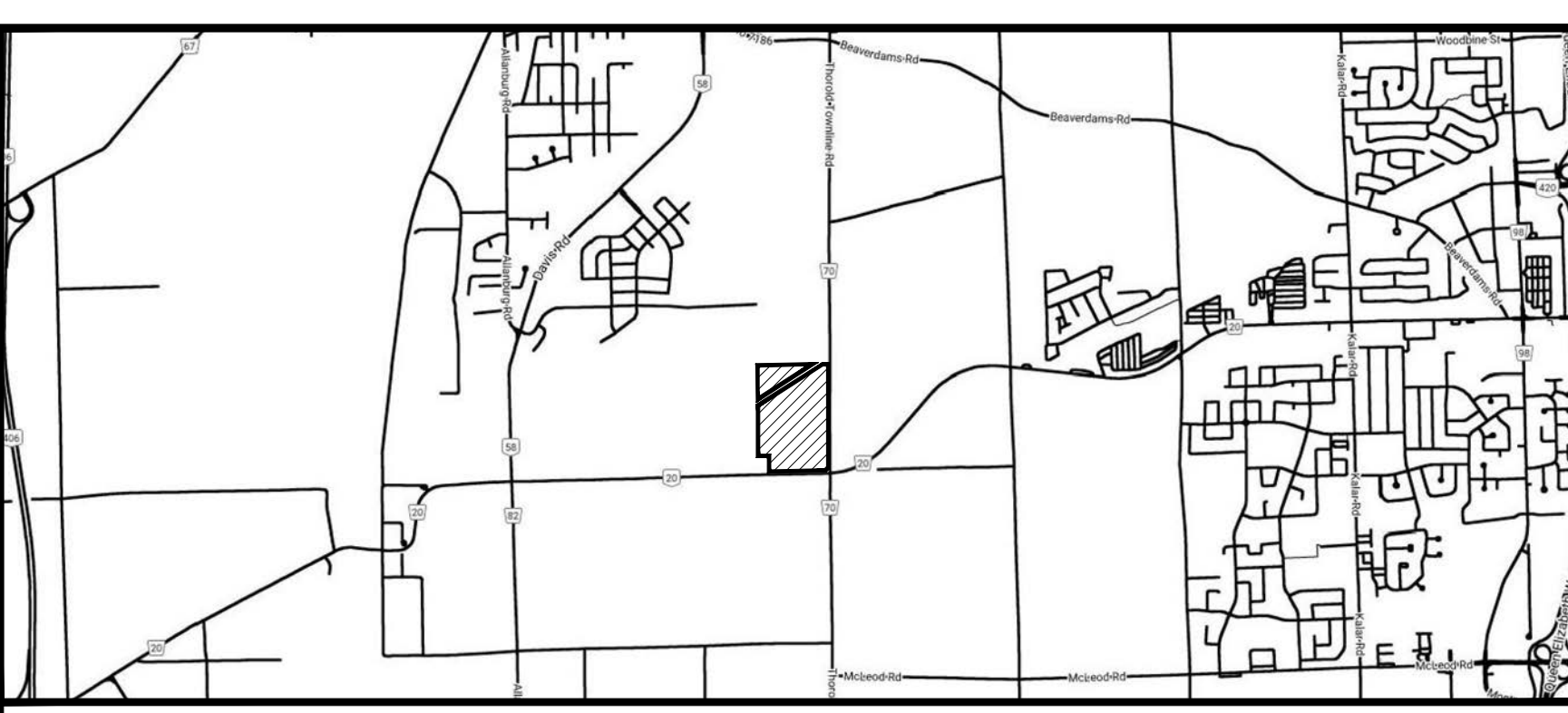
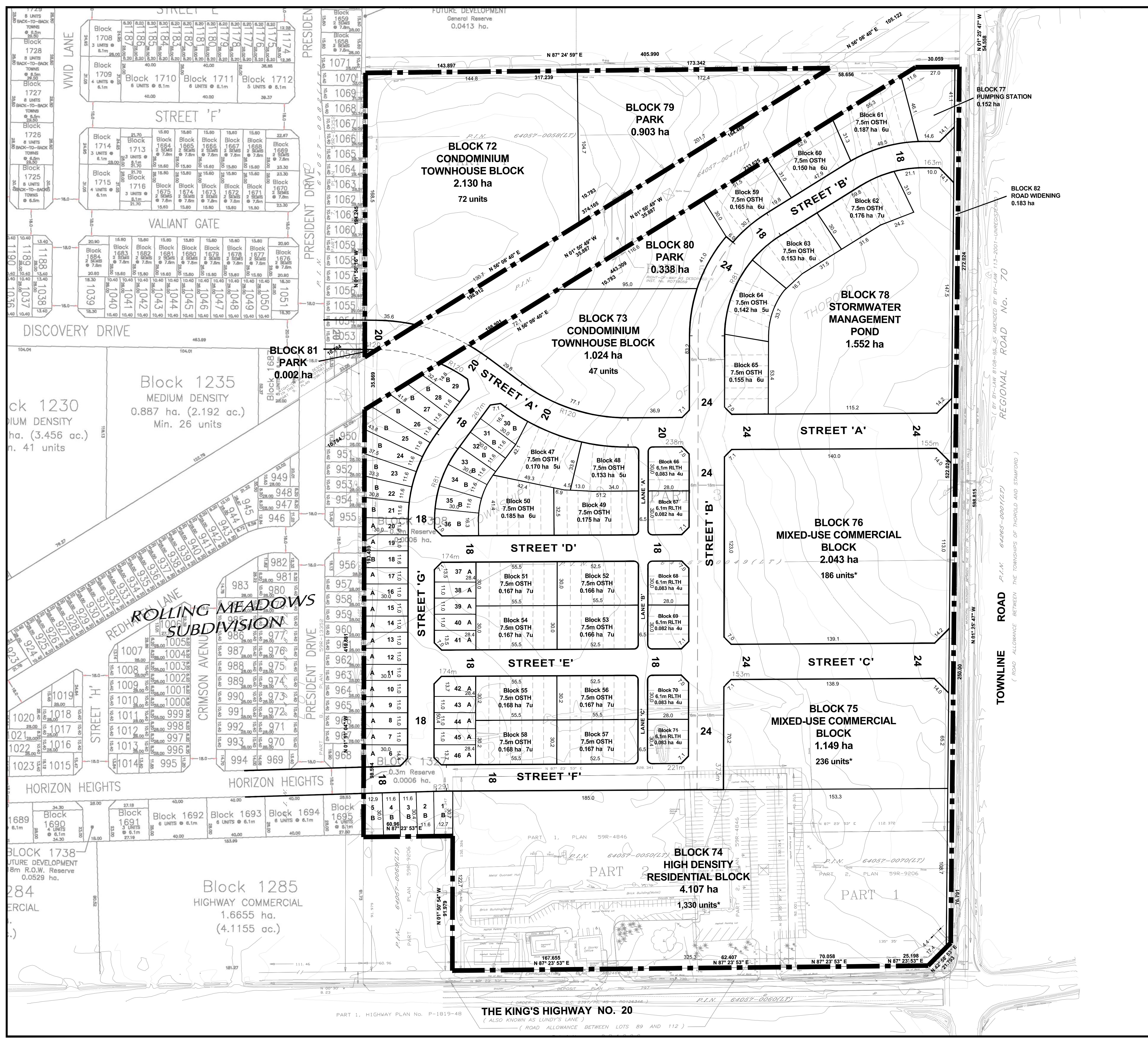
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# Appendix A

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## **Draft Plan of Subdivision Master Site Plan Master Site Plan Statistics**



KEYPLAN  Subject Property

LAND USE - AREA TABLE	2097 - 59dp	December 13, 2023
Single Family Residential	Lots 1-46	8% 1.742 ha*
On-Street Townhouses	Blocks 47-65	14% 3.131
Rear Lane Townhouses	Blocks 66-71	2% 0.496
Condominium Townhouse Blocks	Blocks 72-73	14% 3.154
High Density Residential Block	Block 74	18% 4.107
Mixed-Use / Commercial Blocks	Blocks 75-76	14% 3.192
Pumping Station Block	Block 77	1% 0.152
Stormwater Management Pond	Block 78	7% 1.552
Parks	Blocks 79-81	5% 1.243
Road Widening	Block 82	1% 0.183
Roads		17% 4.016
<b>Total</b>		<b>100% 22.968 ha*</b>

ROADS		
24m Public R.O.W.	528 m	1.671
20m Public R.O.W.	238 m	0.397
18m Public R.O.W.	1,152 m	1.828
6.5m Public Lane	180 m	0.120
<b>Total</b>	<b>2,098 m</b>	<b>4.016 ha</b>

PRELIMINARY UNIT COUNT		
11.0m Single Family Detached	A	1% 24 units
11.6m Single Family Detached	B	1% 22
On-Street Townhouses		6% 121
Rear Lane Townhouses		1% 24
Condominium Townhouses		6% 119 *
Residential Apartment Units		85% 1752 *
<b>Total</b>		<b>100% 2062 * units</b>

\* Final Unit Counts will be determined at the time of Site Plan application for each Block.

LEGEND

 Subject Property

SURVEYOR'S CERTIFICATE

I certify that: the boundaries of the lands to be subdivided and their relationship to the adjacent lands are correctly shown.

NOTES

- All dimensions are in metres.
- All area measurements are computer generated.
- All elevations refer to Geodetic Datum.

PHILIP S. SUDA, O.L.S.  
SUDA & MALESZYK SURVEYING INC. Day Month Year

OWNER'S AUTHORIZATION

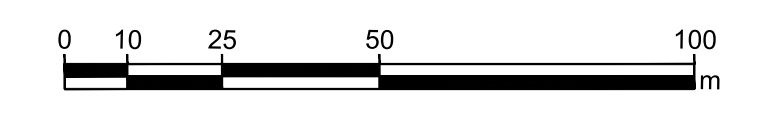
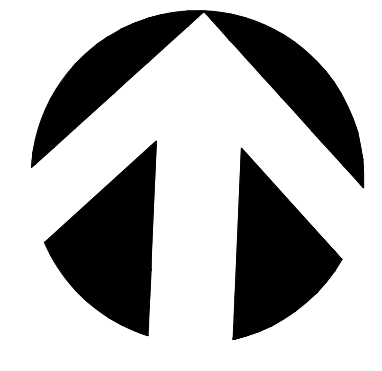
I/we, RUDANCO HOSPITALITY CORPORATION  
being the registered owner(s) of the subject lands hereby authorize  
BOUSFIELDS INC. to prepare and submit a  
draft plan of subdivision for approval.

RUDANCO HOSPITALITY CORPORATION Day Month Year

ADDITIONAL INFORMATION  
REQUIRED UNDER SECTION 51(17)  
OF THE PLANNING ACT

- A, B, E, F, G, J, L - As Shown on Plan
- C. Additional lands owned by the applicant as shown on the key plan.
- D. Residential Singles, On-Street Townhouses, Rear-Lane Townhouses, Condominium Townhouse Blocks, Mixed Use/Commercial Block, High Density Residential Block, Pumping Station, Stormwater Management Pond, Park, Road Widening, Roads and Lanes.
- H. Piped water to be provided.
- I. Clay loam soil.
- K. Sanitary & storm sewers to be provided.

**DRAFT PLAN OF  
PROPOSED SUBDIVISION  
PART OF LOT 89  
(GEOGRAPHIC TOWNSHIP OF THOROLD)  
CITY OF THOROLD  
(REGIONAL MUNICIPALITY OF NIAGARA)**



**BOUSFIELDS INC.**  
3 Church Street, Suite 200  
Toronto, Ontario M5E 1M2  
P (416) 947-9744  
F (416) 947-0781

**THE KING'S HIGHWAY NO. 20**  
(ALSO KNOWN AS LUNDY'S LANE)  
(ROAD ALLOWANCE BETWEEN LOTS 89 AND 112)

**NOT FOR CONSTRUCTION**

**MASTER PLAN STATISTICS** 2023-11-24  
Hwy 20, Thorold

Gross Site	229,687 sm
Development Site	158,288 sm
Parkland	12,430 sm
Stormwater Management Pond	15,520 sm
Unused Site	46 sm
Pumping Station	1,516 sm
Thorold TL Road	3,050 sm
Public ROW	37,447 sm

Summary	Block Area	Unit Count				GCA Retail		GCA Residential		GCA Total	
		Towns	Detach	Apart	Total	sm	sf	sm	sf	sm	sf
Block 74	41,062	-	-	1,330	1,330	-	-	99,895.6	1,075,268	99,895.6	1,075,268
Block 75	11,492	-	-	236	236	607.1	6,535	17,222.8	180,767	18,209.9	197,302
Block 76	20,434	-	-	186	186	4,210.5	45,321	13,996.8	150,660	18,207.3	195,982
BLOCK 42-46, 55-58, 70, 71	10,054	36	5	-	41	-	-	-	-	-	-
BLOCK 37-41, 51-54, 68, 69	10,054	36	5	-	41	-	-	12,104.5	130,292	12,104.5	130,292
BLOCK 30-36, 47-50, 66, 67	11,117	31	7	-	38	-	-	-	-	-	-
BLOCK 1-5	1,846	-	-	-	-	-	-	-	-	-	-
BLOCK 6-29	9,344	-	24	-	24	-	-	-	-	-	-
Block 73	10,243	47	-	-	47	-	-	-	-	-	-
BLOCK 59-65	11,340	41	-	-	41	-	-	-	-	-	-
Block 72	21,302	72	-	-	72	-	-	-	-	-	-
<b>Total</b>	<b>158,288</b>	<b>263</b>	<b>46</b>	<b>1,753</b>	<b>2,062</b>	<b>4,817.6</b>	<b>51,856</b>	<b>143,719.8</b>	<b>1,546,987</b>	<b>148,537.4</b>	<b>1,598,843</b>

GFA Retail		GFA Residential		GFA Total		FSI
sm	sf	sm	sf	sm	sf	
-	-	93,901.9	1,010,752	93,901.9	1,010,752	2.29
546.4	5,881	16,659.4	179,321	17,205.8	185,202	1.50
4,009.3	43,156	13,157.0	141,621	17,166.3	184,777	0.84
-	-	12,104.5	130,292	12,104.5	130,292	1.20
-	-	-	-	-	-	1.00
-	-	-	-	-	-	0.62
-	-	-	-	-	-	0.59
-	-	-	-	-	-	0.95
-	-	-	-	-	-	0.62
-	-	-	-	-	-	0.87
<b>4,555.7</b>	<b>49,037</b>	<b>135,822.8</b>	<b>1,461,985</b>	<b>140,378.6</b>	<b>1,511,022</b>	<b>1.13</b>

**BLOCK 30-36, 47-50, 66, 67**

11,117 sm 1.00 FSI

Level	Unit Count				GCA Retail		GCA Residential		GCA Total	
	Towns	Detach	Apart	Total	sm	sf	sm	sf	sm	sf
Block 47	1-3	5	-	-	5	-	1,440.0	15,500	1,440.0	15,500
Block 48	1-3	5	-	-	5	-	1,380.0	14,854	1,380.0	14,854
Block 49	1-3	7	-	-	7	-	1,990.2	21,422	1,990.2	21,422
Block 50	1-3	6	-	-	6	-	1,788.6	19,252	1,788.6	19,252
Block 66	1-3	4	-	-	4	-	1,476.3	15,891	1,476.3	15,891
Block 67	1-3	4	-	-	4	-	1,476.3	15,891	1,476.3	15,891
Blocks 30-36 Detached houses	-	-	7	-	7	-	1,610.0	17,330	1,610.0	17,330
<b>Total</b>		<b>31</b>	<b>7</b>	<b>-</b>	<b>38</b>	<b>0.0</b>	<b>11,161.4</b>	<b>120,140</b>	<b>11,161.4</b>	<b>120,140</b>

Detached House Units - 230 sm Avg

**BLOCK 1-5**

1,846 sm 0.62 FSI

Level	Unit Count				GCA Retail		GCA Residential		GCA Total	
	Towns	Detach	Apart	Total	sm	sf	sm	sf	sm	sf
Blocks 1-5 Detached houses	-	-	5	-	5	-	1,150.0	12,378	1,150.0	12,378
<b>Total</b>			<b>5</b>	<b>-</b>	<b>5</b>	<b>0.0</b>	<b>1,150.0</b>	<b>12,378</b>	<b>1,150.0</b>	<b>12,378</b>

Detached House Units - 230 sm Avg

**BLOCK 6-29**

9,344 sm 0.59 FSI

Level	Unit Count				GCA Retail		GCA Residential		GCA Total	
	Towns	Detach	Apart	Total	sm	sf	sm	sf	sm	sf
Blocks 6-29 Detached houses	-	24	-	24	-	-	5,520.0	59,417	5,520.0	59,417
<b>Total</b>		<b>-</b>	<b>24</b>	<b>1</b>	<b>24</b>	<b>0.0</b>	<b>5,520.0</b>	<b>59,417</b>	<b>5,520.0</b>	<b>59,417</b>

Detached House Units - 230 sm Avg

**BLOCK 73**

10,243 sm 0.95 FSI

Level	Unit Count				GCA Retail		GCA Residential		GCA Total	
	Towns	Detach	Apart	Total	sm	sf	sm	sf	sm	sf
Townhouse 73A	1-3	8	-	-	8	-	1,440.0	15,500	1,440.0	15,500
Townhouse 73B	1-3	8	-	-	8	-	1,800.0	19,375	1,800.0	19,375
Townhouse 73C	1-3	7	-	-	7	-	1,653.0	17,793	1,653.0	17,793
Townhouse 73D	1-3	6	-	-	6	-	1,416.0	15,242	1,416.0	15,242
Townhouse 73E	1-3	8	-	-	8	-	1,530.0	16,469	1,530.0	16,469
Townhouse 73F	1-3	10	-	-	10	-	1,890.0	20,344	1,890.0	20,344
<b>Total</b>		<b>47</b>	<b>-</b>	<b>-</b>	<b>47</b>	<b>0.0</b>	<b>9,729.0</b>	<b>104,722</b>	<b>9,729.0</b>	<b>104,722</b>

**BLOCK 59-65**

11,340 sm 0.62 FSI

Level	Unit Count				GCA Retail		GCA Residential		GCA Total	
	Towns	Detach	Apart	Total	sm	sf	sm	sf	sm	sf
Block 59	1-3	6	-	-	6	-	1,332.0	14,338	1,332.0	14,338
Block 60	1-3	6	-	-	6	-	1,332.0	14,338	1,332.0	14,338
Block 61	1-3	6	-	-	6	-	1,332.0	14,338	1,332.0	14,338
Block 62	1-3	6	-	-	6	-	1,518.3	16,343	1,518.3	16,343
Block 63	1-3	6	-	-	6	-	1,500.0	16,146	1,500.0	16,146
Block 64	1-3	5	-	-	5	-	1,227.9	13,217	1,227.9	13,217
Block 65	1-3	6	-	-	6	-	1,515.3	16,311	1,515.3	16,311
<b>Total</b>		<b>41</b>	<b>-</b>	<b>-</b>	<b>41</b>	<b>0.0</b>	<b>7,014.3</b>	<b>75,501</b>	<b>7,014.3</b>	<b>75,501</b>

**BLOCK 72**

21,302 sm 0.87 FSI

Level	Unit Count				GCA Retail		GCA Residential		GCA Total	
	Towns	Detach	Apart	Total	sm	sf	sm	sf	sm	sf
Townhouse 72A	1-3	8	-	-	8	-	2,223.0	23,928	2,223.0	23,928
Townhouse 72B	1-3	4	-	-	4	-	1,110.0	11,948	1,110.0	11,948
Townhouse 72C	1-3	4	-	-	4	-	1,110.0	11,948	1,110.0	11,948
Townhouse 72D	1-3	4	-	-	4	-	1,110.0	11,948	1,110.0	11,948
Townhouse 72E	1-3	4	-	-	4	-	1,110.0	11,948	1,110.0	11,948
Townhouse 72F	1-3	4	-	-	4	-	1,110.0	11,948	1,110.0	11,948
Townhouse 72G	1-3	4	-	-	4	-	1,110.0	11,948	1,110.0	11,948
Townhouse 72H	1-3	6	-	-	6	-	2,133.0	22,959	2,133.0	22,959
Townhouse 72I	1-3	6	-	-	6	-	2,133.0	22,959	2,133.0	22,959
Townhouse 72J	1-3	14	-	-	14	-	2,700.0	29,063	2,700.0	29,063
Townhouse 72K	1-3	14	-	-	14	-	2,700.0	29,063	2,700.0	29,063
<b>Total</b>		<b>72</b>	<b>-</b>	<b>-</b>	<b>72</b>	<b>0.0</b>	<b>18,549.0</b>	<b>199,660</b>	<b>18,549.0</b>	<b>199,660</b>

Notes:  
 - GCA to GFA efficiency assumed at 94%, GCA to NSA efficiency assumed at 80%.  
 - Unit counts are assumed based on average sizes as noted.  
 - Building efficiencies and unit yields are preliminary estimations only, and are subject to change.  
 - Detached house GCA is assumed at 230 sqm/ house

**BLOCK 74**

41,062 sm 2.29 FSI

Level	Unit Count				GCA Retail		GCA Residential		GCA Total	
	Towns	Detach	Apart	Total	sm	sf	sm	sf	sm	sf
74 A	1-4	-	-	-	-	-	6,243.2	67,201	6,243.2	67,201
Subtotal	5-14	-	-	-	-	-	8,145.0	87,672	8,145.0	87,672
74 B	1-4	-	-	-	-	-	7,104.0	76,467	7,104.0	76,467
Subtotal	5-14	-	-	-	-	-	8,000.0	86,111	8,000.0	86,111
74 C	1-4	-	-	-	-	-	15,104.0	162,578	15,104.0	162,578
Subtotal	5-16	-	-	-	-	-	9,600.0	103,334	9,600.0	103,334
74 D	1-4	-	-	-	-	-	16,448.8	177,053	16,448.8	177,053
Subtotal	5-14	-	-	-	-	-	5,440.0	58,556	5,440.0	58,556
74 E	1-4	-	-	-	-	-	8,000.0	86,111	8,000.0	86,111
Subtotal	5-18	-	-	-	-	-	13,440.0	144,667	13,440.0	144,667
74 F	1-5	-	-	-	-	-	4,758.0	51,215	4,758.0	51,215
74 G	1-5	-	-	-	-	-	11,200.0	120,556	11,200.0	120,556
74 H	1-6	-	-	-	-	-	15,958.0	171,770	15,958.0	171,770
74 I	1-6	-	-	-	-	-	7,629.5	82,123	7,629.5	82,123
74 J	1-6	-	-	-	-	-	5,054.0	54,401	5,054.0	54,401
74 K	1-6	-	-	-	-	-	5,936.6	63,901	5,936.6	63,901
74 L	1-6	-	-	-	-	-	5,936.6	63,901	5,936.6	63,901
<b>Total</b>		<b>1,330</b>	<b>1,330</b>	<b>0.0</b>	<b>0</b>	<b>0</b>	<b>99,895.6</b>	<b>1,075,268</b>	<b>99,895.6</b>	<b>1,075,268</b>

Apart Units - 60 sm Avg

**BLOCK 75**

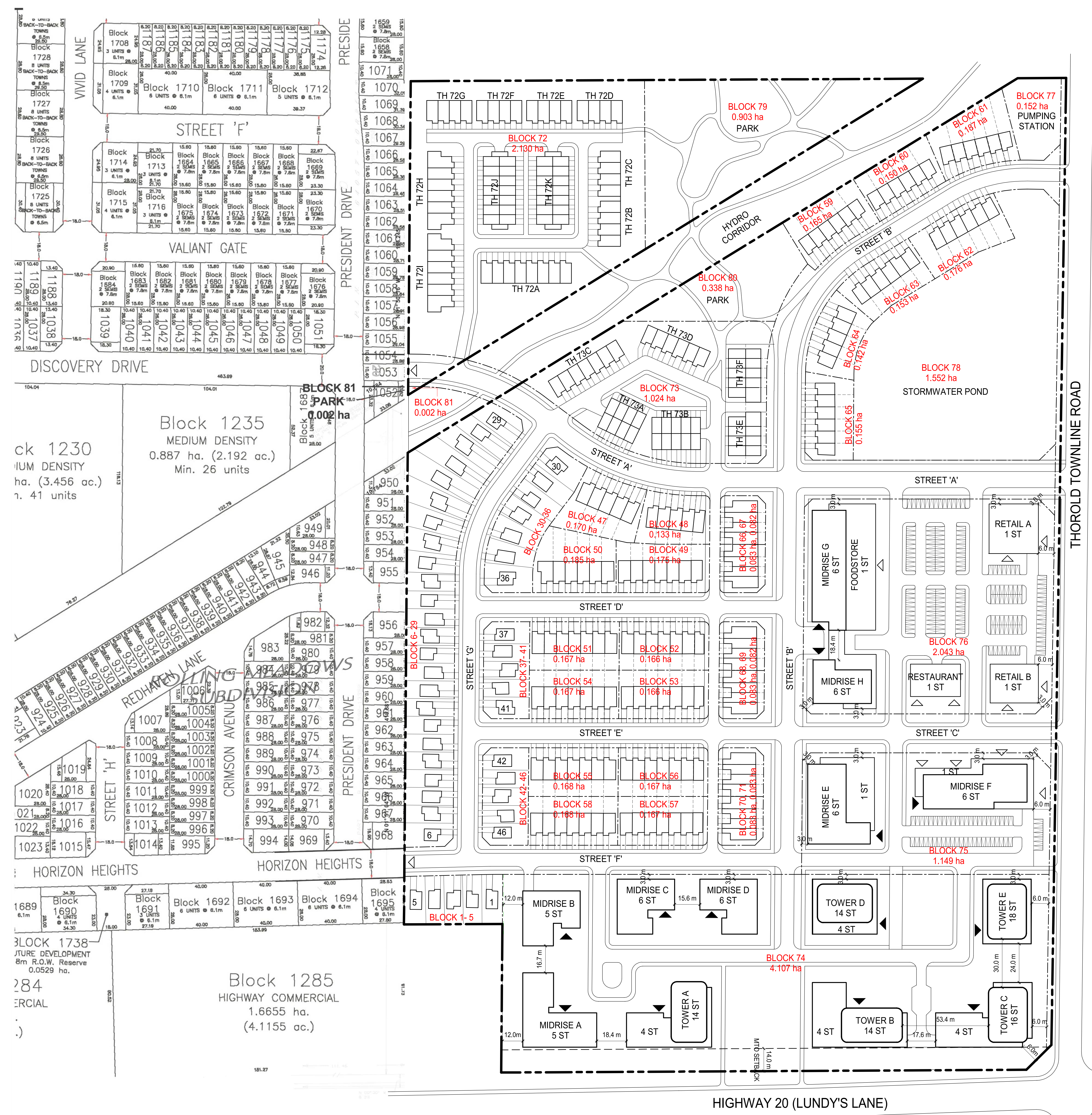
11,492 sm 1.50 FSI

Level	Unit Count				GCA Retail		GCA Residential		GCA Total	
	Towns	Detach	Apart	Total	sm	sf	sm	sf	sm	sf
75 A	1	-	-	-	-	-	2,156.3	23,211	2,156.3	23,211
Subtotal	2-6	-	-	-	-	-	6			

**NOT FOR CONSTRUCTION**

**MASTER PLAN LEGEND**

- ▽ NON-RESIDENTIAL INGRESS & EGRESS POINTS
- ▲ RESIDENTIAL INGRESS & EGRESS POINTS



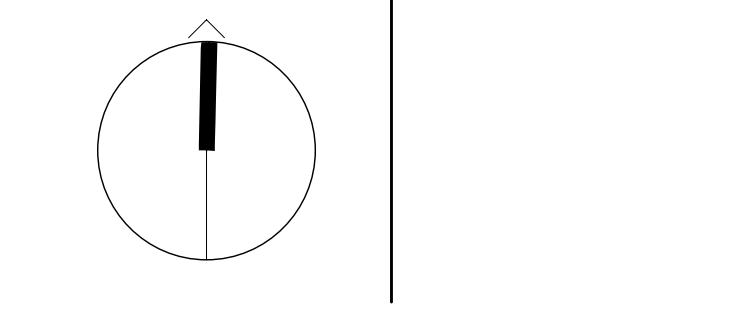
Block 1230  
MEDIUM DENSITY  
ha. (3.456 ac.)  
Min. 41 units

Block 1235  
MEDIUM DENSITY  
0.887 ha. (2.192 ac.)  
Min. 26 units

Block 1285  
HIGHWAY COMMERCIAL  
1.6655 ha. (4.1155 ac.)

