Functional Servicing Report - Niagara Village Development

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Record of Revisions

Revision	Date	Description
0	December 2019	Initial Submission
1	February 6, 2020	Draft Submission
2	March 11, 2020	Final Submission

R.J. Burnside & Associates Limited

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1.0 Introduction and Background

R.J. Burnside & Associates Limited (Burnside) has been retained by 2592693 Ontario Inc. to prepare a Functional Servicing Report (FSR) in support of the proposed Niagara Village development. A Stormwater Management Report will be submitted separately. This FSR will support the application for Draft Plan of Subdivision approval by demonstrating that the subject lands can be provided with municipal servicing in accordance with applicable regulatory requirements and criteria.

1.1 Site Description and Context

The Niagara Village development is 64.06 ha in size and is located on the existing Thundering Waters Golf Course in the City of Niagara Falls. The site is located south of McLeod Road and generally between Oldfield Road and Ramsey Road. Refer to Figure 1 for the location of the site, located within the “Figures” Appendix at the back of this Report.

The site is surrounded by existing residential development to the north, the existing Salit Steel plant to the east and generally undeveloped land to the south and west. To the southwest of this site, work is being undertaken to develop the lands surrounding the Niagara Village site to the south west, known as the Riverfront Community.

The existing Thundering Water Golf Course is crossed by an existing ConRail drain and an adjacent CP Rail, bisecting the development site from north-east going south-west into a north and south parcel for the future development land. The ConRail drain currently provides a stormwater management (SWM) discharge for the north side of the property in question and releasing it into the Welland River to the south-west. There is an intermittent stream on the south side which currently collects drainage from a number of man-made ponds within the golf course.

1.2 Scope of Work

The proposed scope of work for the Niagara Village development was discussed at a pre-consultation meeting with the required agencies on August 2, 2018.

In accordance with the Terms of Reference, the following activities were undertaken to prepare this Functional Servicing Report:

a) Overview of Existing Conditions

- Confirm storm drainage areas from detailed mapping.
- Complete field work to confirm natural features that need to be maintained.
- Prepare a Comprehensive Constraints Map for development of Draft Plans and location of SWM ponds.

- Coordinate geotechnical analysis for slope stability and erosion hazards of the existing features on the site.
- The preliminary grading assessment is noted below as it relates to developed condition.

b) Servicing, Grading and Limits of Development

- Identify the water and sanitary servicing requirements for the development area.
- Prepare a functional servicing sewer system to provide water services as well as sanitary services with possible connection points to outlet into the existing surrounding system.
- Realignment of existing ConRail Drain along existing CP rail corridor.
- Prepare preliminary grading of roads, lots and/or blocks, and ponds to determine impacts and resolution adjacent to environmental features.
- Prepare preliminary grading to incorporate existing underpass crossing underneath existing CP rail corridor together with new realigned ConRail drain.
- Coordinate surveyor to get a legal representation of the development limit.
- Review of possible capacity constraints of the existing service systems and future plans by Niagara Region to accommodate future growth throughout South Niagara (South of Lundy's Lane).

1.3 Background Studies and Documentations

The servicing concepts presented within this report have been developed to comply with the information contained in the following reports, which were established for this area. These following documents, studies, and reports have been incorporated unless otherwise noted:

Document Title	Prepared By	Date
Niagara Falls Thundering Waters Development Functional Servicing Study	Amec Foster Wheeler	June, 2016
Riverfront Community - Infrastructure Requirements Report	Amec Foster Wheeler	September 28th, 2017
Master Servicing Plan for Niagara Region – Volume III	Blue Beam Engineering	June, 2017
Master Servicing Plan for Niagara Region – Volume IV	Blue Beam Engineering	June, 2017
Aquatic Habitat and Fisheries Assessment – Niagara Village	R.J. Burnside & Associates Limited	October, 2018
Preliminary Geotechnical Investigation Report, Proposed Residential Development – Thundering Waters Golf Course	Golder Associates Ltd	May 31, 2018

Document Title	Prepared By	Date
Hydrology Technical Memo – Water Balance Assessment, Thundering Waters Golf Course	Golder Associates Ltd.	July 6, 2018
Environmental Impact Study – Niagara Village Residential Development	R.J. Burnside & Associates Limited	February, 2020
South Niagara Falls Wastewater Solutions – Schedule C Class Environmental Assessment	Region of Niagara and GM BluePlan	November, 2019
Stormwater Management Report – Niagara Village Development	R.J. Burnside & Associates Limited	February, 2020

1.4 Existing Site Conditions

Currently the majority of the site is occupied by the Thundering Waters Golf Course. A CP Rail line runs through the middle of the site, essentially splitting it in two major parcels, the North and South of the existing rail corridor. Adjacent to the CP Rail line is the ConRail Drain which is a drainage feature that conveys upstream flows ultimately to the Welland River located southwest of the site.