1 MASTER PLAN  
A1.00 1:1000

ISSUED FOR OPA / ZBA 23-11-10  
Revision Date



**giannone petricone associates**  
Giannone Petricone Associates Inc., Architects  
95 South Avenue, Suite 500, Toronto, Ontario M5V 2J6,  
T 416.591.7788 F 416.591.1293 E mail@gpa.com

13030 LUNDY'S LANE

THOROLD, ONTARIO

SHEET TITLE

MASTER PLAN

DRAWN BY: GPN/A  
CHECKED BY: GPN/A  
PROJECT START DATE: Y/N/A/M/D/D  
PROJECT NUMBER: XXXX  
SHEET NUMBER

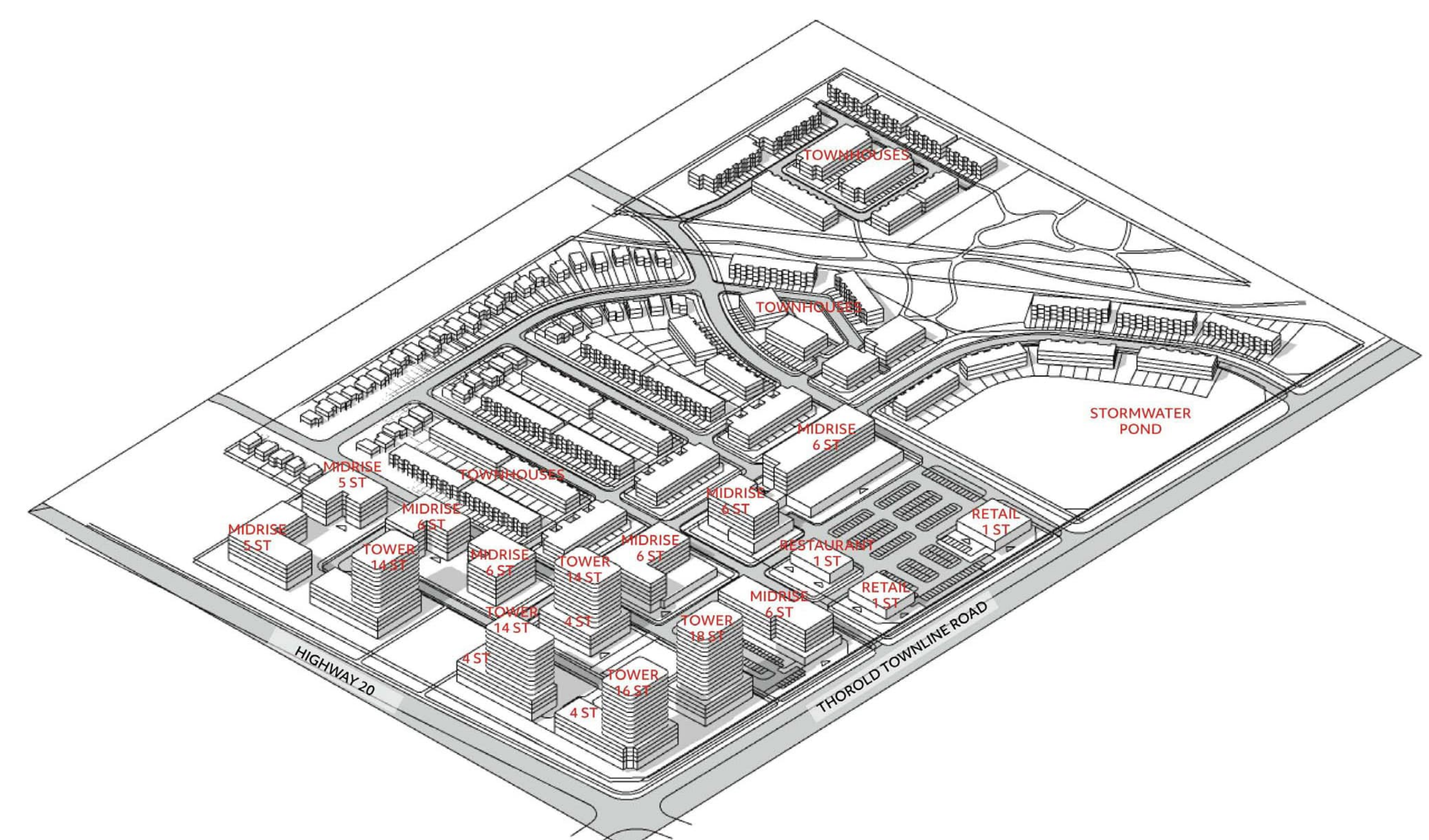
**A1.00**

**NOT FOR CONSTRUCTION**

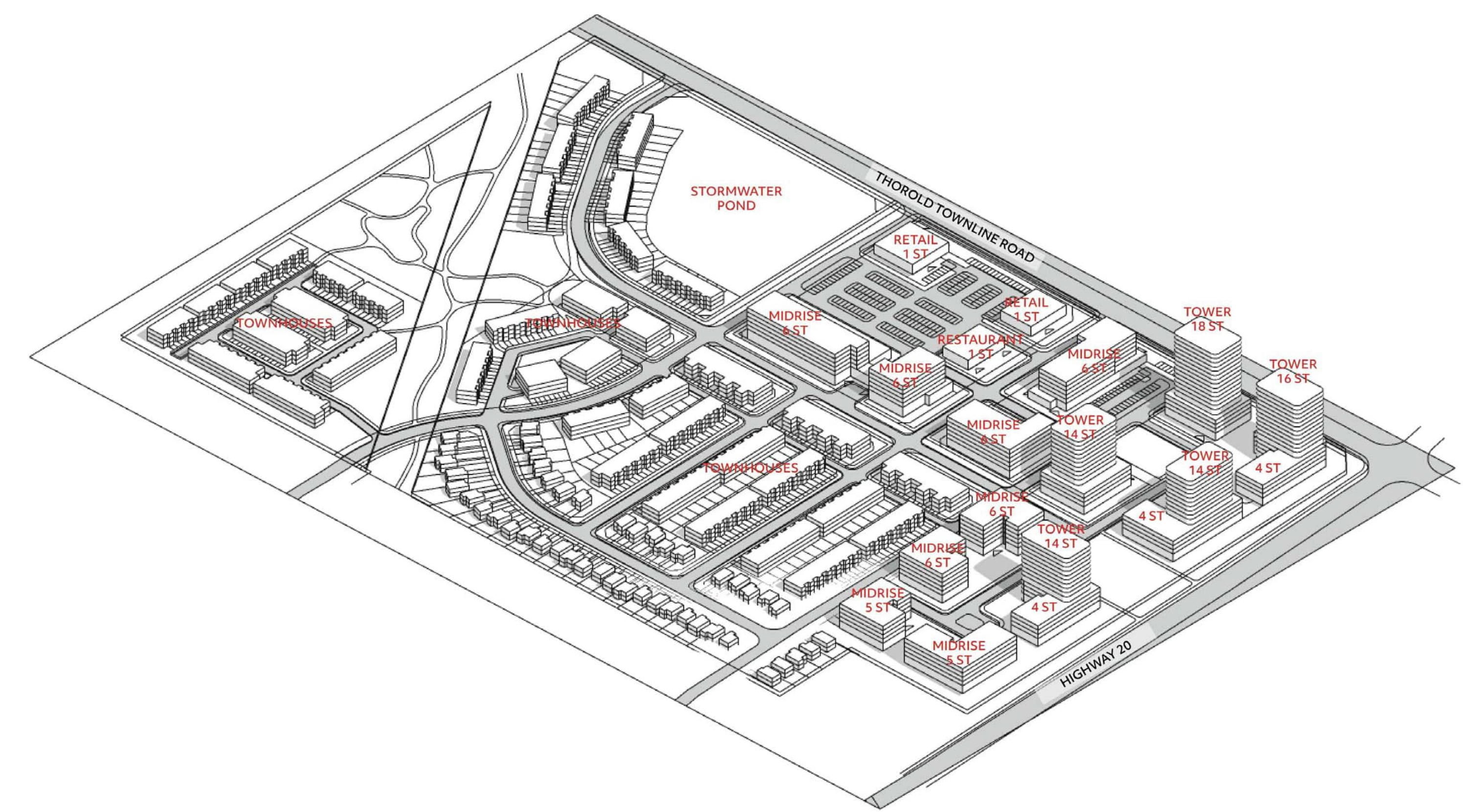




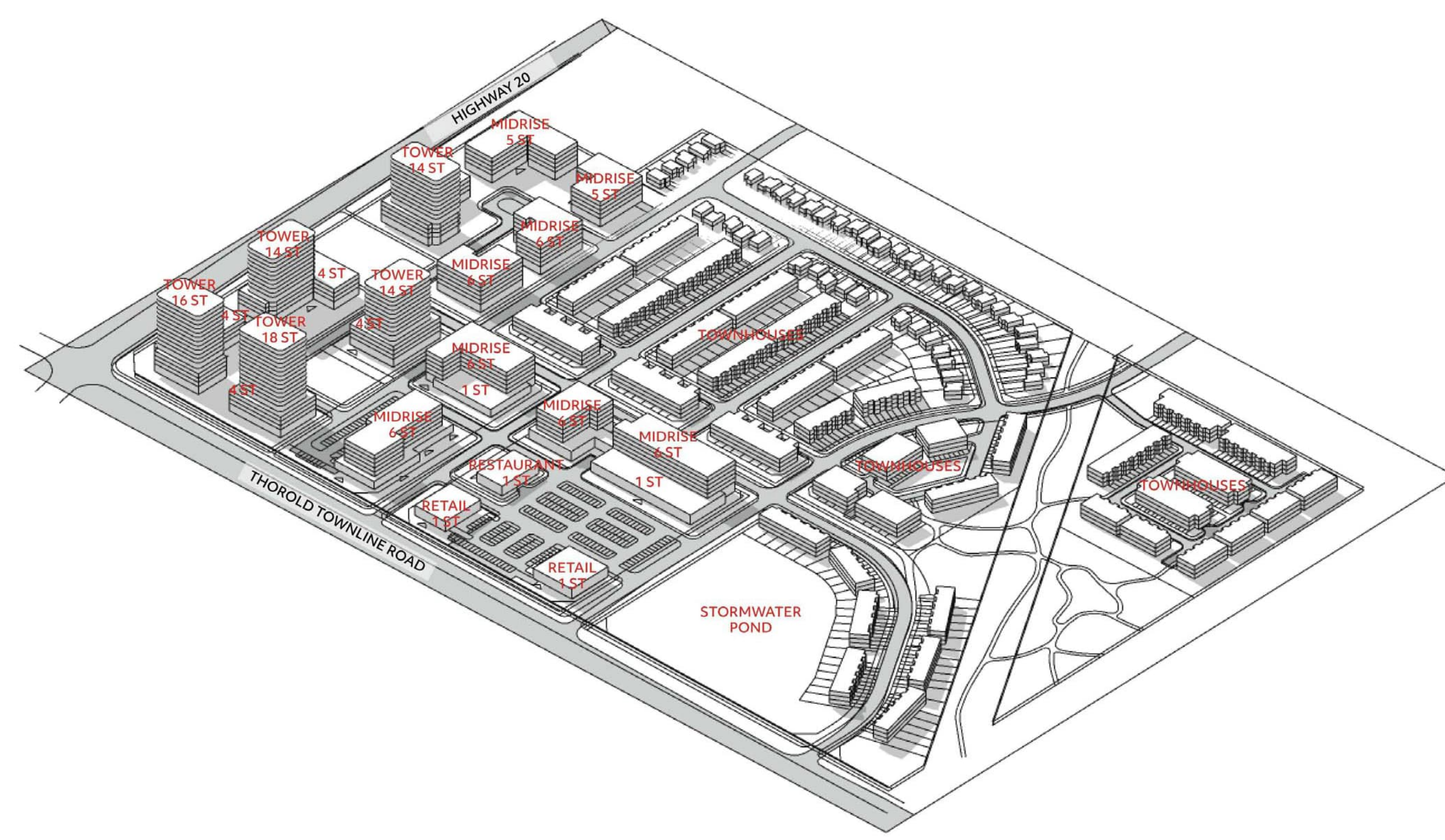
**NOT FOR CONSTRUCTION**



AERICAL VIEW FROM NORTHWEST 3D MASSING



AERICAL VIEW FROM NORTHEAST 3D MASSING



# Appendix B

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## Sanitary Sewer



Project No. 49428-100  
 Sheet No. 1  
 Checked by: RSM  
 Designed by: CNF  
 Date: December 8, 2023

**City of Thorold**  
**PRELIMINARY SANITARY SEWER DESIGN**  
**Proposed Draft Plan of Subdivision - 13030 Lundy's Lane**  
 First Submission

**DESIGN PARAMETERS**

Design flow factor<sup>1</sup> = **275** L/capita/day, L/employee/day  
 where P is in thousands  
 Peaking Factor M =  $1 + \frac{14}{(4 + P^{0.5})}$  (Max = 4.0, Min = 2.0)  
 Infiltration Factor<sup>1</sup>: 0.286 L/s/ha **Per/unit**  
 Mannings n: 0.013 for all pipes **Singles 3.5**  
 Min Velocity: 0.6 m/s **Street TH 3.0**  
 Max Velocity: 3 m/s **Condo TH 2.0**

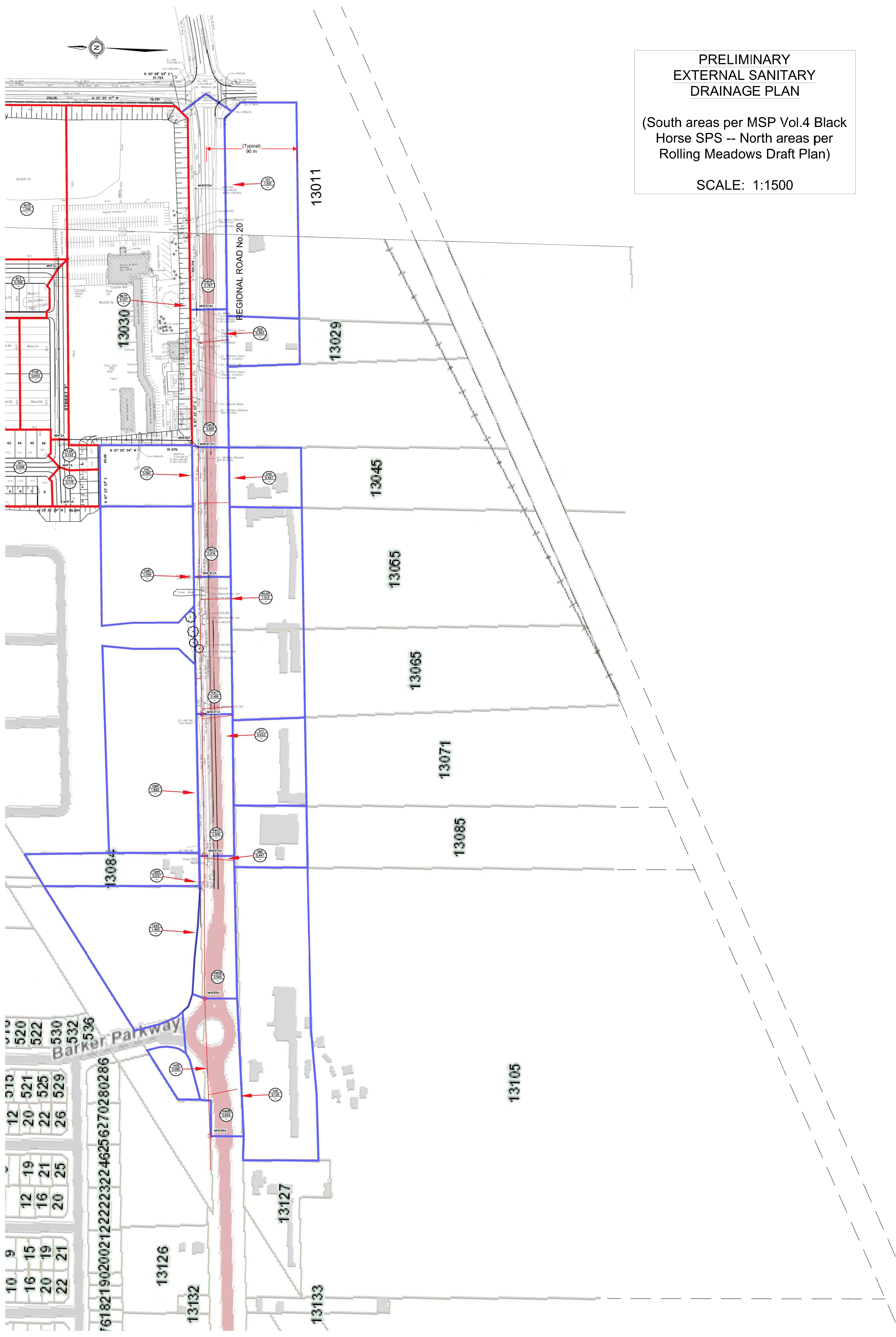
Area No.	Street Name	From MH	To MH	Incremental Area [ha]	Cumulative Area [ha]	Retail				Residential				Average Flow [l/s]	Peaking Factor M	Peak Flow [L/s]	Peak Res Q + Retail Q [L/s]	Inflow/Infiltration [L/s]	Total Flow [L/s]	Proposed Sewer Design					Actual Velocity [m/s]	% Pipe Full	Remarks
						Retail GFA <sup>3</sup> [m <sup>2</sup> ]	Retail Demand <sup>2</sup> [L/m <sup>2</sup> /d]	Incremental Demand [L/s]	Cumulative Demand [L/s]	Number of Units <sup>3</sup>	Persons per Unit	Incremental Population [per]	Cumulative Population [per]							Diameter [mm]	Material n=0.013	Grade %	Capacity [L/s]	Velocity [m/s]			
<b>NORTH, TO BARKER PARKWAY</b>																											
Bk72	Block 72 (Condo TH)	Bk72	A0A	2.130	2.130	-	-	-	0.00	72.0	2.0	144	144	0.46	4.00	1.83	1.83	0.61	2.44	200	PVC	0.50%	23.55	0.74	0.48	10.4%	
AA1	Street A	A0A	A1A	0.185	2.315	-	-	-	0.00	-	-	0	144	0.46	4.00	1.83	1.83	0.66	2.50	200	PVC	0.50%	23.55	0.74	0.48	10.6%	
GA1	Street B (Singles)	GHP	A1A	0.224	0.224	-	-	-	0.00	4	3.5	14	14	0.04	4.00	0.18	0.18	0.06	0.24	200	PVC	0.50%	23.55	0.74	0.24	1.0%	
AA2	Street A (Street TH)	A1A	A2A	0.506	3.045	-	-	-	0.00	10	3.0	30	188	0.60	4.00	2.39	2.39	0.87	3.26	200	PVC	0.50%	23.55	0.74	0.52	13.9%	
AB2W	Street A	A2A	B2A	0.099	3.144	-	-	-	0.00	0	0.0	0	188	0.60	4.00	2.39	2.39	0.90	3.29	200	PVC	0.50%	23.55	0.74	0.52	14.0%	
Bk76	Block 76 (Condo TH & COMM)	Bk76	A3A	2.043	2.043	4009.3	32.2	1.49	1.49	186.0	2.0	372	372	1.18	4.00	4.74	6.23	0.58	5.32	200	PVC	0.50%	23.55	0.74	0.60	22.6%	
AB2E	Street A	A3A	B2A	0.210	2.253	-	-	-	1.49	-	-	0	372	1.18	4.00	4.74	4.74	0.64	5.38	200	PVC	0.50%	23.55	0.74	0.60	22.8%	
Bk74	Block 74 (Mixed-Use Residential)	Bk74	EX15A	4.107	4.107	-	-	-	0.00	1330.0	2.0	2660	2660	8.47	3.49	29.52	29.52	1.17	30.69	250	PVC	0.50%	42.71	0.86	0.94	71.9%	
Bk75	Block 75 (Condo TH & COMM)	Bk75	F3A	1.149	1.149	546.4	32.2	0.20	0.20	236.0	2.0	472	472	1.50	3.99	5.99	6.19	0.33	6.32	200	PVC	0.50%	23.55	0.74	0.63	26.8%	
BF3	Street B (Street TH)	BHP	F3A	0.358	0.358	-	-	-	0.20	8	3.0	24	3156	10.05	3.42	34.39	34.39	0.10	34.49	250	PVC	0.50%	42.71	0.86	0.96	80.8%	
BB1	Street C (Street TH)	B0A	B1A	0.654	0.654	-	-	-	0.20	8	3.0	24	3180	10.12	3.42	34.62	34.62	0.19	34.81	250	PVC	0.50%	42.71	0.86	0.96	81.5%	
DB1	Street D (Street TH)	DHP	B1A	0.728	0.728	-	-	-	0.00	20	3.0	60	60	0.19	4.00	0.76	0.76	0.21	0.97	200	PVC	0.50%	23.55	0.74	0.36	4.1%	
BB2	Street B (Street TH)	B1A	B2A	0.371	1.753	-	-	-	0.20	8	3.0	24	3264	10.39	3.41	35.44	35.44	0.50	35.94	300	PVC	0.50%	67.99	0.97	0.98	52.9%	
Bk73	Block 73 (Condo TH)	Bk73	B2A	1.024	1.024	-	-	-	0.00	47.0	2.0	94	94	0.30	4.00	1.20	1.20	0.29	1.49	200	PVC	0.50%	23.55	0.74	0.41	6.3%	
BB3	Street B (Street TH)	B2A	B3A	0.602	8.776	-	-	-	1.70	11	3.0	33	3951	12.58	3.34	41.98	41.98	2.51	44.49	300	PVC	0.50%	67.99	0.97	1.03	65.4%	
BB4	Street B (Street TH)	B3A	B4A	0.739	9.515	-	-	-	1.70	22	3.0	66	4017	12.79	3.33	42.60	42.60	2.72	45.32	300	PVC	0.50%	67.99	0.97	1.03	66.7%	
BB5	Street B (Street TH)	B4A	B5A	0.354	9.869	-	-	-	1.70	9	3.0	27	4044	12.87	3.33	42.85	42.85	2.82	45.67	300	PVC	0.50%	67.99	0.97	1.04	67.2%	
SPS	Street B	B5A	SPS	0.163	10.032	-	-	-	1.70	2	3.5	7	4051	12.89	3.33	42.92	42.92	2.87	45.78	300	PVC	0.50%	67.99	0.97	1.04	67.3%	
	Thorold Townline Road	SPS	Uppers	0.960	10.992	-	-	-	1.70	-	-	0	4051	12.89	3.33	42.92	42.92	3.14	46.06	375	PVC	0.15%	63.84	0.61	0.66	72.1%	
	Upper's Lane	Uppers	BN	1.650	12.642	-	-	-	1.70	-	-	0	4051	12.89	3.33	42.92	42.92	3.62	46.53	450	PVC	0.15%	109.03	0.69	0.66	42.7%	
<b>SOUTH, TO LUNDY'S LANE VIA EASEMENT</b>																											
GG2	Street G (Singles)	GHP	G2A	0.776	0.776	-	-	-	0.00	14	3.5	49	49	0.16	4.00	0.62	0.62	0.22	0.85	200	PVC	0.50%	23.55	0.74	0.35	3.6%	
DG2	Street D (Street TH)	DHP	G2A	0.310	0.310	-	-	-	0.00	7	3.0	21	21	0.07	4.00	0.27	0.27	0.09	0.36	200	PVC	0.50%	23.55	0.74	0.27	1.5%	
GG1	Street G (Singles)	G2A	G1A	0.534	1.620	-	-	-	0.00	12	3.5	42	112	0.36	4.00	1.43	1.43	0.46	1.89	200	PVC	0.50%	23.55	0.74	0.44	8.0%	
EG1	Street E (Street TH)	EHP	G1A	0.928	0.928	-	-	-	0.00	28	3.0	84	84	0.27	4.00	1.07	1.07	0.27	1.33	200	PVC	0.50%	23.55	0.74	0.40	5.7%	
GF1	Street G (Singles)	G1A	F1A	0.508	3.056	-	-	-	0.00	11	3.5	39	235	0.75	4.00	2.99	2.99	0.87	3.87	200	PVC	0.50%	23.55	0.74	0.55	16.4%	
FF1	Street F (Singles)	F0A	F1A	0.175	0.175	-	-	-	0.00	3	3.5	11	11	0.04	4.00	0.14	0.14	0.05	0.19	200	PVC	0.50%	23.55	0.74	0.22	0.8%	
FF2W	Street F (Singles)	F1A	F2A	0.123	3.354	-	-	-	0.00	2	3.5	7	253	0.81	4.00	3.22	3.22	0.96	4.18	200	PVC	0.50%	23.55	0.74	0.56	17.7%	
FF2E	Street F (Singles)	F3A	F2A	0.643	0.643	-	-	-	0.00	14	3.0	42	42	0.13	4.00	0.53	0.53	0.18	0.72	200	PVC	0.50%	23.55	0.74	0.33	3.1%	
	EASEMENT	F2A	ESMT	0.000	3.997	-	-	-	0.00	-	-	0	295	0.94	4.00	3.76	3.76	1.14	4.90	200	PVC	0.50%	23.55	0.74	0.58	20.8%	
		ESMT	EX13A	0.000	3.997	-	-	-	0.00	-	-	0	295	0.94	4.00	3.76	3.76	1.14	4.90	200	PVC	0.50%	23.55	0.74	0.58	20.8%	
External	Highway No.20	EX13A	EX12A	0.000	3.997	-	-	-	0.00	-	-	0	295	0.94	4.00	3.76	3.76	1.14	4.90	200	PVC	0.43%	21.84	0.69	0.55	22.4%	

- NOTES: 1. In lieu of a St. Catharines standard, design based on Niagara Region 2016 Master Servicing Plan, June 2017.  
 2. Retail Demand based on OBC 8.2.1.3.(2) Table 8.2.1.3.B, Line 20 "Stores" = 5 L/sm/d  
 3. Retail Gross Floor Area (GFA) and Residential Unit Counts on Blocks taken from Master Site Plan Statistics by Giannone Petricone Associates, October 30, 2023.

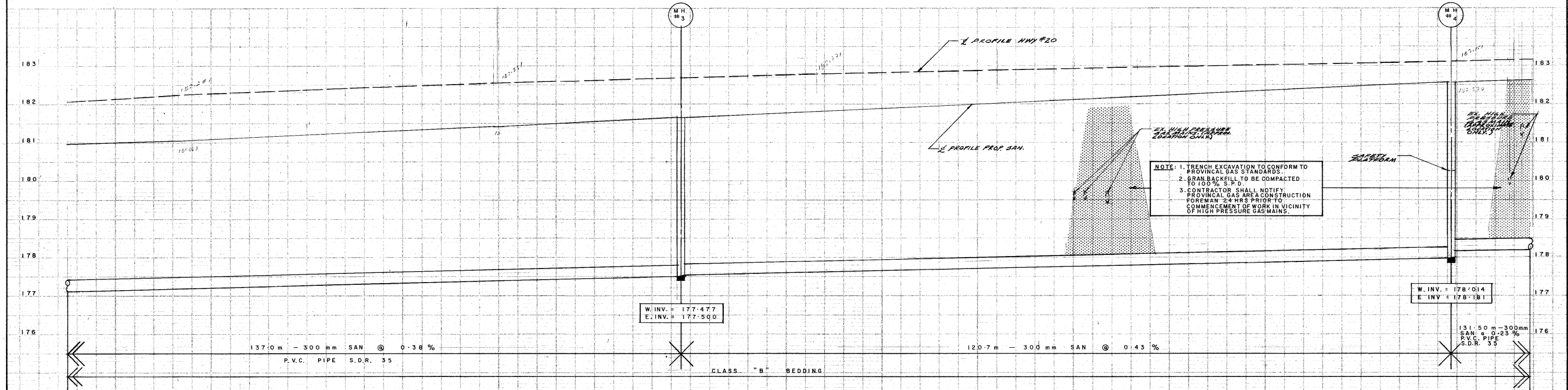
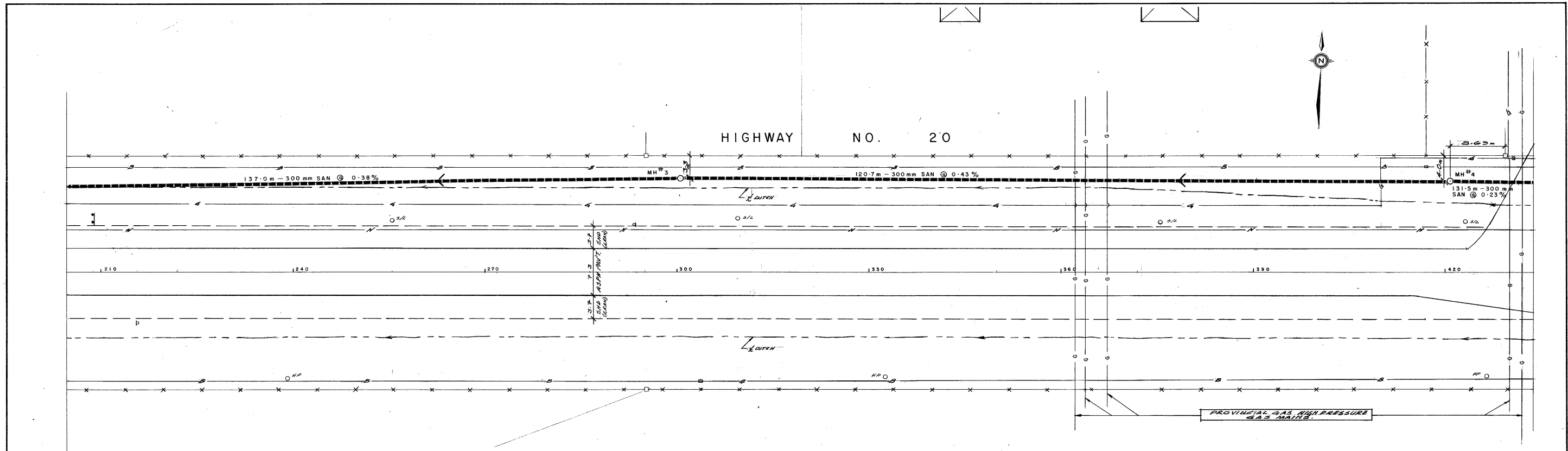
**PRELIMINARY  
EXTERNAL SANITARY  
DRAINAGE PLAN**

(South areas per MSP Vol.4 Black  
Horse SPS -- North areas per  
Rolling Meadows Draft Plan)

SCALE: 1:1500







GROUND ELEVATION

CHANGING

NOTES: 1. Bench Mark - NORTH RIM MHS846 HWY 58 ELEV = 180.409

- △ NO BASEMENT
- ▲ BASEMENT ELEVATION NORTH SIDE LUNDY'S LANE
- ▼ BASEMENT ELEVATION SOUTH SIDE LUNDY'S LANE
- EXISTING SEPTIC OUTLET
- GRANULAR "A" TRENCH BACKFILL COMPACTED TO 100% STANDARD PROCTOR DENSITY

NOTE: PLOT OF UNDERGROUND AND SURFACE OBJECTS NOT GUARANTEED. PRIOR TO COMMENCEMENT OF WORK THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD LOCATES OF ALL UTILITIES.

PROPOSED OBVERT ELEVATION SANITARY LATERAL AT PROPERTY LINE.

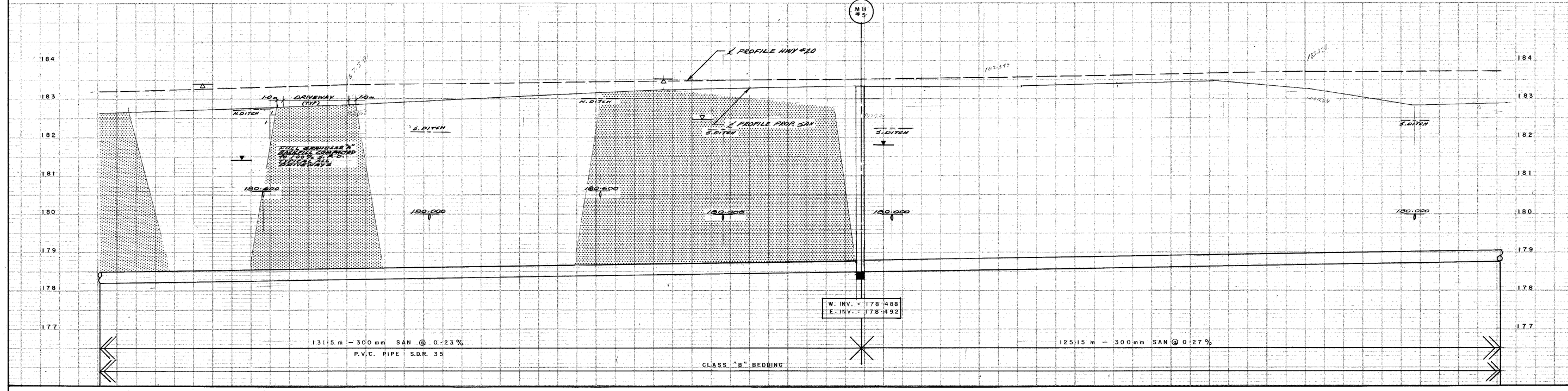
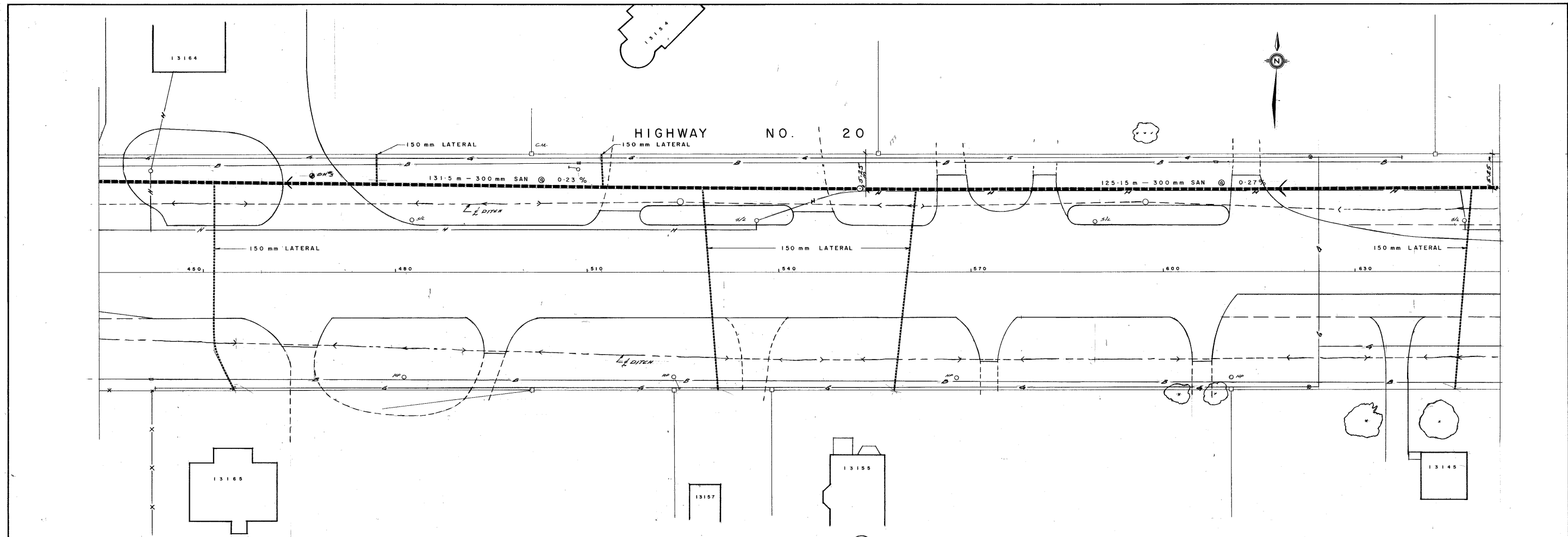
No.	Revision	Initial	Date
1	AS CONSTRUCTED	L.H.S.	OCT/85

**City of Thorold Engineering**

HIGHWAY NO. 20  
SANITARY SEWER SYSTEM

STA. 0+204.5 TO STA. 0+433.8

DESIGNED	R.L.E.R.	DATE	SCALE	DRAWING NO.
CHECKED	R.L.E.R.	JAN/85	HORIZ. 1:300	500-02
DRAWN	L.H.S.	" "	VERT. 1:50	



GROUND ELEVATION

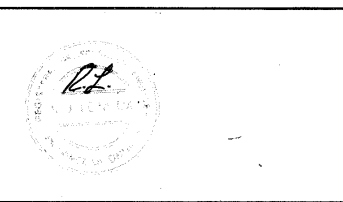
CHANGING

NOTES: 1. Bench Mark - NORTH RIM MHS 846 HWY 58 ELEV = 180.409

- ▲ NO BASEMENT
- ▲ BASEMENT ELEVATION NORTH SIDE LUNDY'S LANE
- ▲ BASEMENT ELEVATION SOUTH SIDE LUNDY'S LANE
- EXISTING SEPTIC OUTLET
- GRANULAR "A" TRENCH BACKFILL COMPACTED TO 100% STANDARD PROCTOR DENSITY

NOTE: PLOT OF UNDERGROUND AND SURFACE OBJECTS NOT GUARANTEED. PRIOR TO COMMENCEMENT OF WORK THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD LOCATES OF ALL UTILITIES.

No.	Revision	Initial	Date
1	AS CONSTRUCTED	L. H. S.	OCT/85



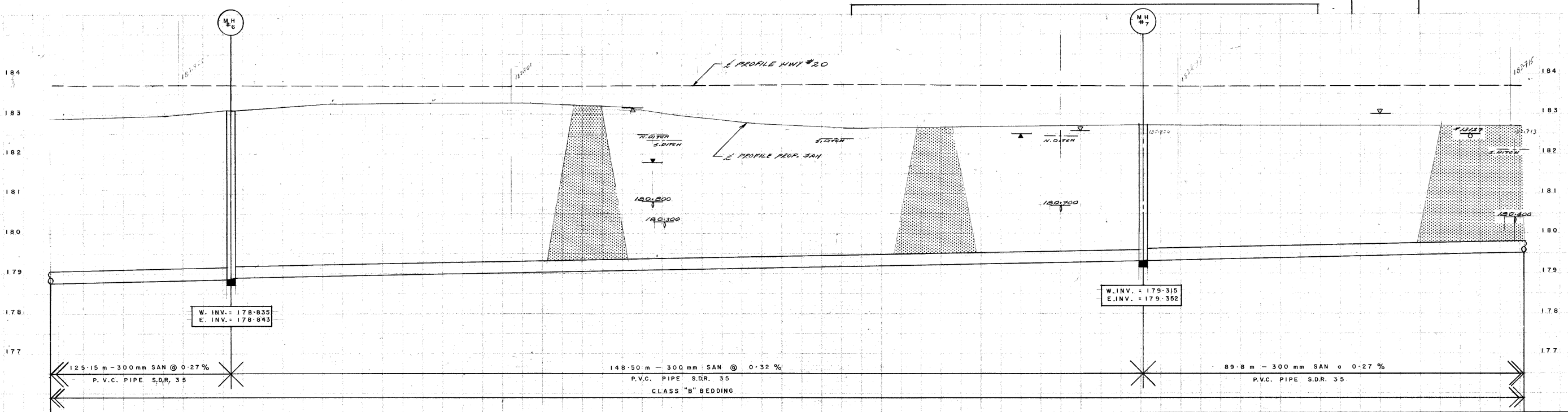
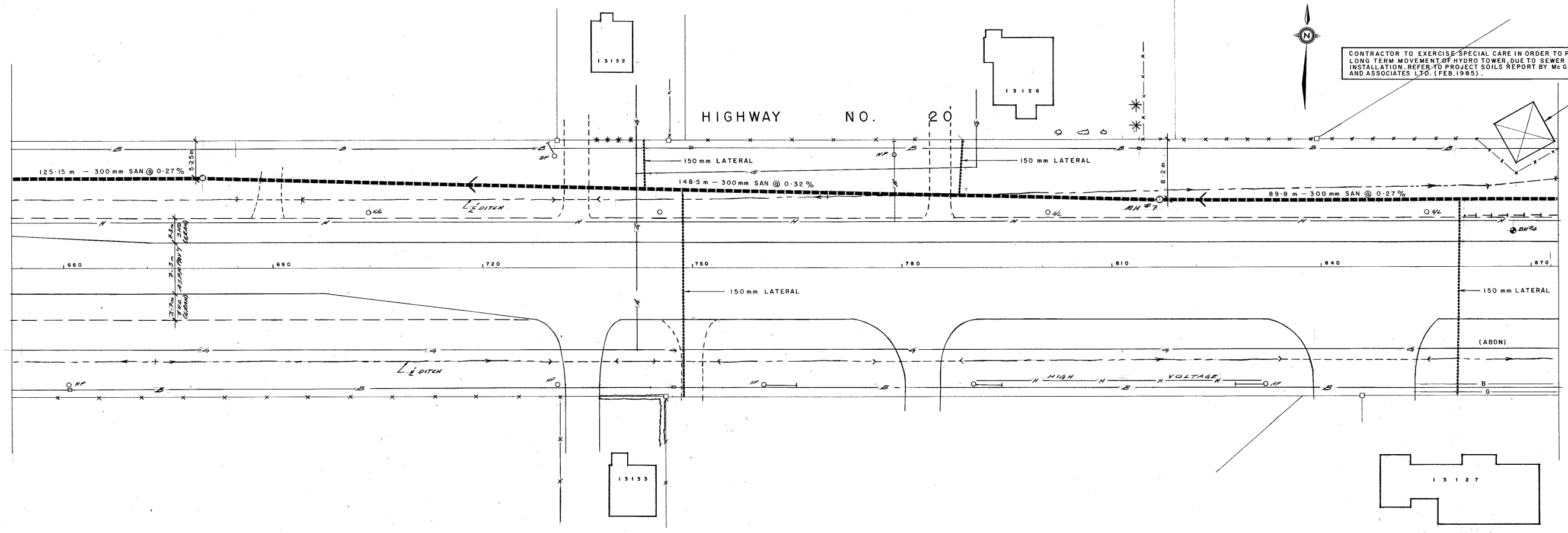
HIGHWAY NO. 20  
SANITARY SEWER SYSTEM

STA. 0+433.8 TO STA. 0+652.6

**City of Thorold Engineering**

DESIGNED	R. L. R.	DATE	JAN/85	SCALE	HORIZ.	VERT.	DRAWING NO.
CHECKED	R. L. R.	"	"	1:300	1:50		500-03
DRAWN	L. H. S.	"	"				

CONTRACTOR TO EXERCISE SPECIAL CARE IN ORDER TO PREVENT LONG TERM MOVEMENT OF HYDRO TOWER DUE TO SEWER INSTALLATION. REFER TO PROJECT SOILS REPORT BY MCGLONE AND ASSOCIATES LTD. (FEB. 1985).



CHANGE

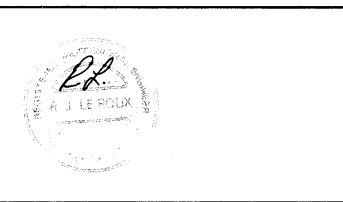
NOTES: 1. Bench Mark - NORTH RIM MH S846 HWY 58 ELEV = 180.409

- ▲ NO BASEMENT
- ▲ BASEMENT ELEVATION NORTH SIDE LUNDY'S LANE
- ▲ BASEMENT ELEVATION SOUTH SIDE LUNDY'S LANE
- EXISTING SEPTIC OUTLET
- ▨ GRANULAR "A" TRENCH BACKFILL COMPACTED TO 100% STANDARD PROCTOR DENSITY

NOTE: PLOT OF UNDERGROUND AND SURFACE OBJECTS NOT GUARANTEED, PRIOR TO COMMENCEMENT OF WORK THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD LOCATES OF ALL UTILITIES.

PROPOSED OBVERT ELEVATION SANITARY LATERAL AT PROPERTY LINE.