There is a provincially significant wetland located, as well as multiple woodlots within the development area, portions of which are proposed to be retained as part of the development plan per the Environmental Impact Study currently being undertaken.

The Thundering Waters Golf Clubhouse is currently serviced from the Existing Green Vista condominium development. There are existing ponds throughout the site. Discussion of these features is contained with the Environmental Impact Study (Burnside 2019). These ponds receive incoming water from a number of sources including a storm pipe near the clubhouse on the north end of the property, and an existing watercourse on the south half of the site near the woodlot to the east. In addition, it appears that a number of the ponds are fed from the existing irrigation system that draws water directly from the Welland River through an existing raw water system connected to the Washington Mills industrial site, east of Stanley Blvd. The ponds on the south half are connected with each other by small watercourses flowing south-westerly, with a discharge at the southern property border into an existing offsite provincially significant wetland.

Please refer to Figure 2 for Existing Site Conditions.

1.4.1 Soil Conditions

A geotechnical investigation for the study area was completed by Golder Associates Ltd. Based upon the findings, the site is covered by a topsoil and/or sand and gravel underlain by predominantly silty clay and/or silty sand fill. The topsoil thickness

generally ranged from 150 mm to 300 mm. Bedrock is approximately 29 m below the surface on the east side of the site and 18 m below on the west side.

The site is predominantly underlain by a silty clay and/or silty sand fill, which overlies an extensive deposit of bedded silt and clay with varying degrees of plasticity.

1.4.2 Groundwater Conditions

Groundwater conditions were monitored, and it was found that the water tables varied from 1.1 m to deeper than 11.7 m below ground level. The shallower water table depths were generally located in the western portion of the site, adjacent to the provincially significant wetlands on the north side of the CP Rail corridor.

1.4.3 Environmental Features

A detailed description of the natural features and functions of the subject property is presented in the Environmental Impact Study (by Burnside February 2020).

1.5 Proposed Site Concept

The development site will include around 232 Single Family Detached Dwelling lots, 39 Street Townhouses as well as numerous Mixed Used-Medium Density Blocks, Retirement Single Detached Block, Parks, Existing Wood Lots and Multi-Use Trails.

Two stormwater management ponds are introduced on site for quality and quantity control, each located north and south of the existing rail corridor. It is the intention of the owner to coordinate the relocation of the existing ConRail Drain, which needs to be realigned to comply with the proposed servicing of the site.

The existing Drummond Road and Ramsey Road will be extended and will be connected to each other to provide the major access road for the proposed subdivision. In addition, the existing Oldfield Road will also be extended and connected to Ramsey Road to provide an additional access points into the development site. A rail crossing is proposed within each road extension to allow a smooth connection between the north end (Drummond Road) and the south end (Ramsey Road). In addition, the existing pedestrian (golf cart) underpass crossing the existing rail corridor will stay in place, to be incorporated into the multi-use trail system.

The site will be serviced by a water and sanitary sewer system throughout the site, with connection and discharge points at Oldfield and Drummond Road intersection for the north parcel and at Ramsey Road and Stanley Avenue Intersection for the southern parcel. This servicing concept will eliminate any interference and modification on the existing rail corridor. Additional utilities like hydro, gas and cable will also be provided from these specific connection points.

Please refer to Figure 3 for Preliminary Draft Plan.

2.0 Roadways

2.1 Municipal Right of Ways

All road way Right of Ways (ROW) are based on the City of Niagara standard for a 26.0 m ROW (Drawing NF-STD-203), 23.0 m ROW (Drawing NF-STD-202-C) and an 18.0 m ROW (Drawing NF-STD-200), which can be found within Appendix A.

The 26.0 m ROW will be introduced for the connection roads between Drummond Road Extension and Ramsey Road Extension connecting the north access point with the south access point of the proposed site.

Along the Oldfield Extension an existing easement of 50.0 m in width is currently in place, in which the existing 1,200 mm Sanitary and 1,050 mm Watermain is located running from the John Daly Way and Thundering Waters Blvd intersection towards Oldfield Road. After review, we propose that the width of this easement can be reduced to a 23.0 m ROW, allowing all existing as well as proposed services to be included within it. The Oldfield Road Extension will run south east where it will connect at Ramsey Road and allow a second road connection between the north access and south access points for this proposed development site. Please see Figure 8 for the Typical Proposed Street Cross Section for Oldfield Road Extension.