No.	Revision	Initial	Date
1	AS CONSTRUCTED	L.H.S.	OCT/85



HIGHWAY NO. 20  
SANITARY SEWER SYSTEM

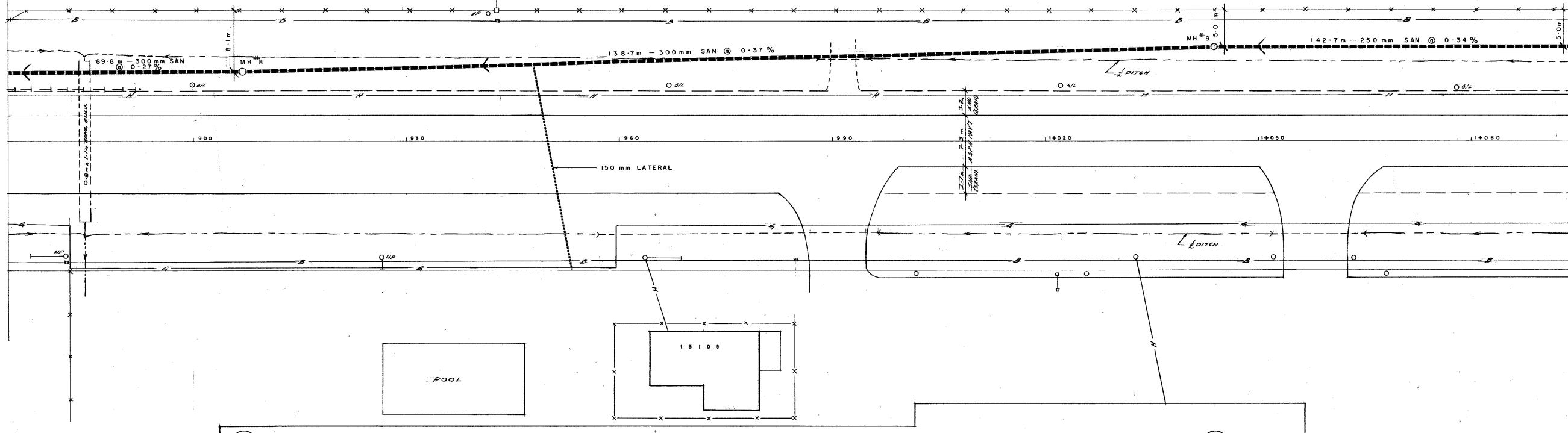
STA. 0+652.6 TO STA. 0+873.8

**City of Thorold Engineering**

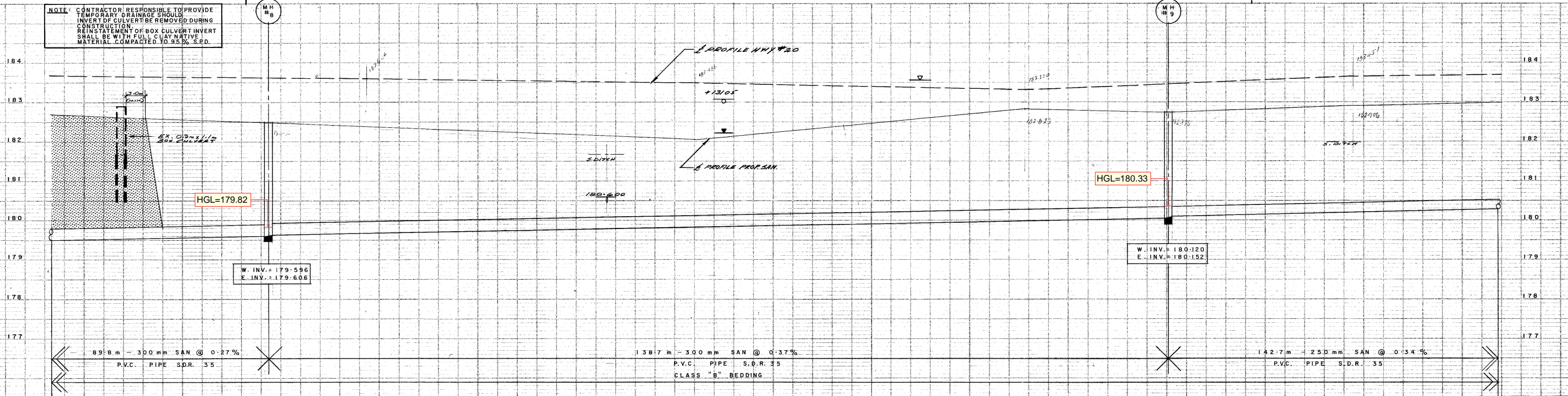
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CHECKED	R.L.R.	"	"					
DRAWN	L.H.S.	"	"					



HIGHWAY NO. 20



NOTE: CONTRACTOR RESPONSIBLE TO PROVIDE TEMPORARY DRAINAGE SHOULD INVERT OF CULVERT BE REMOVED DURING CONSTRUCTION. REINSTATEMENT OF BOX CULVERT INVERT SHALL BE WITH FULL CLAY NATIVE MATERIAL COMPACTED TO 95% S.P.D.



CHANGING ELEVATION

NOTES: 1. Bench Mark - NORTH RIM MHS846 HWY 58 ELEV = 180.409  
 ▲ NO BASEMENT  
 ▲ BASEMENT ELEVATION NORTH SIDE LUNDY'S LANE  
 ▼ BASEMENT ELEVATION SOUTH SIDE LUNDY'S LANE  
 ○ EXISTING SEPTIC OUTLET  
 ▨ GRANULAR "A" TRENCH BACKFILL COMPACTED TO 100% STANDARD PROCTOR DENSITY.  
 NOTE: PLOT OF UNDERGROUND AND SURFACE OBJECTS NOT GUARANTEED. PRIOR TO COMMENCEMENT OF WORK THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD LOCATES OF ALL UTILITIES.

PROPOSED OBVERT ELEVATION SANITARY LATERAL AT PROPERTY LINE.

No.	Revision	Initial	Date
1	AS CONSTRUCTED	L.H.S.	OCT/85



HIGHWAY NO. 20  
 SANITARY SEWER SYSTEM  
 STA. 0+873.8 TO STA. 1+094.0

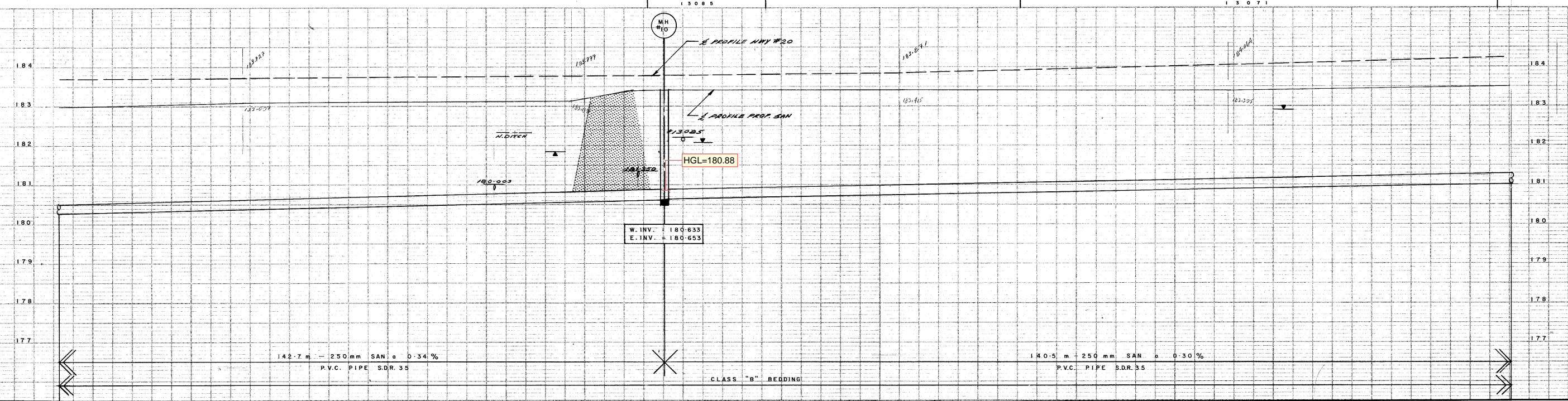
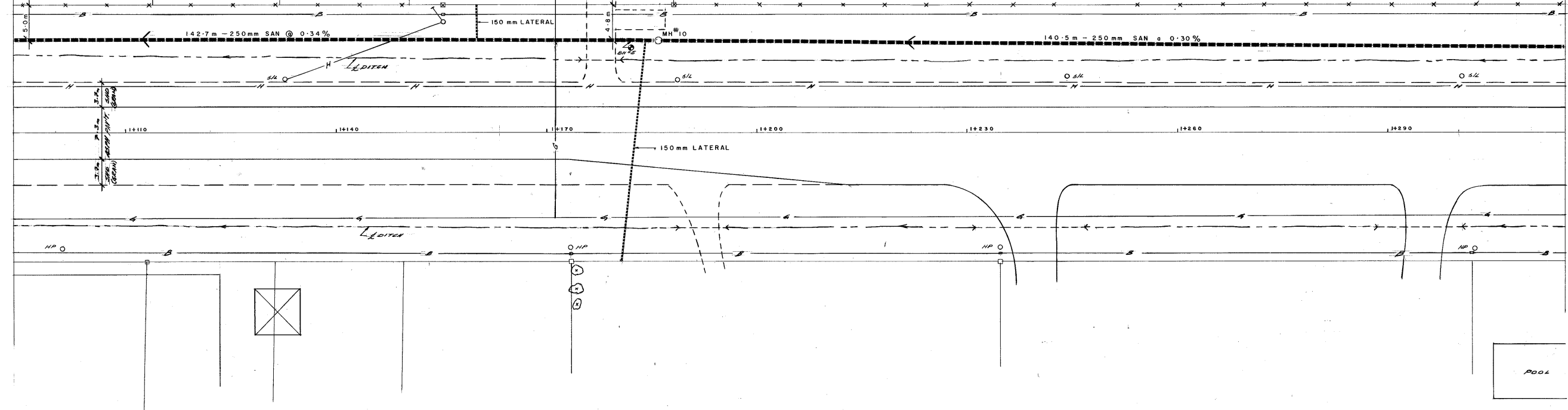
**City of Thorold Engineering**

DESIGNED	R.L.R.	DATE	JAN/85	SCALE	HORIZ.	VERT.	1:300	1:50	DRAWING NO.	500-05
CHECKED	R.L.R.	"	"							
DRAWN	L.H.S.	"	"							

13084



# HIGHWAY NO. 20



GROUND ELEVATION  
CHAINAGE

NOTES: 1. Bench Mark - NORTH RIM MHS846 HWY 58 ELEV = 180.409

- ▲ NO BASEMENT
- ▲ BASEMENT ELEVATION NORTH SIDE LUNDY'S LANE
- ▼ BASEMENT ELEVATION SOUTH SIDE LUNDY'S LANE
- EXISTING SEPTIC OUTLET
- GRANULAR "A" TRENCH BACKFILL COMPACTED TO 100% STANDARD PROCTOR DENSITY.

PROPOSED OBVERT ELEVATION  
SANITARY LATERAL AT PROPERTY  
LINE

NOTE: PLOT OF UNDERGROUND AND SURFACE OBJECTS NOT GUARANTEED. PRIOR TO COMMENCEMENT OF WORK THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD LOCATES OF ALL UTILITIES.

No.	Revision	Initial	Date
1	AS CONSTRUCTED	L.H.S.	OCT/85

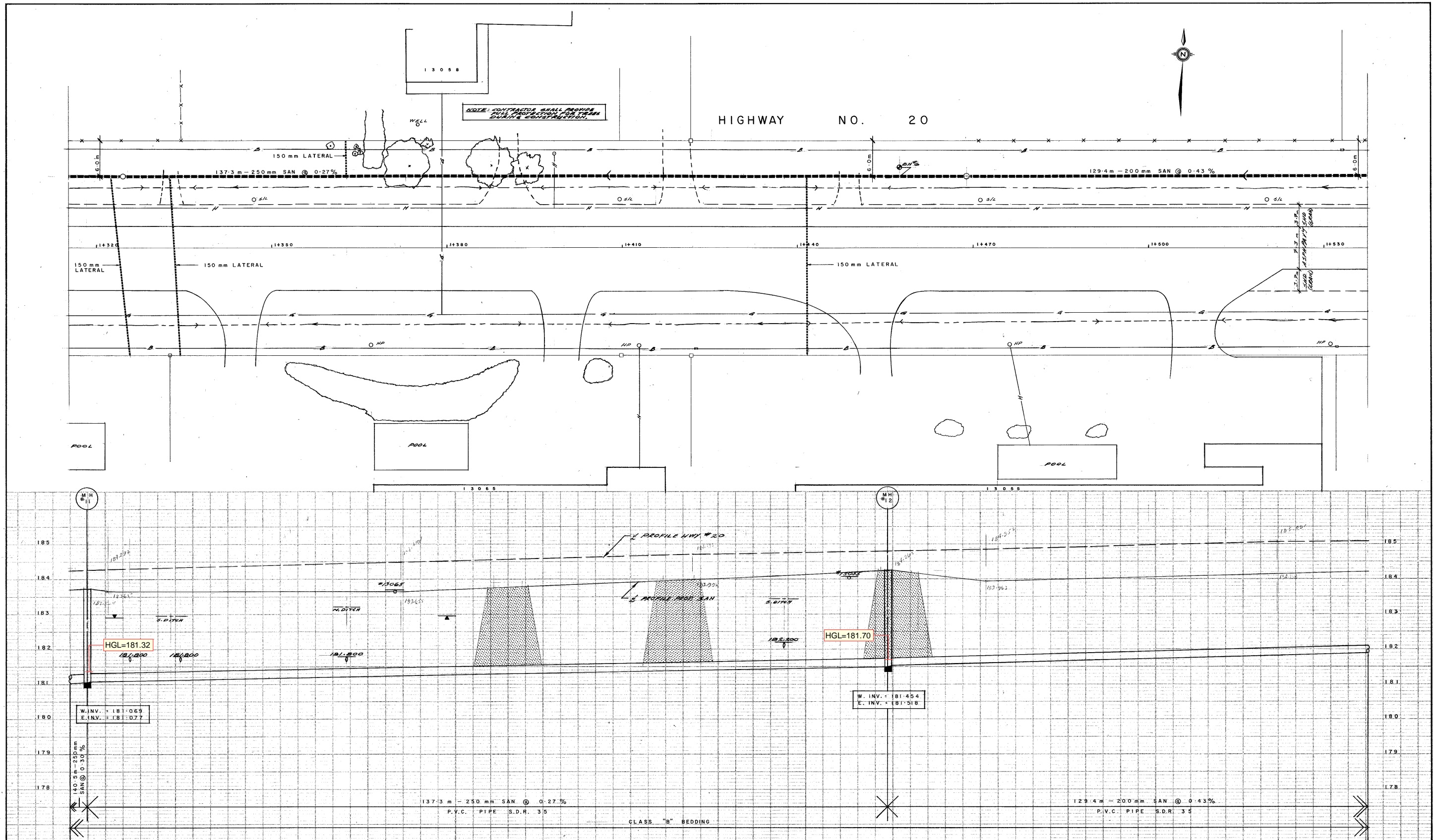


## HIGHWAY NO. 20 SANITARY SEWER SYSTEM

STA. 1+094 TO STA. 1+315.2



DESIGNED	R.L.E.R.	DATE	SCALE	DRAWING NO.
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DRAWN	L.H.S.	" "	VERT. 1:50	



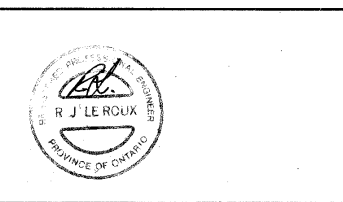
CHANGING GROUND ELEVATION

NOTES: 1. Bench Mark - NORTH RIM MHS846 HWY 58 ELEV = 180.409

- ▲ NO BASEMENT
- ▲ BASEMENT ELEVATION NORTH SIDE LUNDY'S LANE
- ▼ BASEMENT ELEVATION SOUTH SIDE LUNDY'S LANE
- EXISTING SEPTIC OUTLET
- GRANULAR "A" TRENCH BACKFILL COMPACTED TO 100% STANDARD PROCTOR DENSITY.

NOTE: PLOT OF UNDERGROUND AND SURFACE OBJECTS NOT GUARANTEED PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD LOCATES OF ALL UTILITIES.

No.	Revision	Initial	Date
1	AS CONSTRUCTED	L.H.S.	OCT/85

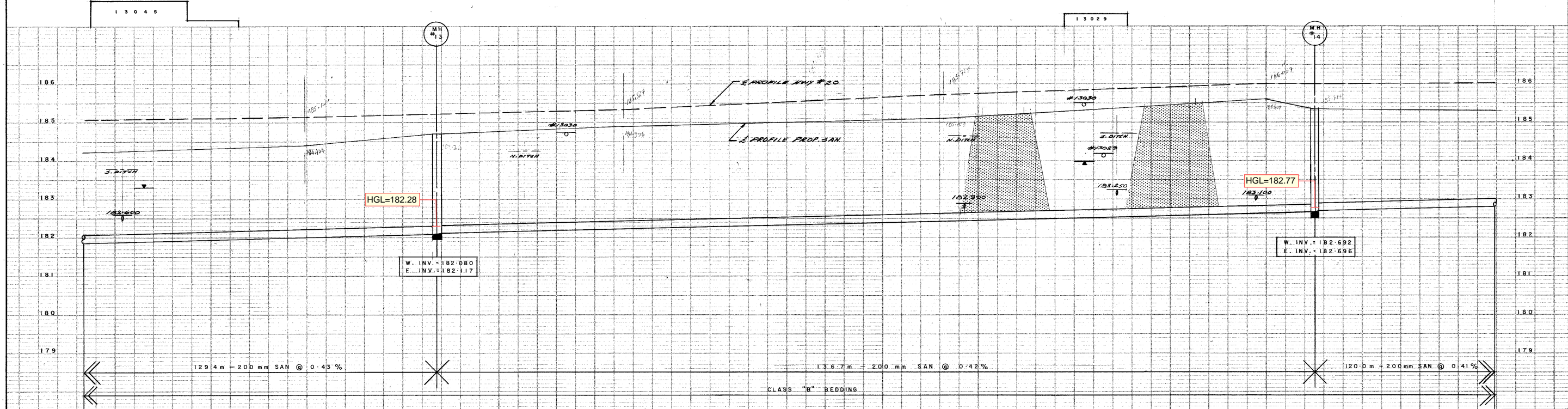
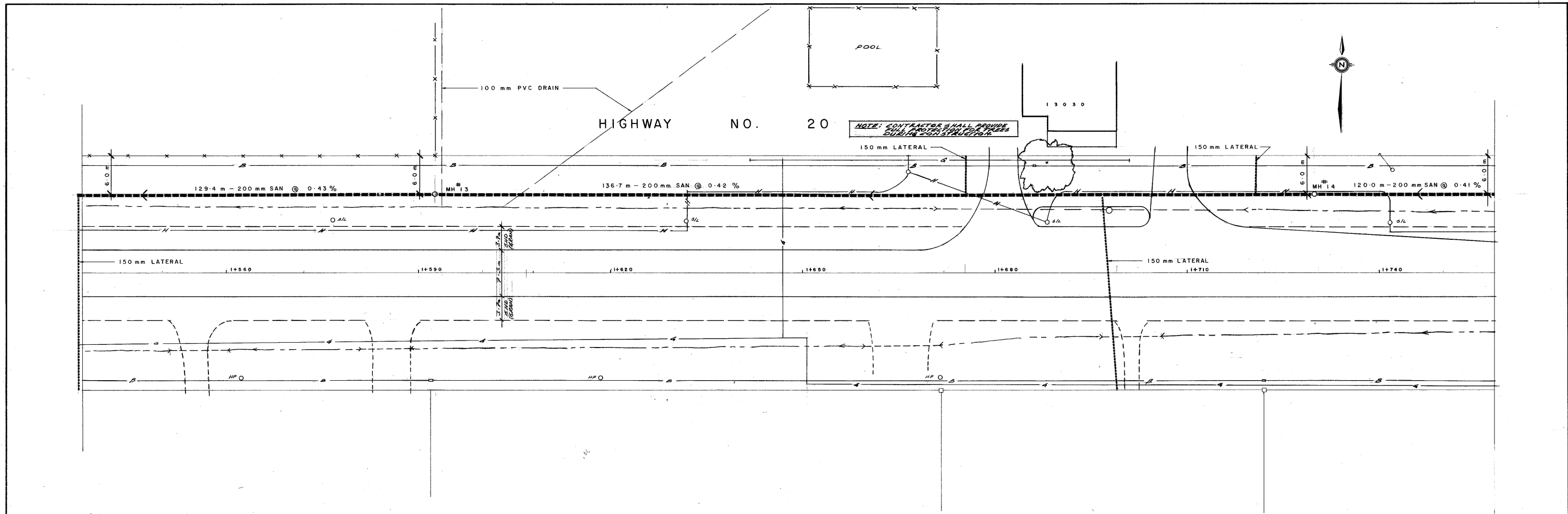


HIGHWAY NO. 20  
 SANITARY SEWER SYSTEM

STA. 1+315.2 TO STA. 1+537.5

**City of Thorold Engineering**

DESIGNED	R.L.R.	DATE	JAN/85	SCALE	HORIZ.	VERT.	DRAWING NO.
CHECKED	R.L.R.	"	"	1:300	1:50		500-07
DRAWN	L.H.S.	"	"				



GROUND ELEVATION

CHAINAGE

NOTES: 1. Bench Mark - NORTH RIM MHS846 HWY 58 ELEV = 180.409

NO BASEMENT

BASEMENT ELEVATION NORTH SIDE LUNDY'S LANE

BASEMENT ELEVATION SOUTH SIDE LUNDY'S LANE

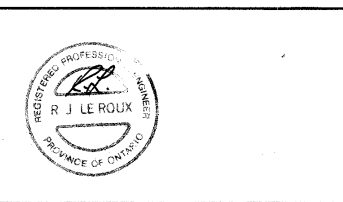
EXISTING SEPTIC OUTLET

GRANULAR "A" TRENCH BACKFILL COMPACTED TO 100% STANDARD PROCTOR DENSITY.

NOTE: PLOT OF UNDERGROUND AND SURFACE OBJECTS NOT GUARANTEED, PRIOR TO COMMENCEMENT OF WORK THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD LOCATES OF ALL UTILITIES.

PROPOSED OBVERT ELEVATION SANITARY LATERAL AT PROPERTY LINE.

No.	Revision	Initial	Date
1	AS CONSTRUCTED	L. H. S.	OCT/85

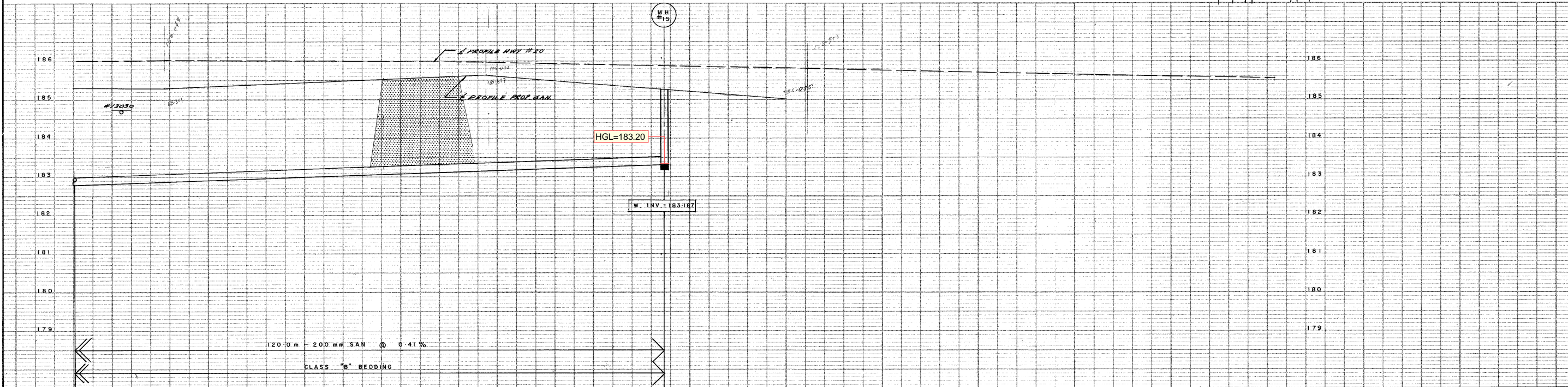
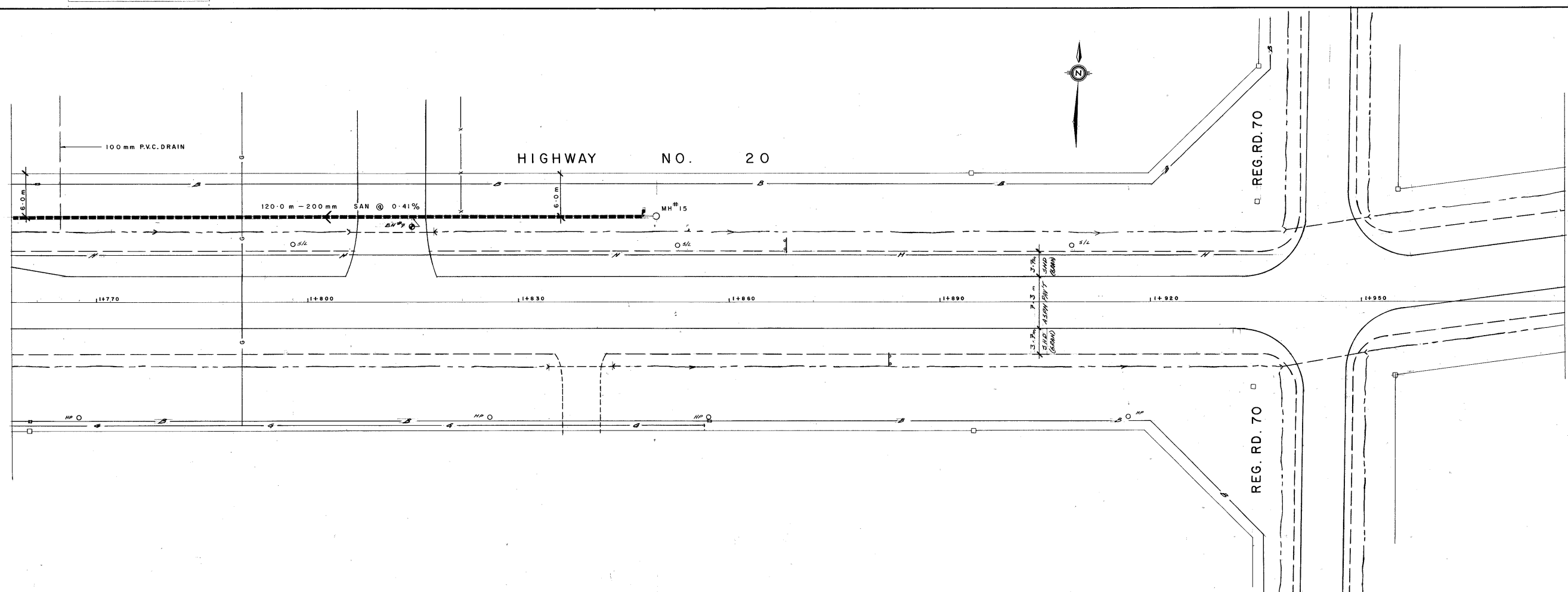


HIGHWAY NO. 20  
SANITARY SEWER SYSTEM

STA. 1+537.5 TO STA. 1+758.0

**City of Thorold Engineering**

DESIGNED	R.L.R.	DATE	JAN/85	SCALE	HORIZ. 1:300	VERT. 1:50	DRAWING NO.	500-08
CHECKED	R.L.R.	"	"					
DRAWN	L.H.S.	"	"					



GROUND ELEVATION

CHAINAGE

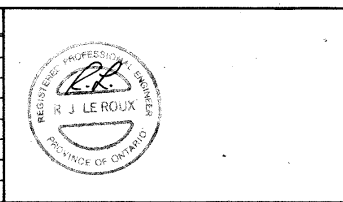
NOTES: 1. Bench Mark - NORTH RIM MHS 846 HWY 58 ELEV: 180.409

- ▲ NO BASEMENT
- ▲ BASEMENT ELEVATION NORTH SIDE LUNDY'S LANE
- ▲ BASEMENT ELEVATION SOUTH SIDE LUNDY'S LANE
- EXISTING SEPTIC OUTLET
- GRANULAR "A" TRENCH BACKFILL COMPACTED TO 100% STANDARD PROCTOR DENSITY.

NOTE: PLOT OF UNDERGROUND AND SURFACE OBJECTS NOT GUARANTEED. PRIOR TO COMMENCEMENT OF WORK THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD LOCATES OF ALL UTILITIES.

PROPOSED OBVERT ELEVATION SANITARY LATERAL AT PROPERTY LINE.

No.	Revision	Initial	Date
1	AS CONSTRUCTED	L. H. S.	OCT./85



HIGHWAY SANITARY NO. 20 SEWER SYSTEM

STA. 1+758.0 TO STA. 1+950.0

**City of Thorold Engineering**

DESIGNED	R. LeR	DATE	JAN/85	SCALE		DRAWING NO.	
CHECKED	R. LeR	HORIZ.	1:300	VERT.	1:50	500-09	
DRAWN	L. H. S.						



Legend

- RMoN Water Facility Point**
- Water Treatment Plant
  - Pumping Station
  - Chlorine Facility
  - Elevated Tank
  - Reservoir
  - Standpipe
- RMoN Water Anode**
- RMoN Water Anode
- RMoN Water Tracer Wire Access**
- RMoN Water Tracer Wire Access
- RMoN Water Marker Ball**
- RMoN Water Marker Ball
- RMoN Water Control Valve**
- Pressure Regulation
  - PRV
- RMoN Water System Valve**
- Backflow
  - Drain
  - Hydrant Valve
  - Isolation
- RMoN Water Main**
- Transmission
  - Transmission Under Construction
  - Intake
- LAM Water Facility Point**
- LAM Water Facility Point
  - LAM Water Main
- Address Points**

254.0 0 127.00 254.0 Meters

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Notes

# Appendix C

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## Water Distribution

**Proposed Draft Plan of Subdivision, 13030 Lundy's Lane**  
**Preliminary Design - Domestic and Fire Flow**

Thorold, Ontario

Project #: 49428-100  
 Date: December 13, 2023  
 Date Printed: December 14, 2023  
 By: RSM



Development Information <sup>1,2</sup>						Fire Flow													
Description	# of Units	Population Density	Retail Gross Floor Area <sup>12</sup>	Population (or UNIT) Density	Population	Fire Underwriters Survey <sup>3</sup>								Average Day	Max Day	Peak Hour	Max Day + Fire Flow		
						C	A <sup>9,12</sup>	F	F	Occupancy Reduction	Sprinkler Protection	Building Exposure	F					L/s	L/s
		ppl/unit	sm	per/ha	# of people		m <sup>2</sup>	L/min	L/s	%	%	%	L/s	L/s	L/s	L/s			
Single Detached Res. <sup>10</sup>	48	3.50			168	1.50	288	6,000	100	-15	0	75	160	0.58	0.90	2.33	160.9		
Street Townhomes <sup>9</sup>	145	3.00			435	1.50	1,200	11,000	183	-15	0	45	238	1.51	2.34	6.04	240.7		
Retail (Blk 75-76) <sup>11, 13</sup>			4555.7		0	1.00	2,673	11,000	183	-15	-30	20	138	1.70	2.63	6.79	140.1		
Residential (Blk 74-76) <sup>11</sup>	1752	2.00			3504	1.00	2,673	11,000	183	-15	-30	20	138	12.17	18.86	48.67	156.4		
Condo townhomes (Blk 72-73) <sup>9</sup>	119	2.00			238	1.50	1,200	11,000	183	-15	0	45	238	0.83	1.28	3.31	239.6		
<b>TOTALS FOR SITE<sup>8</sup></b>	<b>2064</b>				<b>4345</b>								<b>238</b>	<b>16.78</b>	<b>26.02</b>	<b>67.14</b>	<b>240.7</b>		
													<b>MAX FIRE FLOW=</b>		<b>238</b>	<b>16.78</b>	<b>26.02</b>	<b>67.14</b>	<b>240.7</b>
<b>Sum of Maximum Day Flows + Largest Fire Flow (L/s) = 240.7</b>																			

**Assumptions:**

- Development information based on Draft Plan prepared by Bousfields Inc.
- Population densities conservatively estimated from common design standard values.
- All buildings are classified as occupancy group C (Residential Occupancy). SDR and TH buildings are classified as Type V - Wood Frame Construction. Mixed-Use buildings are classified as Type III - Ordinary Construction.
- Average Daily Demands referenced from Niagara Region MSP, June 2017  
 Residential & Employment = 300 L/cap/day
- Max Day and Peak Hour factors referenced from Niagara Region MSP, June 2017  
 Maximum Day = 1.55  
 Peak Hour = 4.0
- Lot 38 used for Single Detached fire flow calculations. Assumed 2-storey building, wood construction with 1.5m side yard set back and 6m front & back yard setbacks.  
 Sample building for Townhouse fire flow calculations: Condo Townhouse units in Blk 72 assumed 3-storey building, ordinary construction with 3m side yard & 6m front/rear setbacks, and Street Townhouse units in Blk 51 assumed 3-storey building, ordinary construction with 1.5m side yard & 6m front/rear setbacks
- Fire flow requirement for commercial block based on historically calculated values for similar developments
- Slight variation in total population estimate compared to sanitary calculations due to rounding
- Max TH floor area without a firewall assumed to be 600sm x 2 storeys = 1200sm. Mixed-Use Commercial worst-case = Block 76, Building 76A.
- Includes two SDR units on Block 77 (Sanitary Pump Station Block).
- Residential Unit Count, Residential GFA and Retail GFA from Master Site Statistics, GPA, 2023/10/30.
- Per FUS 2020, Total Effective Area of Blocks 74-76 Retail and Residential = Area of Largest Level + 25% of Area of 2 adjacent levels.
- Retail demand: Assume Retail GFA comprises 75% Shopping Centre/Store and 25% Restaurant.  
 Shopping Centre/Store Demand: 5 L/sm/d (OBC 8.2.1.3.(2), Table 8.2.1.3.B Lines 20, 22.)  
 Restaurant Demand: 125 L/seat/d (OBC 8.2.1.3.(2), Table 8.2.1.3.B Line 12 a)  
 1.1 sm/seat (OBC 3.1.17.1, Table 3.1.17.1 Line 5)  
 113.6 L/sm/d  
 Therefore average Retail Demand = 5 L/sm/d x 75% + 113.6 L/sm/d x 25% = 32.2 L/sm/d

# Appendix D

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## Storm Sewer



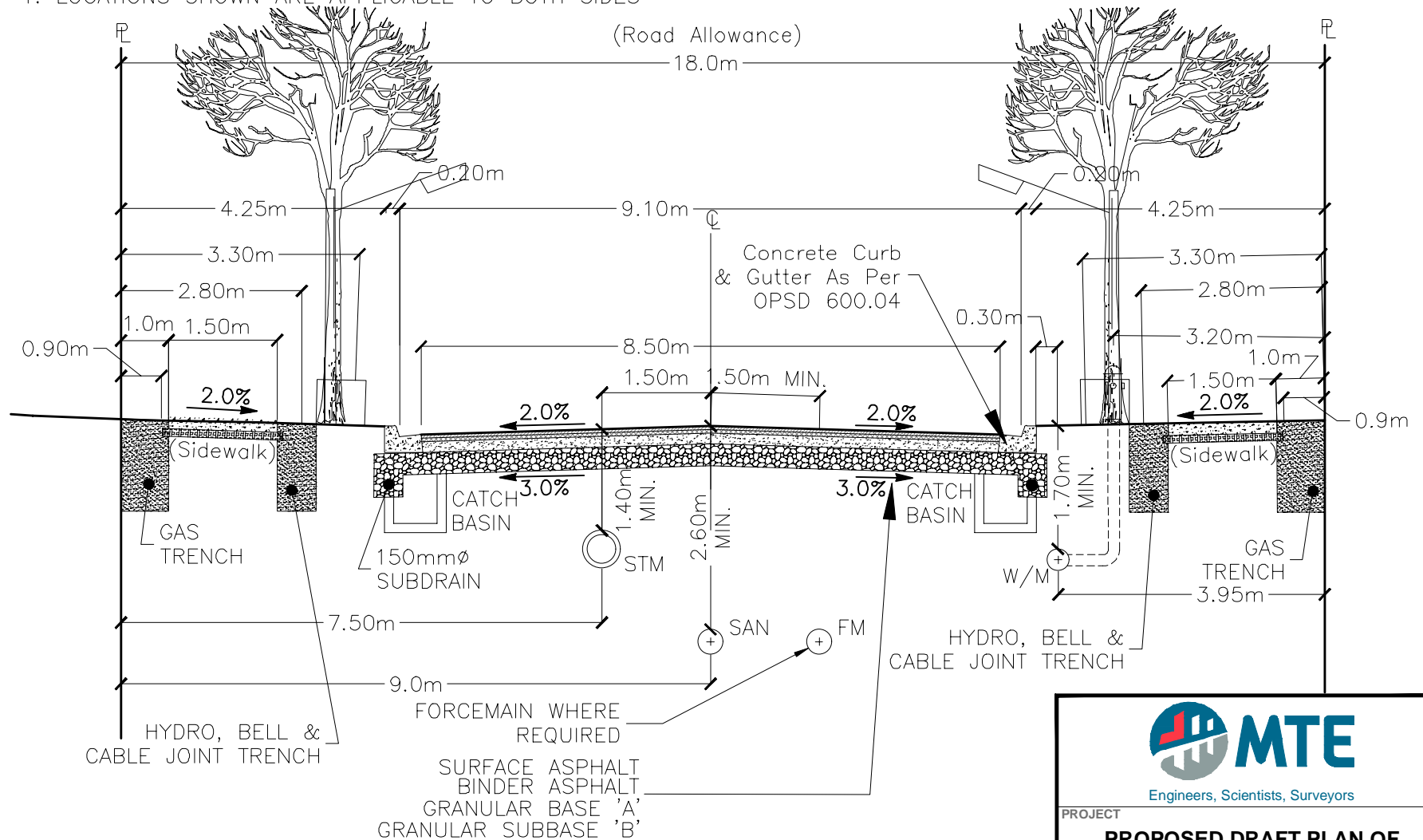
# Appendix E

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## Typical R.O.W. Cross-Sections

NOTE:

1. LOCATIONS SHOWN ARE APPLICABLE TO BOTH SIDES



**TYPICAL 18m R.O.W URBAN CROSS-SECTION WITH SIDEWALKS AND 8.5m PAVEMENT WIDTH**

N.T.S.



Engineers, Scientists, Surveyors

PROJECT

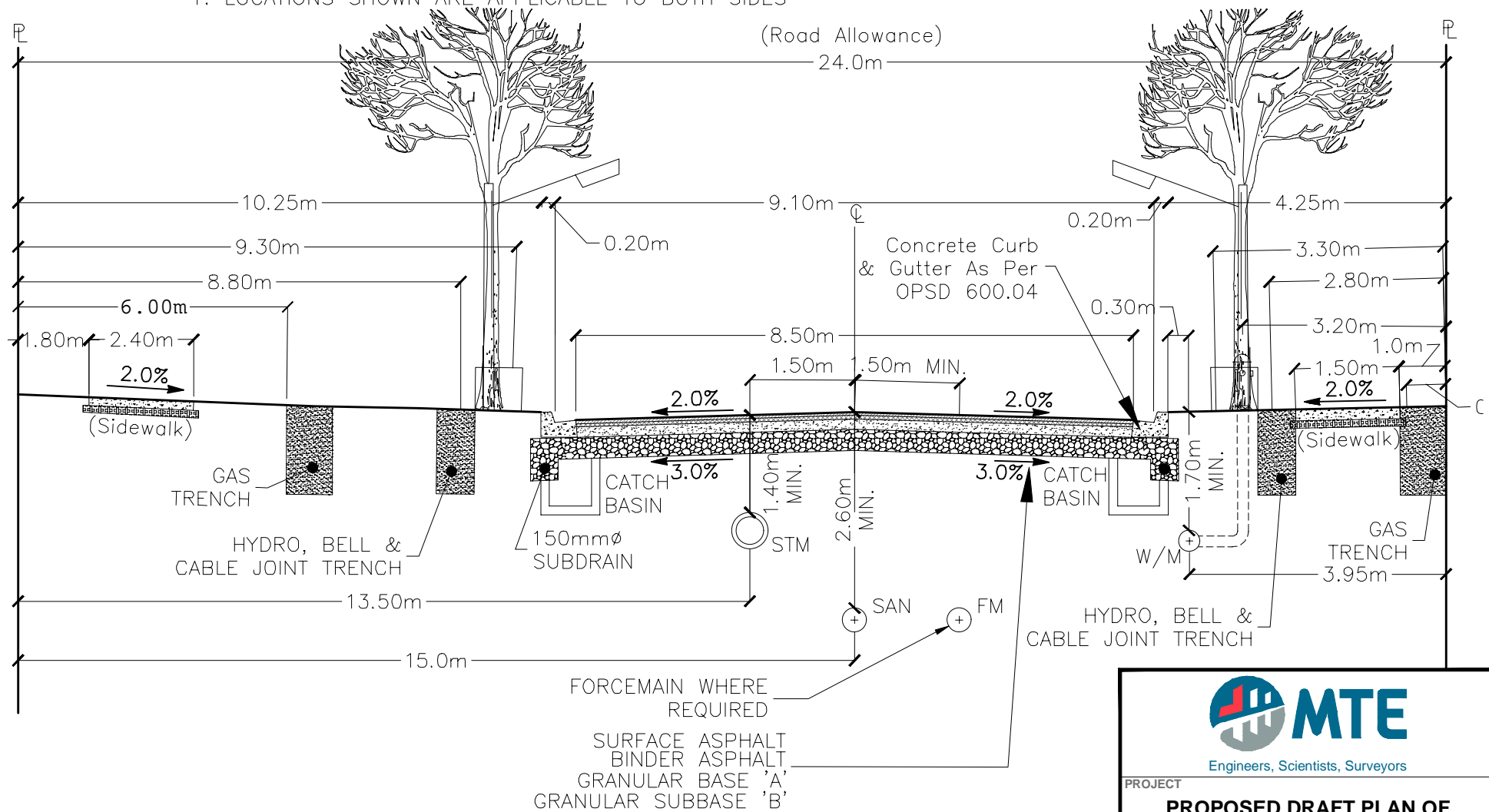
**PROPOSED DRAFT PLAN OF SUBDIVISION-13030 LUNDY'S LANE**

**TITLE**  
**PROPOSED 18m ROAD ALLOWANCE STREETS D, E, F, G AND PART OF STREET B**

Drawn	RXJ	Scale	N.T.S.	Figure
Checked	LXQ	Project No.	49428-100	<b>M1</b>
Date	2023-10-12	Rev No.	0	

NOTE:

1. LOCATIONS SHOWN ARE APPLICABLE TO BOTH SIDES



**TYPICAL 24m R.O.W URBAN CROSS-SECTION WITH SIDEWALKS AND 8.5m PAVEMENT WIDTH**

N.T.S.



PROJECT

**PROPOSED DRAFT PLAN OF SUBDIVISION-13030 LUNDY'S LANE**

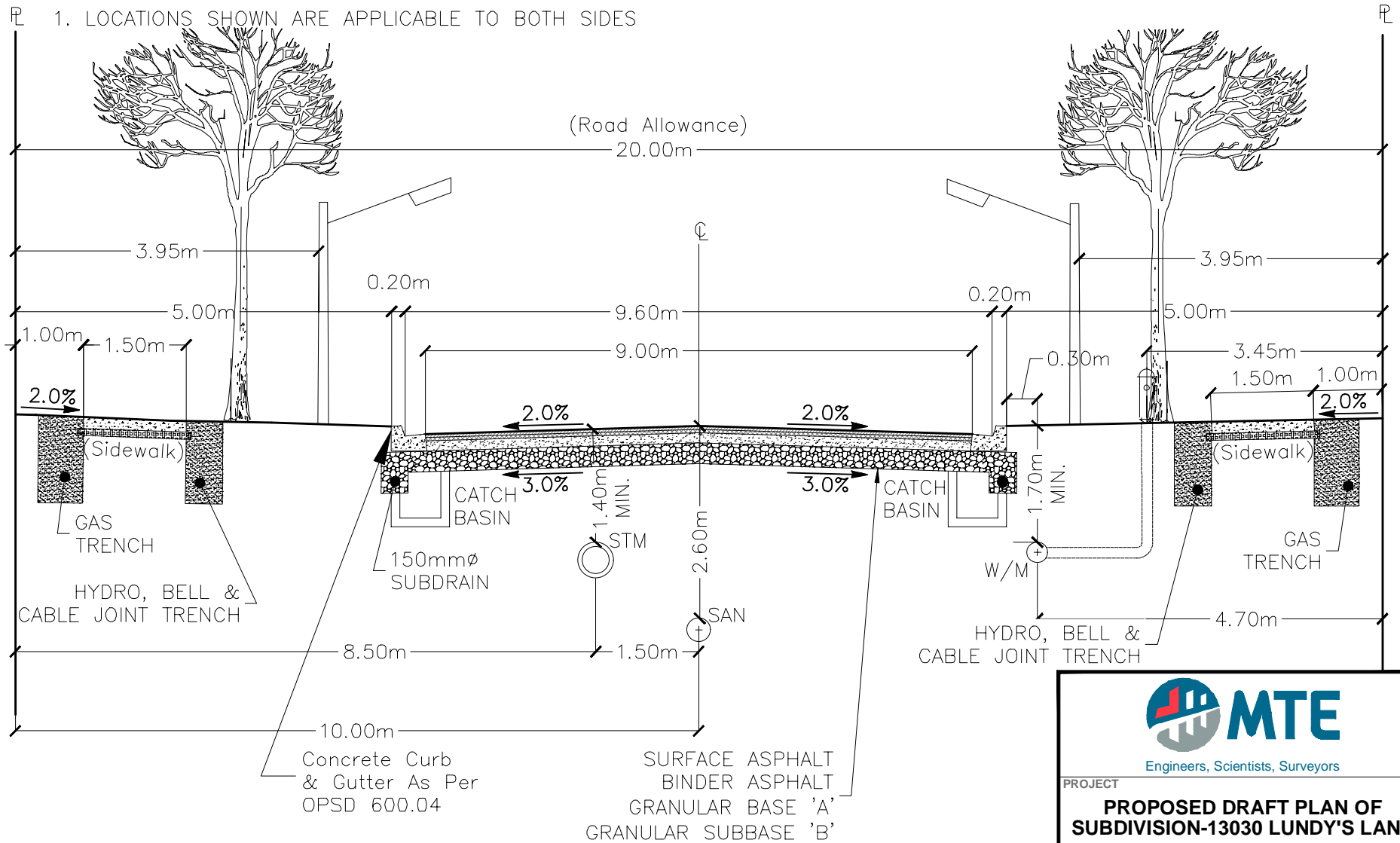
TITLE

**PROPOSED 24m ROAD ALLOWANCE PART OF STREET B**

Drawn	RXJ	Scale	N.T.S.	Figure
Checked	LXQ	Project No.	49428-100	<b>M2</b>
Date	2023-10-12	Rev No.	0	

NOTE:

1. LOCATIONS SHOWN ARE APPLICABLE TO BOTH SIDES



**TYPICAL 20m R.O.W URBAN CROSS SECTION WITH SIDEWALKS AND 9.0m PAVEMENT WIDTH**

N.T.S.