The 18.0 m ROWs will be used throughout the proposed subdivision connecting into the proposed 26.0 m and 23.0 m ROWs.

3.0 Water Distribution

3.1 Water Design Criteria

The proposed water distribution within the property will be designed and constructed to current City of Niagara Falls and MOECC criteria and specifications, which are as follows:

- Peak hourly demand plus fire flow.
- Pressure in transmission watermains to be minimum 40 psi (275 kPa) during peak hour demands at hydrant elevation.
- Pressure in a transmission main under condition of simultaneous peak hour flow and fire flow demands is to be not less than 20 psi (140 kPa) at the point in the system where the fire flow is being drawn. Fire Flow shall be minimum 80.0 L/sec.

3.2 Pressure Zone Boundaries

The development site is currently within the 250 m Pressure Zone, which gives the proposed site an accessibility of a water supply at a minimum demanding pressure between 80-90 psi and fire flow exceeding 250 L/sec.

3.3 Existing Water Infrastructure

The existing Thundering Waters Golf Clubhouse is surrounded by the Green Vista condominium infrastructure. No services are proposed to be made to connect to this private development.

There is existing 300 mm Watermain on Drummond Road and Oldfield with an additional Regional 1,050 mm Watermain trunk pipe connecting from Oldfield Road and entering our site on the west side and continuing east where it is connecting to John Daly Way and Thundering Waters Blvd intersection through an existing easement passing the new constructed Green Vista Gate Condominium block on the south side. From that intersection the 1,050 mm trunk watermain continues southwesterly, where it crosses the existing CP Rail south easterly within an easement toward the intersection of Ramsey and Stanley.

In addition, an existing 200 mm watermain is running along the south side of Ramsey Road, which connects to an existing 300 mm watermain at the Stanley Avenue and Ramsey Road intersection.

3.4 Proposed Water Distribution Layout

The preliminary Water Distribution Plan (Drawing WAT1) of this FSR is a preliminary plan indicating connection points, as well as layout and routing for the proposed watermain. There will be two separate watermain loops introduced to eliminate any

required crossing of the existing rail corridor. A minimum cover of 1.5 m will be ensured for the entire length of water services within the developments site.

The north loop will connect to the exiting 300 mm watermain at Drummond Road and Oldfield Road Intersection and will service all the lots and blocks north of the existing rail corridor. The south loop, which will service all the proposed lots and blocks south of the rail corridor, will be connected to the existing 200 mm watermain at Ramsey Road at the southern property limits.

No Connections to the existing Regional 1050mm trunk watermain are proposed within this development.

3.5 External Water Distribution Improvements

The 2016 Water Master Servicing Plan indicates that the future grow demand will not exceed the maximum growth targets that have been established for this area and that the demand maximum pressure to be between 80-90 psi and the fire flow will still exceed 250 L/sec in 2041. In addition, a new elevated tank will be introduced just south west of the new development site together with a new trunk watermain going south and looping around the Welland River, which will additionally enhance the water supply.

4.0 Wastewater Servicing

4.1 Wastewater Design Criteria

The proposed wastewater sewers will be designed and constructed to current City of Niagara Falls and MECP criteria and specifications. The following summary of applicable City of Niagara criteria will be applied in generating the average and peak flows:

- Residential flow rate: 450 L/capita/day
- Infiltration: Max. 0.28 L/ha.sec
- Peaking Factor: Babbit Peaking Factor
- Population Densities:
  - Low Density (Single Detached Units): 3.0 ppu
  - Medium Density (Townhouse/Condo Units): 2.5 ppu
  - Retirment Facility / Long Term Care: 2.5 ppu
- Design Minimum and Maximum:
  - Pipe Diameter: Minimum size for local sanitary sewer is 200 mm.
  - Flow Velocity: Max. 3.0 m/s for full pipe, Min. 0.6 m/s at dry weather flow.
  - Slopes: Min. Slope in the highest or starting leg shall be 0.6 %

Sanitary Design Sheets will be prepared during detailed designed stage to confirm that the above parameters are within the acceptable limits per City of Niagara Falls standard and to confirm sizing of sanitary sewerss within the site.

4.2 Existing Wastewater Infrastructure

Currently there is an existing 1,200 mm sanitary trunk gravity sewer going through the north parcel of the development site, connecting the John Daly Way and Thundering Waters Boulevard intersection with the Oldfield Road and Drummond Road intersection going west along Oldfield Road into the South Side High Lift Sanitary Pumping Station (SSHLPS), located on the west side of the Welland Cannel.