Engineers, Scientists, Surveyors

PROJECT

**PROPOSED DRAFT PLAN OF SUBDIVISION-13030 LUNDY'S LANE**

TITLE

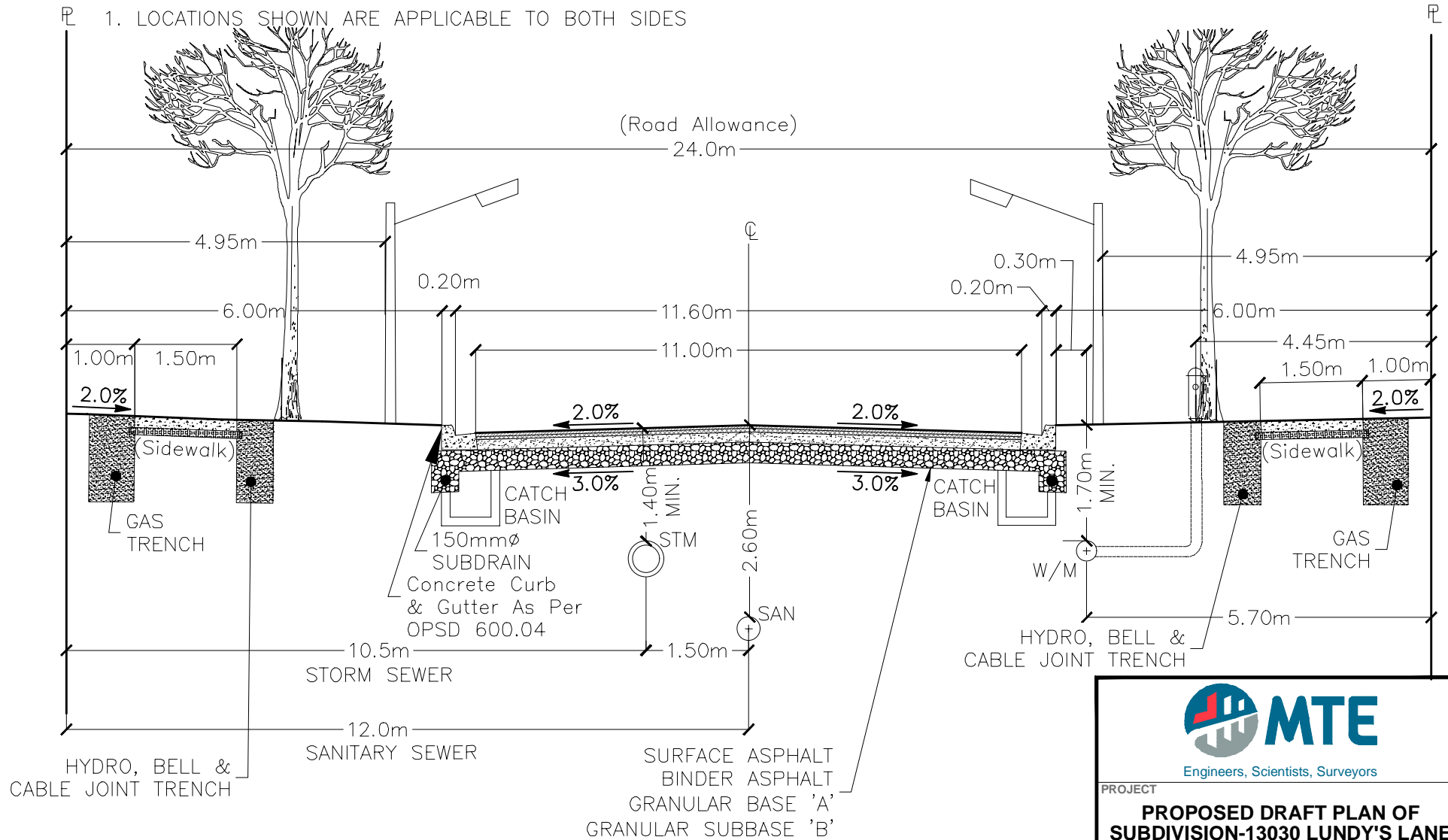
**PROPOSED 20m ROAD ALLOWANCE PART OF STREET A**

Drawn	RXJ	Scale	N.T.S.	Figure
Checked	LXQ	Project No.	49428-100	
Date	2023-10-12	Rev No.	0	

**M3**

NOTE:

1. LOCATIONS SHOWN ARE APPLICABLE TO BOTH SIDES



**TYPICAL 24m R.O.W URBAN CROSS SECTION WITH  
SIDEWALKS AND 11.0m PAVEMENT WIDTH**  
N.T.S.

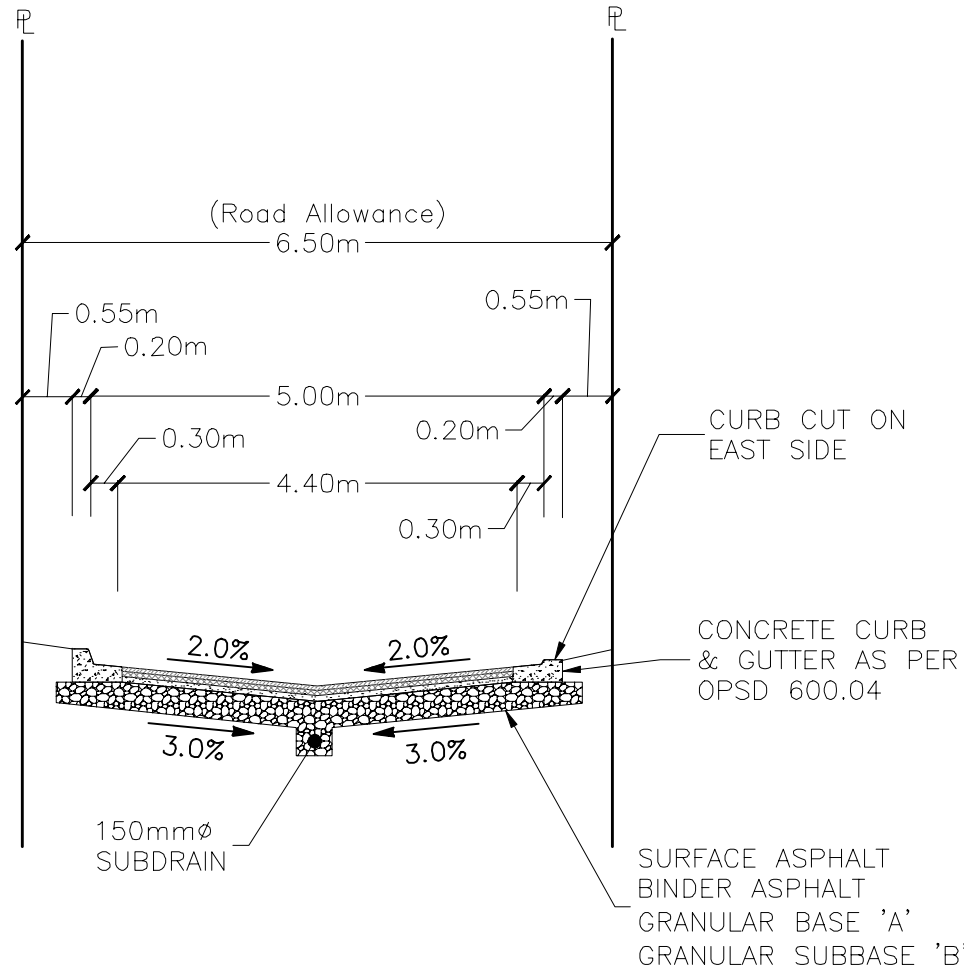


PROJECT  
**PROPOSED DRAFT PLAN OF  
SUBDIVISION-13030 LUNDY'S LANE**

TITLE  
**PROPOSED 24m ROAD ALLOWANCE  
STREET C AND PART OF STREET A**

Drawn	RXJ	Scale	N.T.S.	Figure
Checked	LXQ	Project No.	49428-100	
Date	2023-10-16	Rev No.	0	

**M4**



**TYPICAL 6.5m R.O.W URBAN CROSS SECTION  
LANEWAY WITH 4.4m PAVEMENT WIDTH**  
N.T.S.



PROJECT		
<b>PROPOSED DRAFT PLAN OF SUBDIVISION-13030 LUNDY'S LANE</b>		
TITLE		
<b>PROPOSED 6.5m ROAD ALLOWANCE LANES A, B, C</b>		

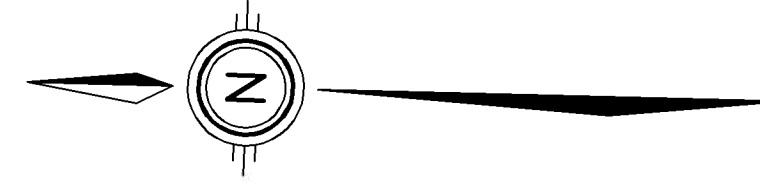
Drawn	RXJ	Scale	N.T.S.	Figure
Checked	LXQ	Project No.	49428-100	
Date	2023-10-12	Rev No.	0	

**M5**

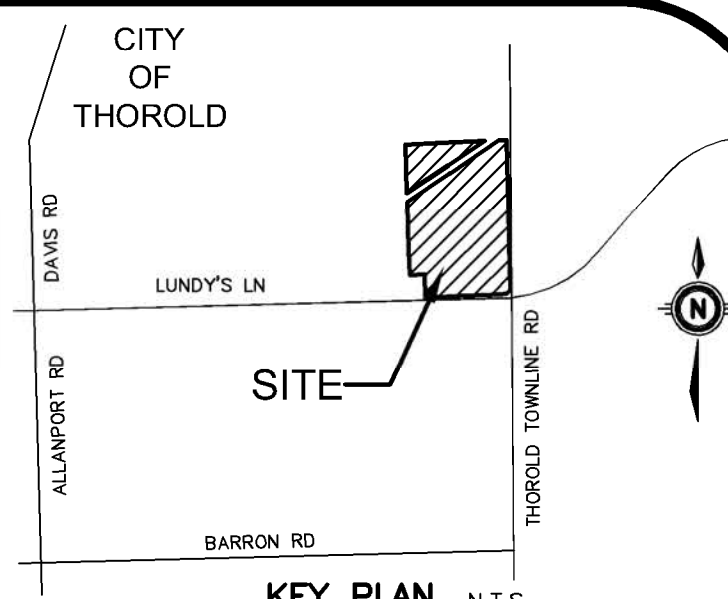
# Drawings

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# TOWNLINER ROAD



N 42° 58' 53" E  
21.793

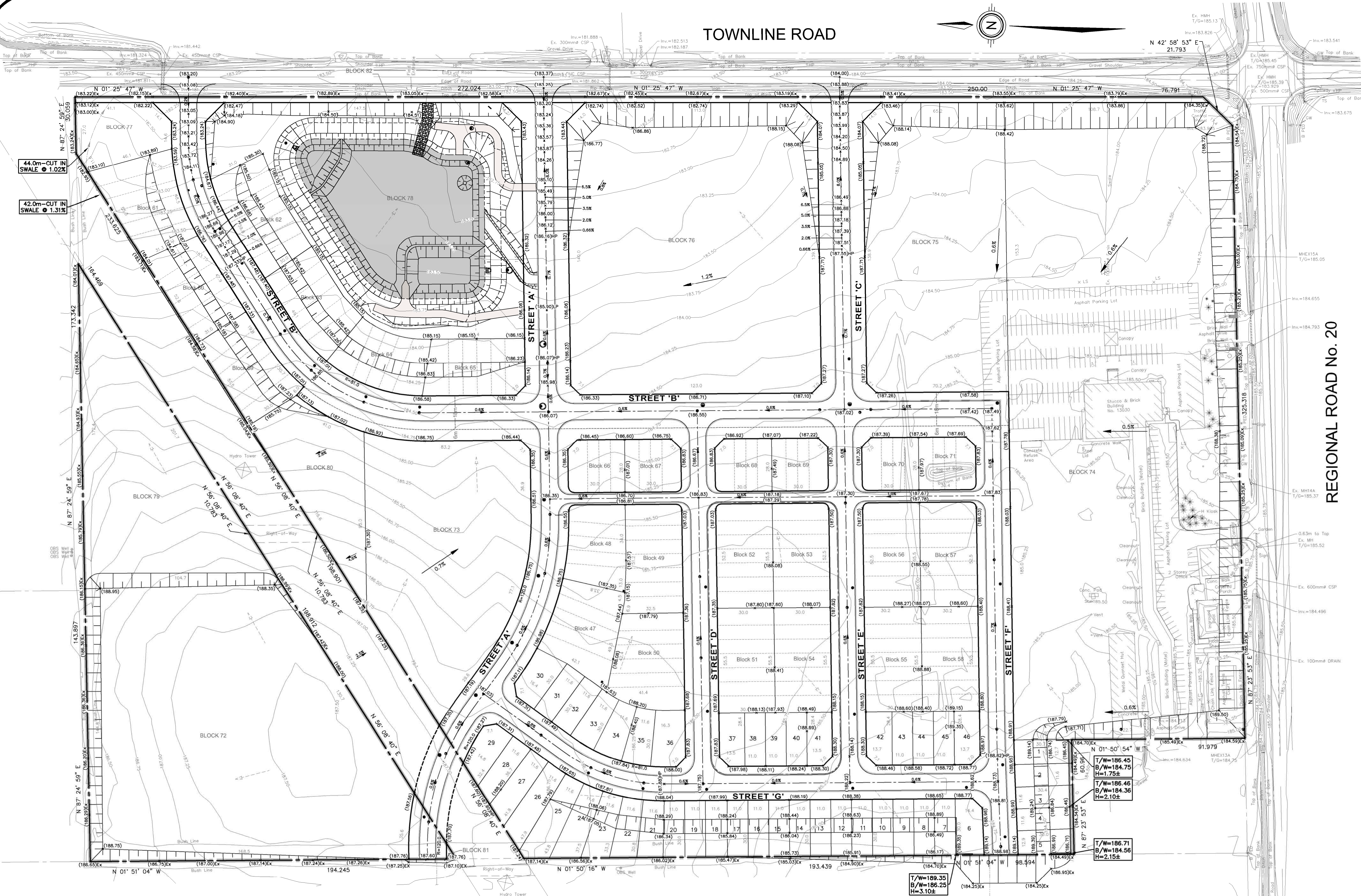


GEODETIC BM ELEV. = NAm

SITE BENCHMARK ELEV. = NAm

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REGIONAL ROAD No. 20



### LEGEND OF EXISTING FEATURES

- SITE BOUNDARY
- EASEMENT
- EXISTING CONTOURS
- EXISTING DIRECTION OF DRAINAGE
- EXISTING CURB
- EXISTING BUILDING
- EXISTING BRICK WALL

### LEGEND OF PROPOSED FEATURES

- PROPOSED SPOT ELEVATIONS  
EX = MAINTAIN EXISTING  
DIRECTION OF DRAINAGE/SWALE
- EMBANKMENT  
(SLOPE AS NOTED)
- OVERLAND FLOW ROUTE  
(MAJOR STORM)

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1.	ISSUED FOR DRAFT PLAN APPROVAL	RSM 2023-11-24
No.	REVISION	BY YYYY-MM-DD



905-639-2552

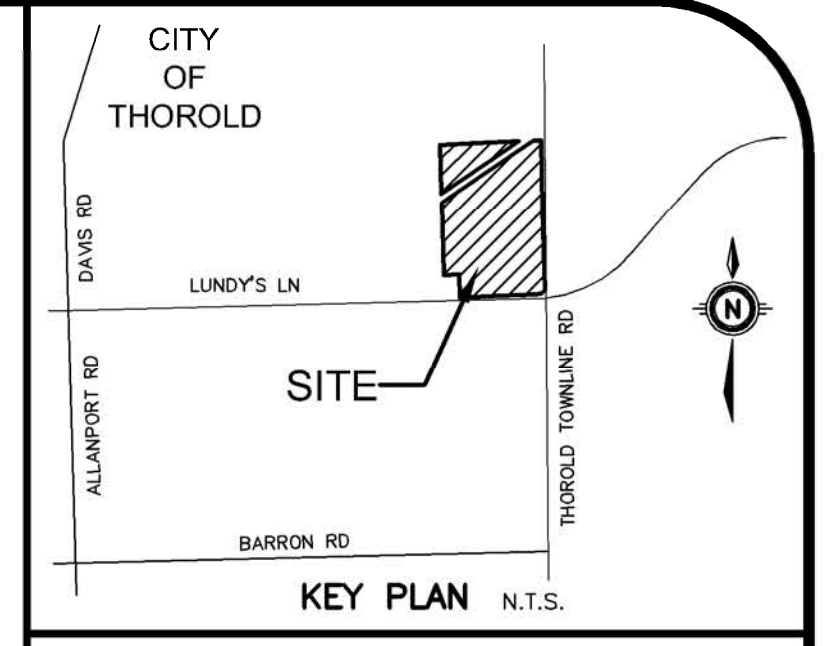
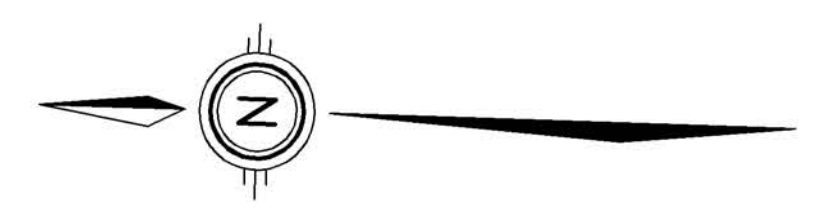
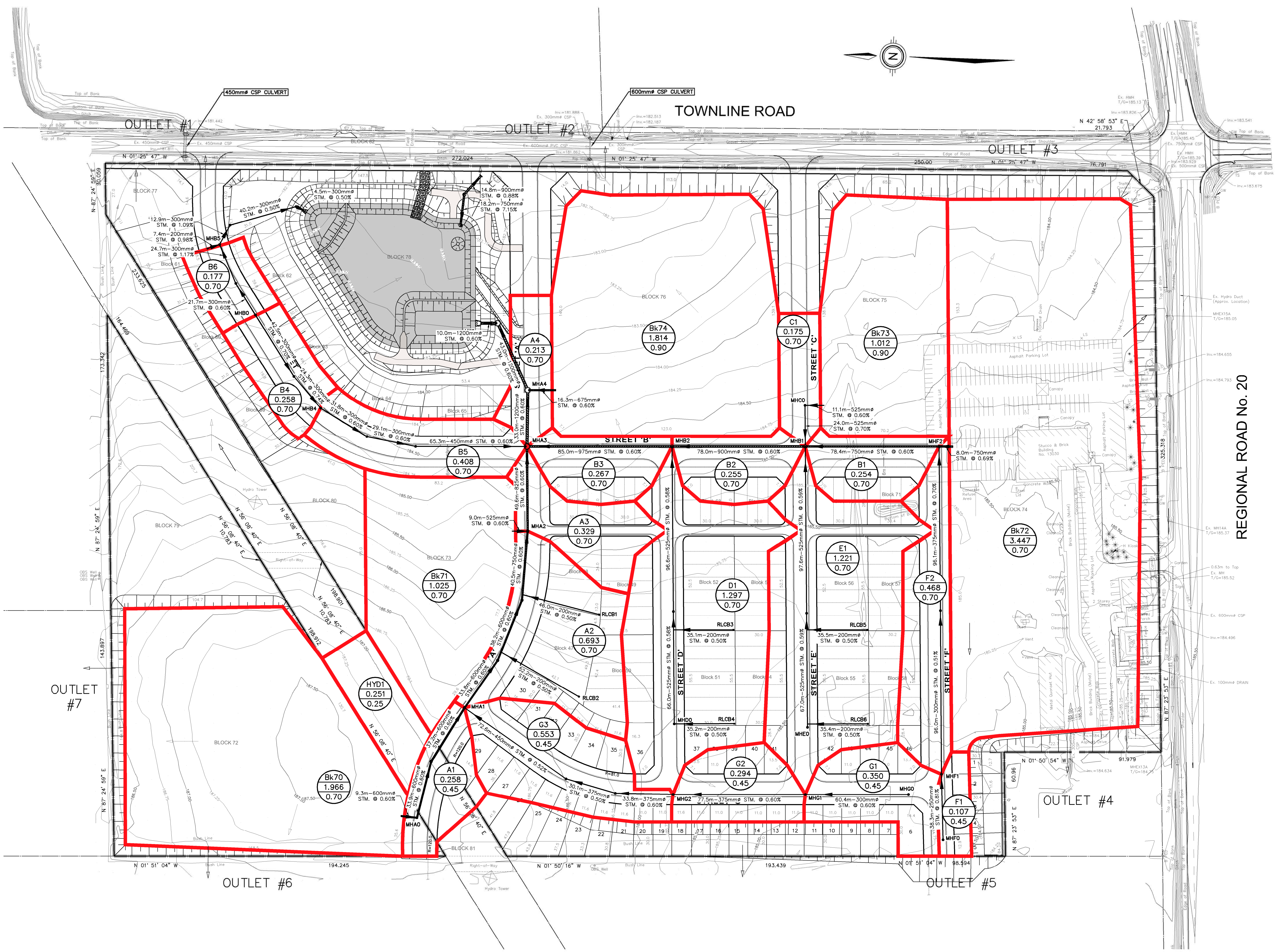
NOT FOR CONSTRUCTION

CLIENT  
**RUDANCO HOSPITALITY CORPORATION**  
4728 DORCHESTER RD. NIAGARA FALLS, ON  
PROJECT  
**PROPOSED PLAN OF SUBDIVISION 13030 LUNDY'S LANE**  
HIGHWAY 20 & THOROLD TOWNLINER ROAD THOROLD, ON  
DRAWING

### PRELIMINARY GRADING PLAN

Project Manager	M.GOUSIC	Project No.	49428-100
Design By	CNF	Checked By	RSM
Drawn By	LXQ	Checked By	CNF
Surveyed By	OTHERS	Drawing No.	P-AG1.1
Date	Apr.26/23	Scale	1:1000
Scale	1:1000	Sheet	of





GEODETIC BM	ELEV. =	Nam
SITE BENCHMARK	ELEV. =	Nam

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**LEGEND**

	SITE BOUNDARY
	DRAINAGE AREA
	ID No. AREA (Ha)
	RUNOFF COEFFICIENT
	EXISTING DIRECTION OF DRAINAGE
	PROPOSED DIRECTION OF DRAINAGE
	EXISTING OUTLET LOCATION
	STORM SEWER

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1.	ISSUED FOR DRAFT PLAN APPROVAL	RSM 2023-11-24
No.	REVISION	BY YYYY-MM-DD

**MTE**  
 Engineers, Scientists, Surveyors  
 905-639-2552

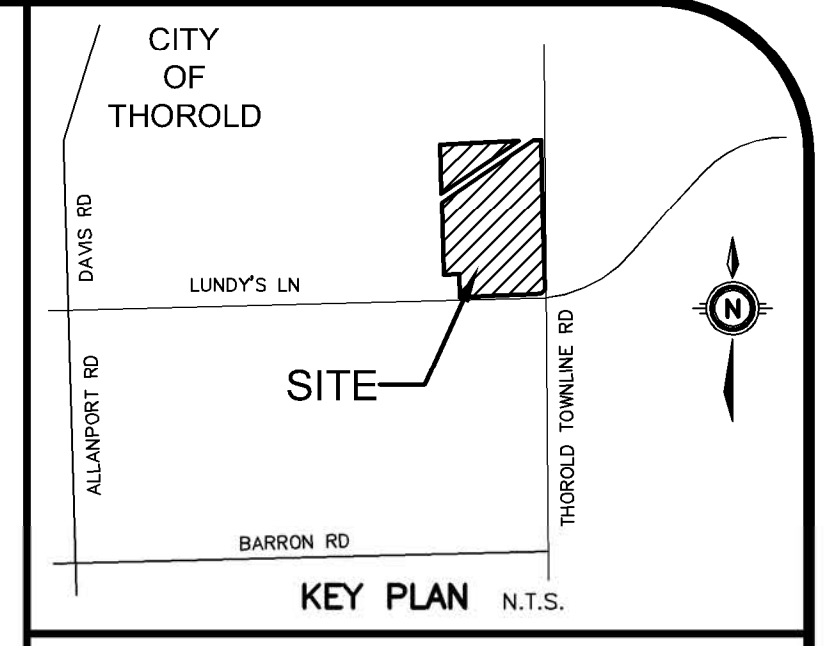
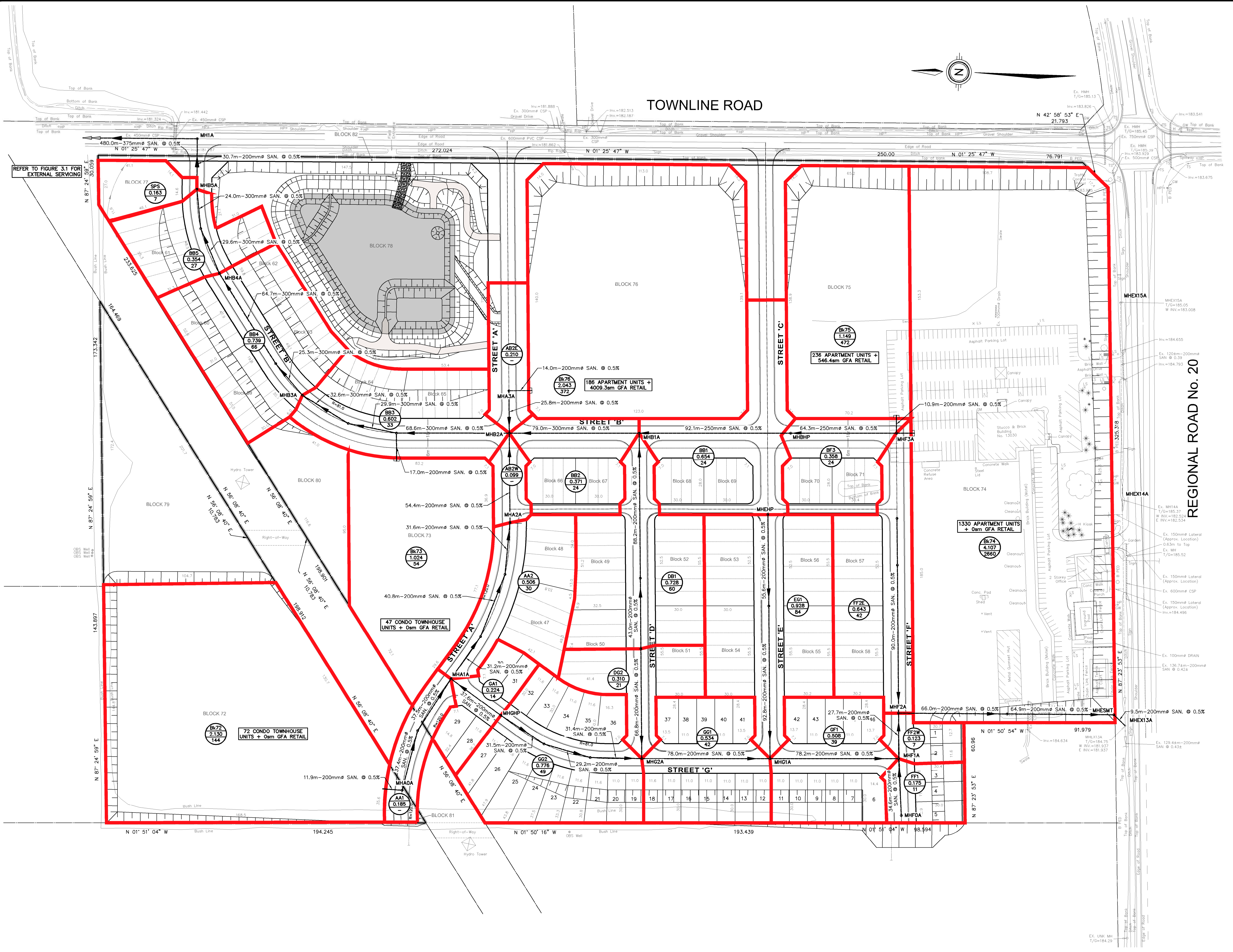
CLIENT  
**RUDANCO HOSPITALITY CORPORATION**  
 4728 DORCHESTER RD. NAGARA FALLS, ON  
 PROJECT  
**PROPOSED PLAN OF SUBDIVISION 13030 LUNDY'S LANE**  
 HIGHWAY 20 & THOROLD TOWNLINE RD THOROLD, ON  
 DRAWING

**PRELIMINARY STORM DRAINAGE AREA PLAN**

Project Manager	M.GOUSIC	Project No.	49428-100
Design By	CNF	Checked By	RSM
Drawn By	RXJ	Checked By	CNF
Surveyed By	OTHERS	Drawing No.	
Date	Apr.27/23		<b>P-ST1.1</b>
Scale	1:1000	Sheet	1 of 1

REGIONAL ROAD No. 20

NOT FOR CONSTRUCTION



GEODETIC BM	ELEV. =	Nam
SITE BENCHMARK	ELEV. =	Nam

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**LEGEND**

	SITE BOUNDARY
	EXISTING SANITARY SEWER
	PROPOSED SANITARY SEWER
	DRAINAGE AREA
	ID No.
	AREA (Ha)
	POPULATION
	UNIT COUNTS PER MASTER SITE PLAN 2023/10/30

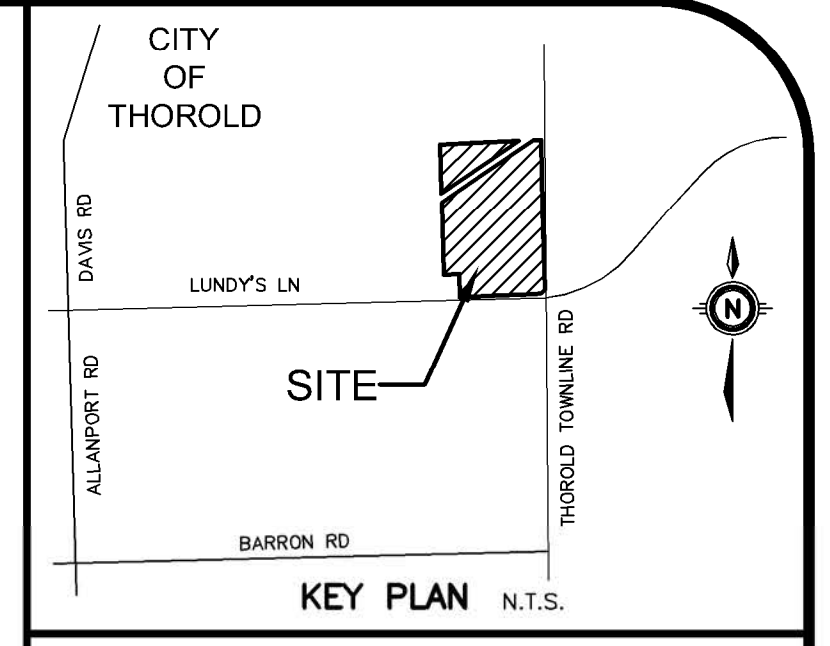
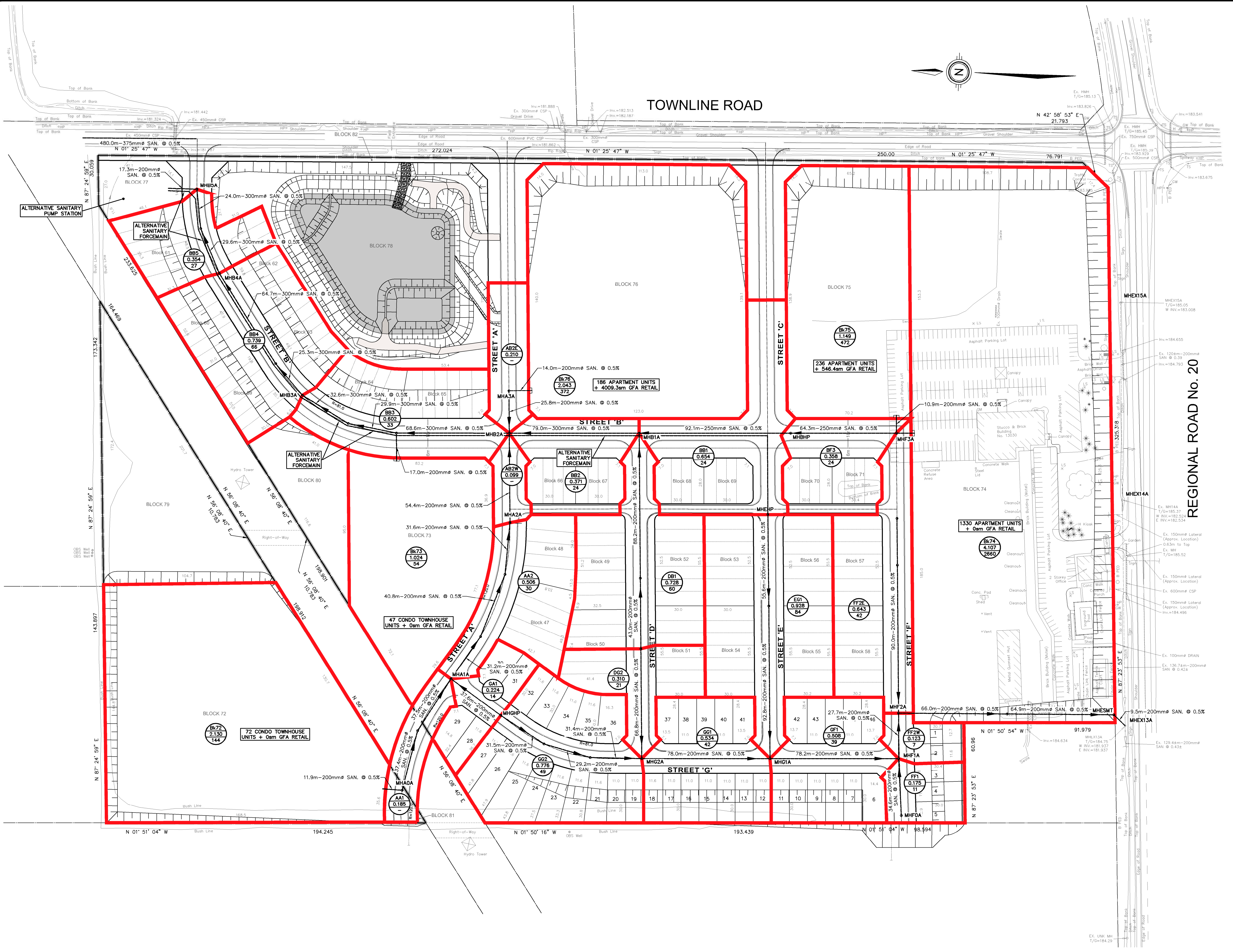
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1.	ISSUED FOR DRAFT PLAN APPROVAL	RSM 2023-12-13
No.	REVISION	BY YYYY-MM-DD

**MTE**  
Engineers, Scientists, Surveyors  
905-639-2552

CLIENT  
**RUDANCO HOSPITALITY CORPORATION**  
4728 DORCHESTER RD. NAGARA FALLS, ON  
PROJECT  
**PROPOSED PLAN OF SUBDIVISION 13030 LUNDY'S LANE**  
HIGHWAY 20 & THOROLD TOWNLINER RD THOROLD, ON  
DRAWING

Project Manager	M.GOUSIC	Project No.	49428-100
Design By	SXA	Checked By	RSM
Drawn By	RXJ	Checked By	CNF
Surveyed By	OTHERS	Drawing No.	
Date	Apr.27/23		<b>P-SA1.1</b>
Scale	1:1000	Sheet 1 of 1	

NOT FOR CONSTRUCTION



GEODETIC BM	ELEV. =	NA m
SITE BENCHMARK	ELEV. =	NA m

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**LEGEND**

	SITE BOUNDARY
	EXISTING SANITARY SEWER
	PROPOSED SANITARY SEWER
	DRAINAGE AREA
	ID No. AREA (Ha) POPULATION
	UNIT COUNTS PER MASTER SITE PLAN 2023/10/30

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1.	ISSUED FOR DRAFT PLAN APPROVAL	RSM 2023-12-13
No.	REVISION	BY YYYY-MM-DD

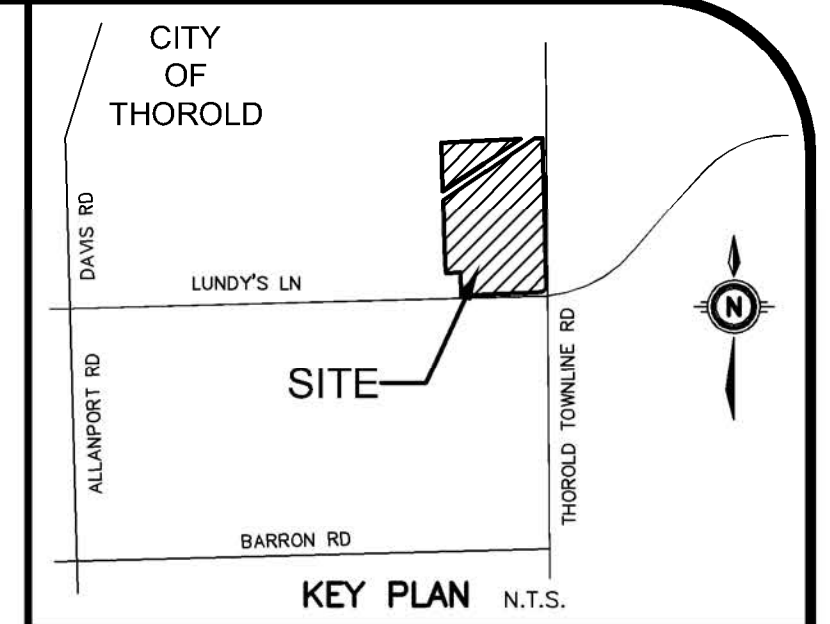
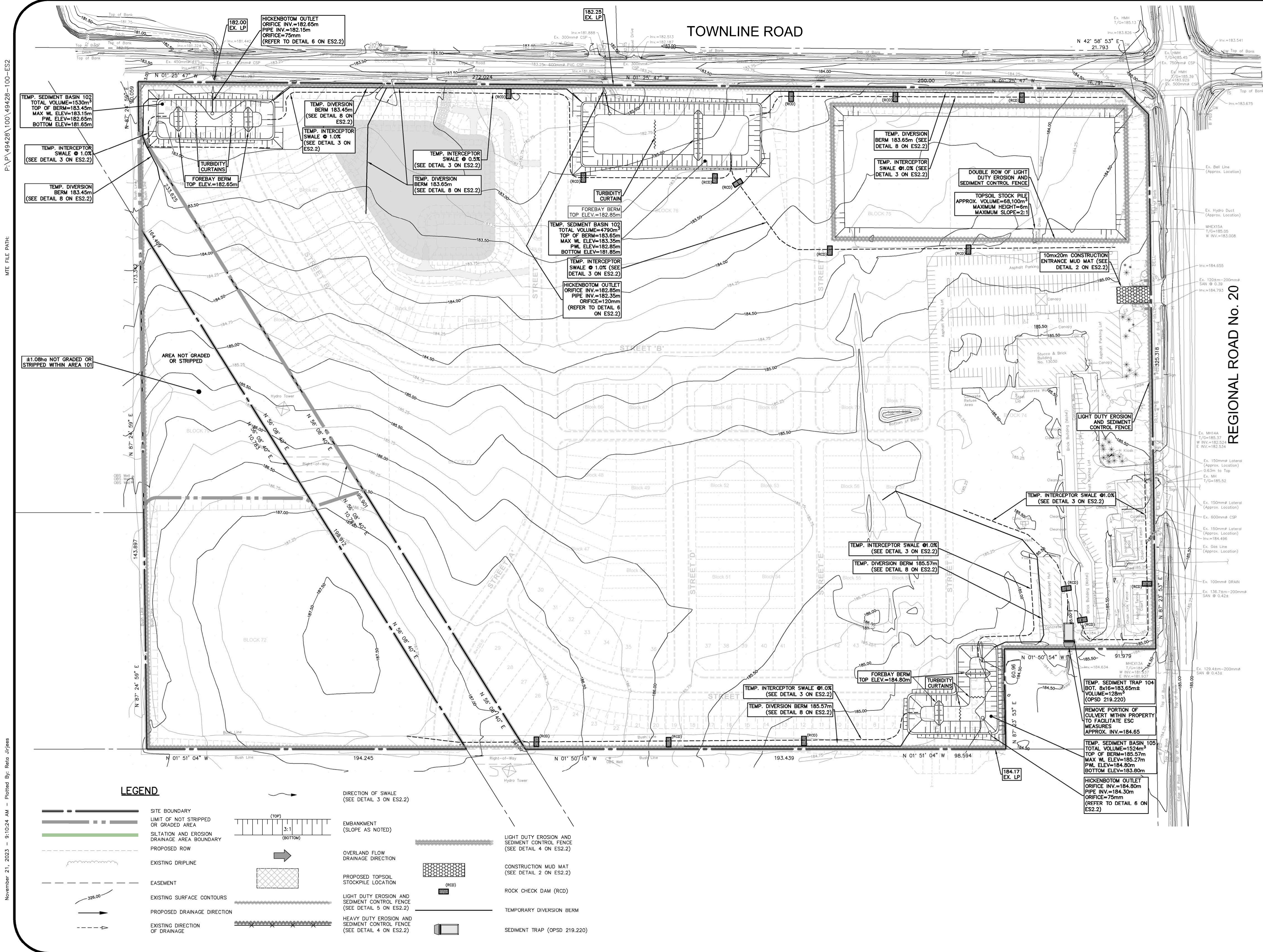


905-639-2552

NOT FOR CONSTRUCTION

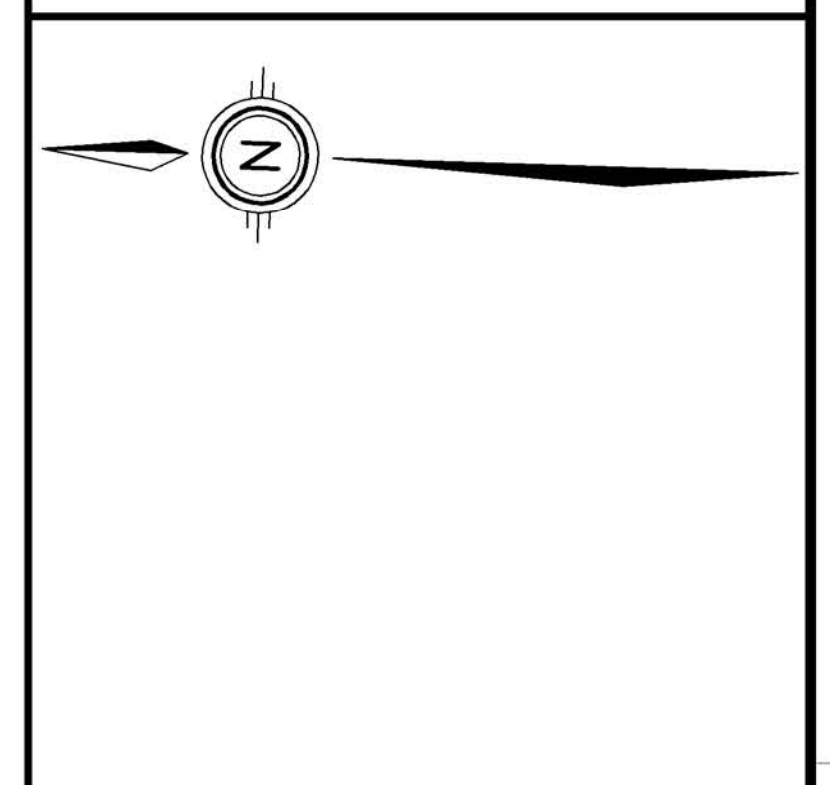
CLIENT  
**RUDANCO HOSPITALITY CORPORATION**  
 4728 DORCHESTER RD. NAGARA FALLS, ON  
 PROJECT  
**PROPOSED PLAN OF SUBDIVISION 13030 LUNDY'S LANE**  
 HIGHWAY 20 & THOROLD TOWNLINE RD. THOROLD, ON  
 DRAWING  
**SANITARY ALTERNATIVE-PUMP STATION & FORCEMAIN**

Project Manager	M.GOUSIC	Project No.	49428-100
Design By	SXA	Checked By	RSM
Drawn By	RXJ	Checked By	CNF
Surveyed By	OTHERS	Drawing No.	
Date	Apr.27/23		<b>P-SA1.2</b>
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GEODETIC BM ELEV. = NAm  
 SITE BENCHMARK ELEV. = NAm

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1.	FIRST SUBMISSION FOR DRAFT PLAN APPROVAL	RSM 2023-11-23
No.	REVISION	BY YYYY-MM-DD

**MTE**  
 Engineers, Scientists, Surveyors  
 905-639-2552

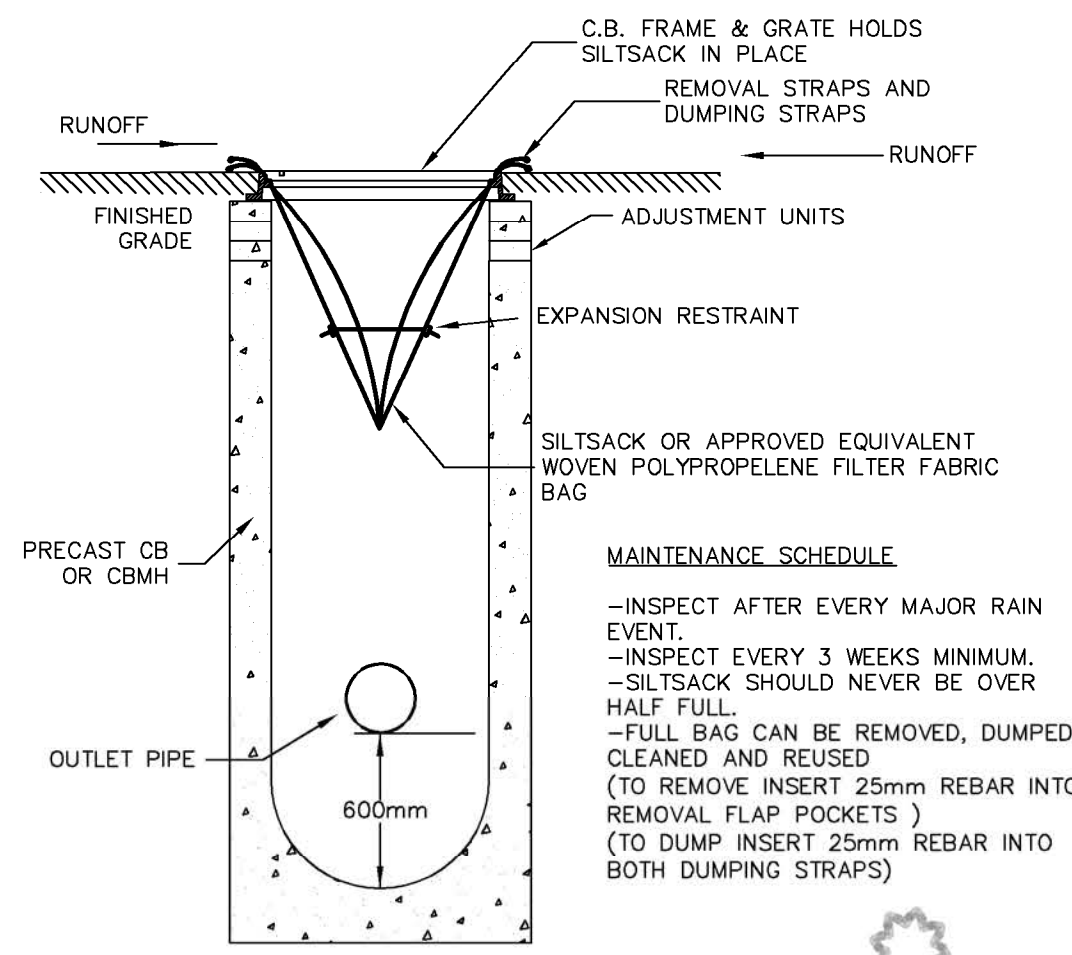
CLIENT  
**RUDANCO HOSPITALITY CORPORATION**  
 4728 DORCHESTER RD NAGARA FALLS, ON  
 PROJECT  
**PROPOSED PLAN OF SUBDIVISION 13030 LUNDY'S LANE**  
 HIGHWAY 20 & THOROLD TOWNLINE RD THOROLD, ON  
 DRAWING  
**EROSION AND SEDIMENT CONTROL PLAN PRE-GRADING**

Project Manager	M.GOJSIC	Project No.	49428-100
Design By	CNF	Checked By	MJG
Drawn By	RXJ	Checked By	CNF
Surveyed By	OTHERS	Drawing No.	
Date	Nov.03/23		<b>P-ES2.1</b>
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November 21, 2023 - 9:10:24 AM - Plotted By: Renc Ji/jens

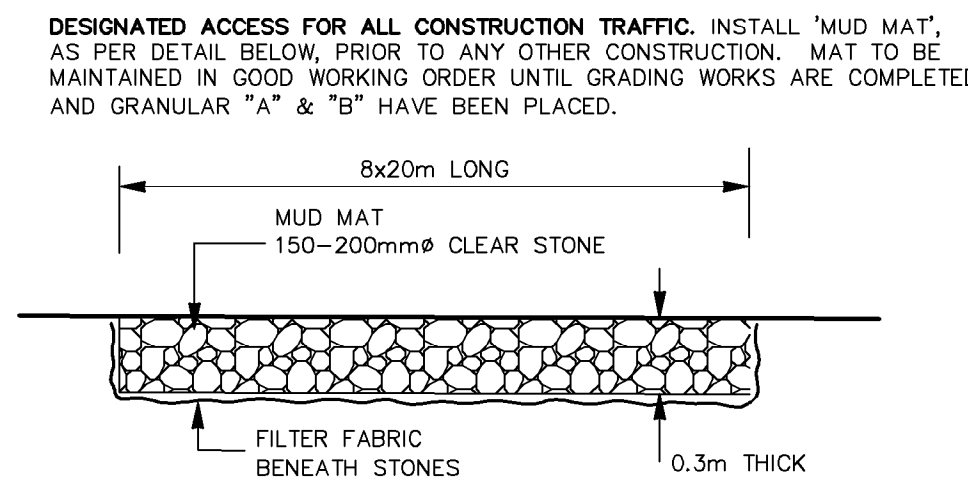
**LEGEND**

- SITE BOUNDARY
- LIMIT OF NOT STRIPPED OR GRADED AREA
- SILTATION AND EROSION DRAINAGE AREA BOUNDARY
- PROPOSED ROW
- EXISTING DRILINE
- EASEMENT
- EXISTING SURFACE CONTOURS
- PROPOSED DRAINAGE DIRECTION
- EXISTING DIRECTION OF DRAINAGE
- EMBANKMENT (SLOPE AS NOTED)
- OVERLAND FLOW DRAINAGE DIRECTION
- PROPOSED TOPSOIL STOCKPILE LOCATION
- LIGHT DUTY EROSION AND SEDIMENT CONTROL FENCE (SEE DETAIL 4 ON ES2.2)
- HEAVY DUTY EROSION AND SEDIMENT CONTROL FENCE (SEE DETAIL 4 ON ES2.2)
- CONSTRUCTION MUD MAT (SEE DETAIL 2 ON ES2.2)
- ROCK CHECK DAM (RCD)
- TEMPORARY DIVERSION BERM
- SEDIMENT TRAP (OPSD 219.220)



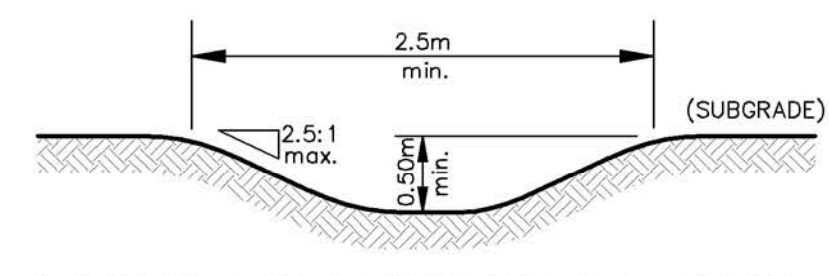
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N.T.S.

**DETAIL 1**



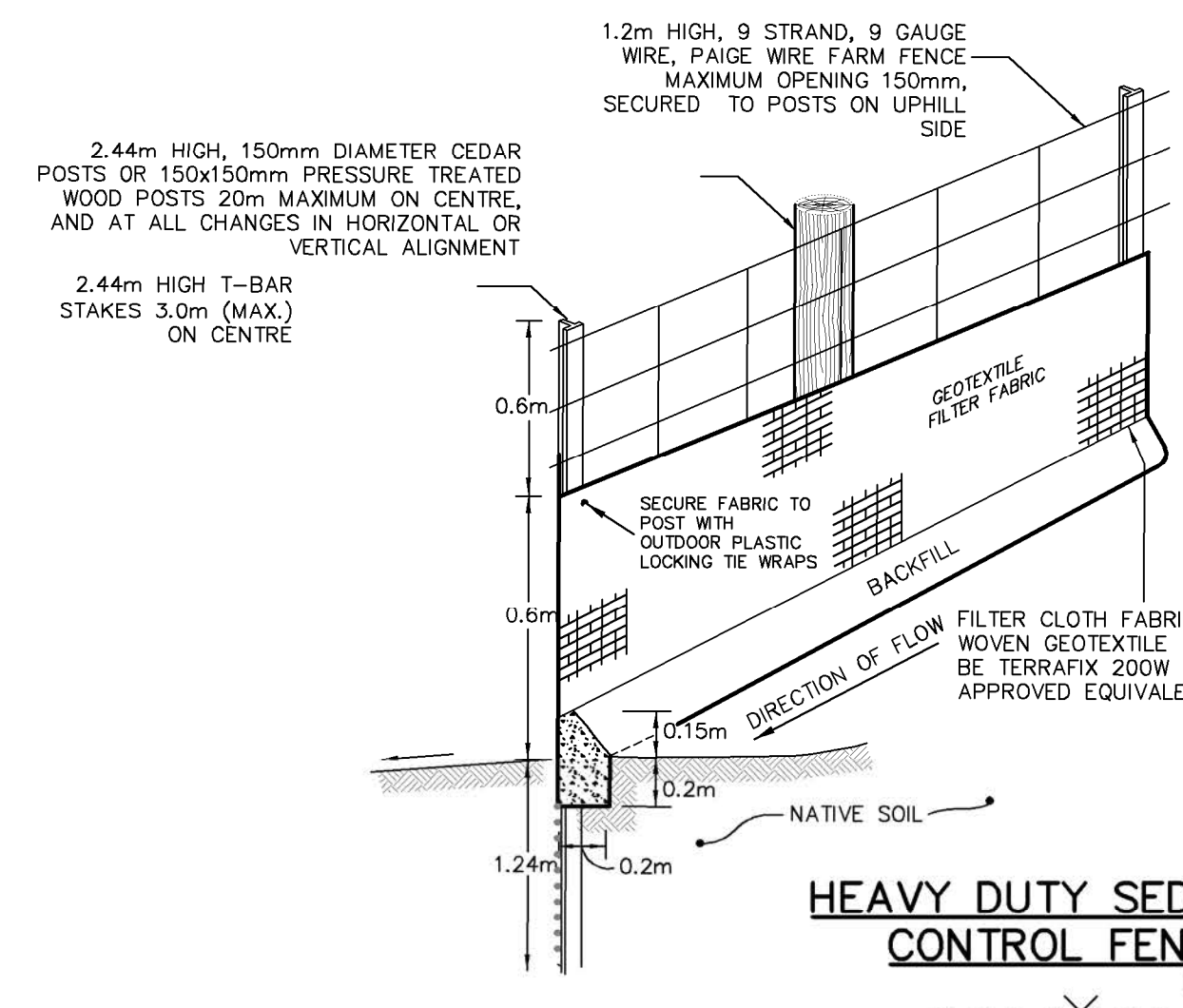
**MUD MAT ENTRANCE DETAIL**  
N.T.S.

**DETAIL 2**



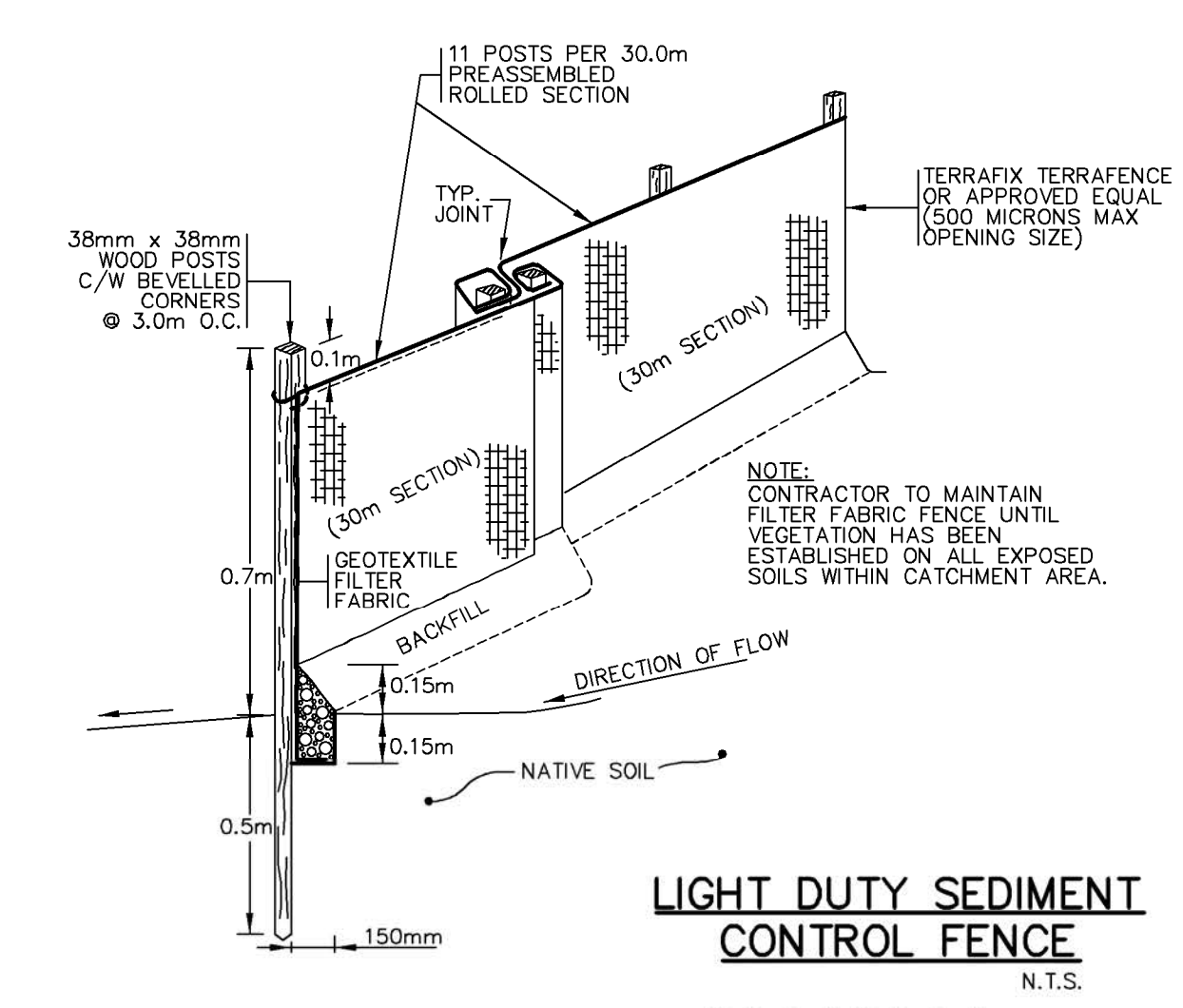
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N.T.S.

**DETAIL 3**



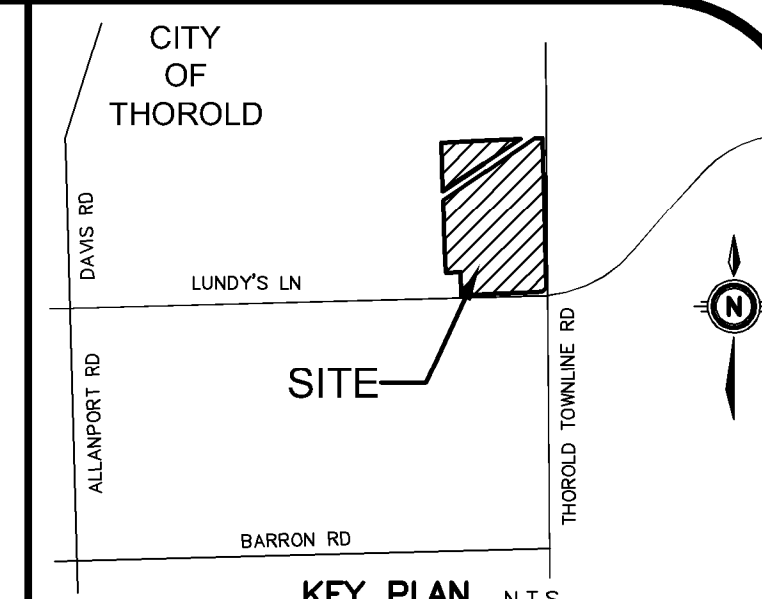
**HEAVY DUTY SEDIMENT CONTROL FENCE**  
N.T.S.

**DETAIL 4**



**LIGHT DUTY SEDIMENT CONTROL FENCE**  
N.T.S.

**DETAIL 5**

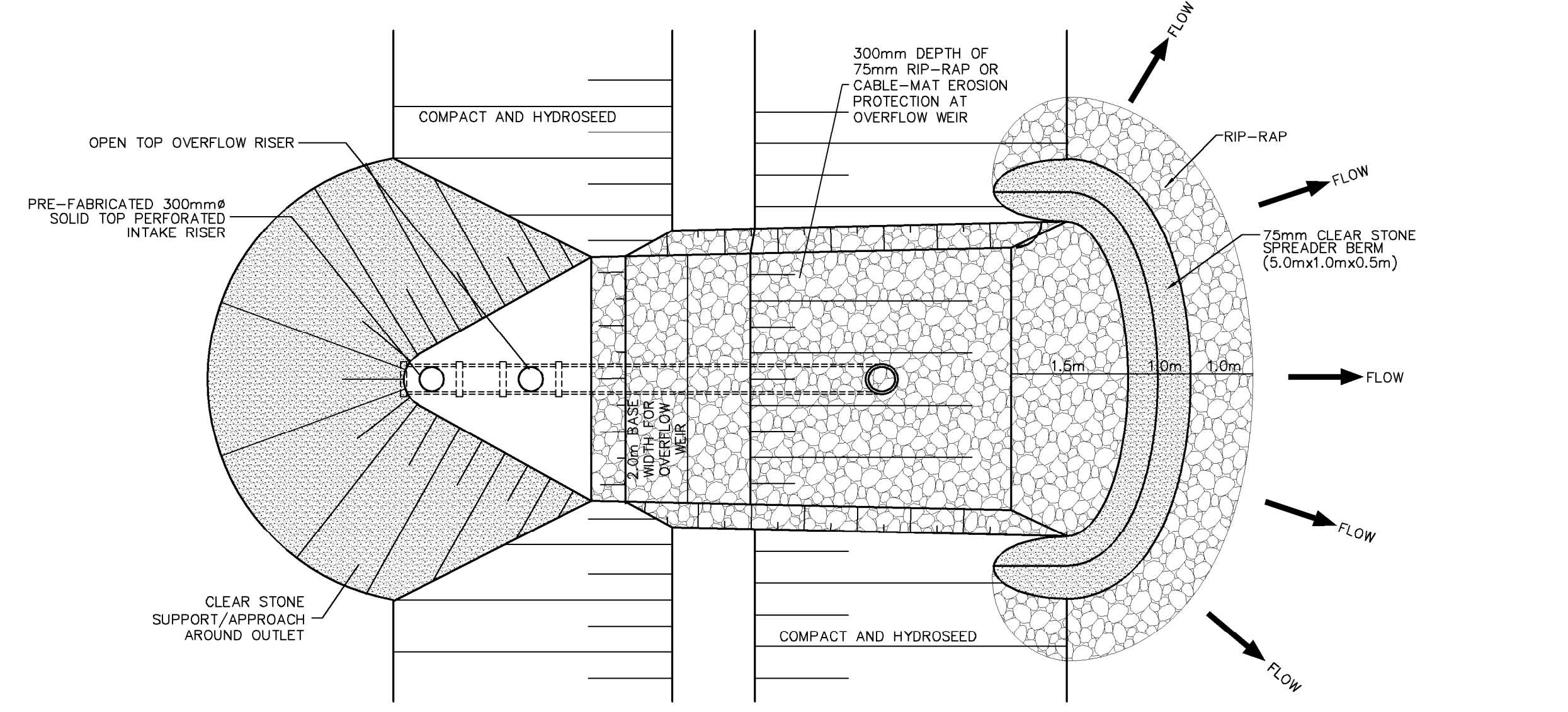


**KEY PLAN** N.T.S.

**GEODETIC BM** ELEV. = **NA**m

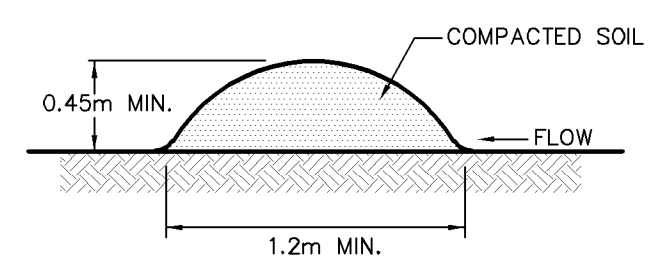
**SITE BENCHMARK** ELEV. = **NA**m

**NOTE TO CONTRACTOR :**  
DO NOT SCALE DRAWINGS.  
CONTRACTORS MUST CHECK AND VERIFY ALL DIMENSIONS BEFORE PROCEEDING WITH THE WORK.  
ALL DRAWINGS REMAIN THE PROPERTY OF THE ENGINEER AND SHALL NOT BE REPRODUCED OR REUSED WITHOUT THE ENGINEER'S WRITTEN PERMISSION.  
THE OWNER/ARCHITECT/CONTRACTOR IS ADVISED THAT M.T.E. CONSULTANTS INC. CANNOT CERTIFY ANY COMPONENT OF THE SITE WORKS NOT INSPECTED DURING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO NOTIFY M.T.E. CONSULTANTS INC. PRIOR TO COMMENCEMENT OF CONSTRUCTION TO ARRANGE FOR INSPECTION.



**ROCK CHECK SILTATION DAM DETAIL**  
N.T.S.

**DETAIL 7**

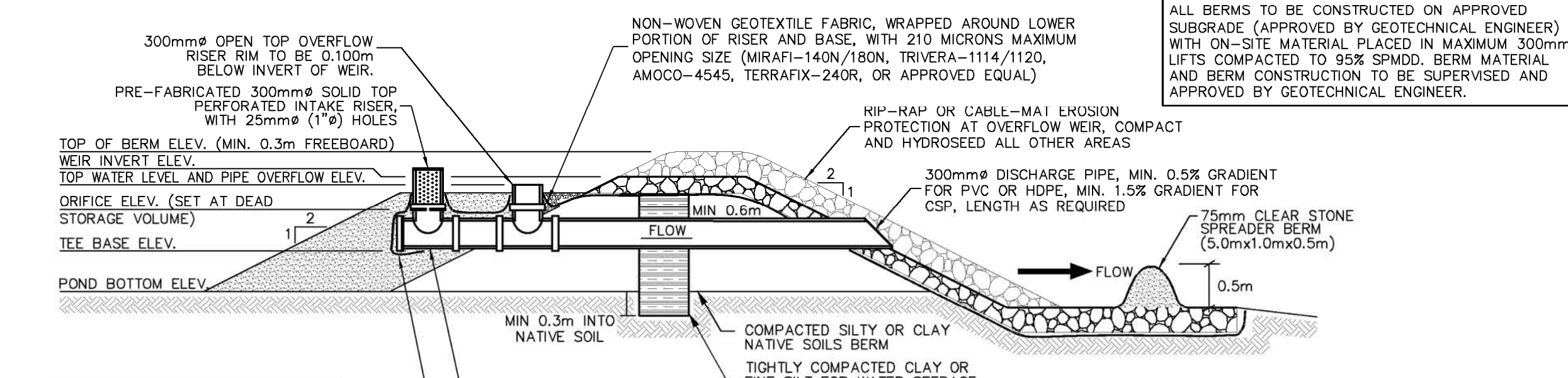


**TEMPORARY DIVERSION BERM**  
N.T.S.

**DETAIL 8**

**RIP-RAP SPECIFICATIONS**

**CLASS 1**  
NOMINAL 300mm Ø OR 36kg WEIGHT GRADING SPECIFICATIONS:  
100% SMALLER THAN 450mm OR 136kg  
AT LEAST 20% LARGER THAN 350mm OR 68kg  
AT LEAST 50% LARGER THAN 300mm OR 36kg  
AT LEAST 80% LARGER THAN 200mm OR 11kg



**TEMPORARY SEDIMENT BASIN AND BERM OUTLET DETAIL**  
N.T.S.

**DETAIL 6**

**GENERAL NOTES :**

- EROSION AND SEDIMENTATION FACILITIES TO BE INSTALLED PRIOR TO ANY AREA GRADING OPERATIONS.
- SITE INSPECTIONS OF THE EROSION CONTROL MEASURES BY THE DEVELOPER'S CONSULTANT ARE TO BE CONDUCTED WEEKLY OR AFTER ANY STORM EVENT GREATER THAN 15mm. INSPECTIONS MUST INCLUDE AN ASSESSMENT OF THE PROPOSED FACILITIES/CONTROLS AND RECOMMENDED CORRECTIVE MEASURES (IF REQUIRED). REPORTS ARE TO BE SUBMITTED MONTHLY TO THE NIAGARA PENINSULA CONSERVATION AUTHORITY AND CITY OF THOROLD.
- ALL EROSION CONTROL MEASURES (INCLUDING SILT FENCE, TEMPORARY SEDIMENT BASINS, INTERCEPTOR SWALES AND STORM STRUCTURE CONTROL MEASURES) ARE TO BE MONITORED BY THE DEVELOPER'S CONSULTANT AND REPAIRS COMMISSIONED AS REQUIRED.
- THE MEASURES AS PROPOSED MAY BE MODIFIED AT THE DISCRETION OF THE ENGINEER TO SUIT THE PROPOSED CONSTRUCTION PROGRAMS. THE GENERAL INTENT OF THE PROPOSED EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES.
- UPON COMPLETION OF THE GRADING OPERATION ALL DISTURBED AREAS SHALL BE RESTORED WITH MULCH AND TREFOIL MIX SEED PER OPS-804 UNLESS FINAL CONSTRUCTION IS SCHEDULED TO COMMENCE WITHIN 1 MONTH OF THE GRADING OPERATION.
- CONTRACTOR AND DEVELOPER'S CONSULTANT TO REVIEW SITE PRIOR TO CONSTRUCTION TO DETERMINE THE NEED FOR MODIFICATIONS TO THIS SCHEDULE. CONTRACTOR IS NOT TO REMOVE ANY EROSION OR SEDIMENT CONTROL FACILITIES UNTIL DIRECTED TO DO SO BY THE ENGINEER.

**SCHEDULE FOR CONSTRUCTION OF EROSION CONTROL MEASURES :**

- INSTALL SEDIMENT FENCE AS ILLUSTRATED. CONSTRUCT SEDIMENT BASINS c/w OUTLET STRUCTURES. INSTALL CONSTRUCTION ACCESS.
- INSTALL "NO DUMPING OR REMOVAL OF TREES" SIGNS.
- CONSTRUCT TEMPORARY INTERCEPTOR SWALES c/w ROCK CHECK DAMS WHERE GRADES PERMIT.
- ROUGH GRADE SUBDIVISION AS FOLLOWS:  
- GRADE AREAS DIRECTING DRAINAGE TO TEMPORARY SEDIMENT BASIN 101, 102, AND 105, AND TO SEDIMENT TRAP 104.  
- SEDIMENT BASINS TO REMAIN IN PLACE UNTIL VEGETATIVE COVER IS ESTABLISHED.
- ESTABLISH VEGETATIVE COVER TO ALL GRADED AREAS.
- REMOVE/DECOMMISSION ALL EROSION CONTROL MEASURES ONCE VEGETATIVE COVERS IS ESTABLISHED. FINE GRADE AND ESTABLISH VEGETATIVE COVER ON REMAINING AFFECTED LOTS WHERE DISTURBED BY REMOVAL/DECOMMISSIONING OF SAID MEASURES.
- AS SERVICING OF EACH PHASE IS COMPLETED, CATCHBASINS OR OTHER POTENTIAL INLET TO THE STORM SEWER SYSTEM SHALL BE PROTECTED WITH SILTSACKS, SILT FENCE, OR STRAW BALE FILTERS (OR COMBINATION THERE OF) AS DIRECTED BY THE ENGINEER TO PREVENT ENTRY OF SEDIMENT TO THE STORM SEWER SYSTEM.

**MAINTENANCE RECOMMENDATIONS :**

- EROSION CONTROL STRUCTURES TO BE MONITORED REGULARLY AND ANY DAMAGE REPAIRED IMMEDIATELY.
- SEDIMENTS TO BE REMOVED WHEN ACCUMULATIONS REACH A MAXIMUM OF 1/3 THE HEIGHT OF THE FABRIC ON THE LIGHT DUTY TYPE FENCE AND 2/3 THE HEIGHT OF THE FABRIC ON THE HEAVY DUTY FENCE TYPE.
- OWNER'S REPRESENTATIVE TO MONITOR EROSION CONTROL STRUCTURES TO ENSURE FENCING IS INSTALLED AND MAINTENANCE IS PERFORMED TO CITY OF THOROLD REQUIREMENTS.

**EROSION AND SEDIMENT CONTROL STRATEGY :**

- ALL MATERIALS AND EQUIPMENT USED FOR THE PURPOSE OF SITE PREPARATION AND PROJECT COMPLETION SHOULD BE OPERATED AND STORED IN A MANNER THAT PREVENTS ANY DELETERIOUS SUBSTANCE (E.G. PETROLEUM PRODUCTS, SILT, DEBRIS, ETC) FROM REACHING GROUND SURFACE OR ENTERING GROUNDWATER.
- ANY STOCKPILED MATERIALS SHOULD BE STORED AND STABILIZED AWAY FROM THE SEDIMENT BASINS.
- VEHICLE AND EQUIPMENT REFUELLING AND MAINTENANCE SHOULD BE CONDUCTED AWAY FROM THE SEDIMENT BASINS.
- ANY PART OF EQUIPMENT ENTERING OPEN WATER OR GROUNDWATER SHOULD BE FREE OF FLUID LEAKS AND EXTERNALLY CLEANED/DEGREASED TO PREVENT ANY DELETERIOUS SUBSTANCES FROM ENTERING THE WATER OR GROUNDWATER.

EROSION & SEDIMENT CONTROL										13030 Lundy's Lane										Date: November 01, 2023	
SEDIMENT BASIN SIZING & CONSTRUCTION INFORMATION										City of Thorold, Ontario										Project Number: 49428-100	
ID Tag	Basin Area	Sediment Basin Design Volume			Bottom Area	Bottom of Basin	Bottom Elevation	Tee Base Elevation	Orifice Plate		Top Water Level & Overflow Pipe		Weir Invert	Top Berm Elevation	Orifice Diameter	Maximum Orifice Flow	Live Storage Drawdown Time	Error Report			
		Dead	Live	Total					Elevation	Dead Volume	Elevation	Total Volume						Dead Volume	Total Volume	Dead	Total
	ha	m <sup>3</sup>	m <sup>3</sup>	m <sup>3</sup>	m <sup>2</sup>	flat/sloped	m	m	m	m	m	m	m	mm	m <sup>3</sup> /s	hrs					
101	2.07	383 (2)	259	642	570	flat	181.65	182.15	182.65	670	183.15	1,530	183.25	183.45	75	0.0087	48.4	OK	OK		
102	14.73	2725 (2)	1,841	4,566	2423	flat	181.85	182.35	182.85	2926	183.35	4,790	183.45	183.65	120	0.0223	50.0	OK	OK		
105	3.55	444 (1)	444	888	544	flat	183.80	184.30	184.80	869	185.27	1,524	185.37	185.57	75	0.0086	48.7	OK	OK		

(1) Dead Storage is based upon minimum 125m<sup>3</sup> volume per ha drainage area. Live Storage is based upon minimum 125m<sup>3</sup> volume per ha drainage area.  
(2) Dead Storage is based upon minimum 185m<sup>3</sup> volume per ha drainage area. Live Storage is based upon minimum 125m<sup>3</sup> volume per ha drainage area.

8.			
7.			
6.			
5.			
4.			
3.			
2.			
1.	FIRST SUBMISSION FOR DRAFT PLAN APPROVAL	RSM	2023-11-23
No.	REVISION	BY	YYYY-MM-DD



905-639-2552

NOT FOR CONSTRUCTION

CLIENT  
**RUDANCO HOSPITALITY CORPORATION**  
4728 DORCHESTER RD. NIAGARA FALLS, ON

PROJECT  
**PROPOSED PLAN OF SUBDIVISION 13030 LUNDY'S LANE**  
HIGHWAY 20 & THOROLD TOWNLINE RD. THOROLD, ON

DRAWING  
**EROSION AND SEDIMENT CONTROL PLAN NOTES AND DETAILS**

Project Manager	M.GOJSIC	Project No.	49428-100
Design By	CNF	Checked By	MJG
Drawn By	RXJ	Checked By	CNF
Surveyed By	OTHERS	Drawing No.	
Date	Nov.03/23		<b>P-ES2.2</b>
Scale	N.T.S.	Sheet	2 of 2