South of the development site, there is a 375 mm sanitary sewer on Ramsey Road going east, connecting to a 525 mm sanitary trunk sewer at the Ramsey and Stanley Road intersection. The sanitary trunk sewer flows south by gravity to the South Side Low Lift Sanitary Pumping Station (SSLLPS), which pumps the sewage back up north to the John Daly Way and Thundering Waters Boulevard intersection through a 600 mm forcemain pipe, where it flows by gravity through our north parcel towards Oldfield Road.

Currently, Oldfield outlets to the SSHLPS. It is anticipated that prior to final buildout of this site, the South Niagara Wastewater Treatment Facility will be constructed close to the current location of the SSHLPS, as stated in Section 4.4 below.

4.3 Proposed Wastewater Servicing

The portion of the development located north of the rail will be serviced by a new internal sanitary sewer system which will connect and discharge into the existing 1,200 mm sanitary gravity trunk sewer at Drummond Road and Oldfield Road by connecting to existing MH10 and MH11. From there the trunk sewer flows by gravity west into Oldfield Road, where it reaches the SSHLPS.

While there may be some benefit to consider a pumping station to service this development, the City has requested that we service the development lands south of the existing rail by a new internal sanitary sewer pipe system that will flow south by gravity along Ramsey Road Extension, connecting to the existing sewer located at Ramsey Road and Stanley Road intersection, from where the flow continues going south on Stanley into the SSLLPS.

Please refer to Drawing SAN1 for the Preliminary Wastewater Distribution Plan, as well as Figure 6 for the Sanitary Drainage Plan.

4.4 Downstream Wastewater Improvements in the Future

The capacity of the SSLLPS (392 L/s) has currently not been reached and, considering the future grow statistics as stated in the 2016 Master Servicing Plan, the capacity will not be reached by 2041 and still have a surplus of 37 L/s.

The SSHLPS is currently close to capacity with the current intake flow of 726 L/s and a capacity of 760 L/s. With an estimated required capacity of 1093 L/s by 2041 the SSHLPS will have a deficit of 333 L/s, as stated within the 2016 Master Serving Plan future growth. The future proposed connection of the new Riverfront Subdivision will exceed the current capacity.

These capacity issues are well known by the City and the Region, and therefore a new South Niagara Falls Wastewater Treatment Plant (SNFWWTP) is proposed for Southern Niagara to be build south-west from the development site, adjacent to the Welland River. The new SNFWWTP will accommodate future growth within the southern portion of Niagara Falls, by improving the increasing capacity on the existing sanitary and combined stormwater systems during wet weather flow events and at the same time will free up the capacity of existing sanitary infrastructures south of Lundy's Lane and the current wastewater treatment plan on Stanley Avenue.

Burnside is in close contact with Niagara Region and the PMs responsible for the new SNFWWTP location and design. Once the location of the treatment plant is confirmed by Niagara Region in Winter 2020, additional investigation will take place, during the detail design stage, to confirm the outlets of this site.

5.0 Utilities

5.1 Utilities

Utilities will be installed in a joint utility trench. Design will be provided by the utility companies. It appears that there are connections for natural gas and electrical supply adjacent to the perimeter of the site and during detailed design, consultation with Enbridge (natural gas) and Niagara Peninsula Energy (hydro), will be made to confirm adequate external utility supply will be confirmed.

6.0 Grading and Storm Drainage

6.1 Site Grading

The conceptual site grading design provided in drawing GRD1, GRD2 and GRD3 of the FSR has been developed in consideration of the following requirements and constraints:

- Conformance of the City of Niagara Falls grading and drainage criteria.
- Incorporate existing underpass (grades) below existing rail corridor into the proposed trail system and realigned ConRail Drain.
- Matching of existing boundary grades.
- Optimization of earthworks (i.e., minimizing fill).
- Provision for adequate cover on proposed services.
- Provision for overland flow conveyance on the roadways to the proposed SWM ponds (i.e. major system storm drainage and emergency overland flow)
- Conveyance of stormwater within site and minimize external runoff.

The road grades indicated allow for overland flow conveyance on the future ROWs in order to direct major storm drainage to the future SMW ponds.

6.2 Existing ConRail Drain Realignment

The realignment of the existing ConRail Drain is proposed in order to promote a more contiguous development as well as reduce service crossing required underneath the ConRail Drain and underneath the existing railway corridor. The land between the existing Conrail Drain and the existing Rail corridor would not be able to be serviced as the existing ConRail Drain is too deep to allow services to go underneath to the north and at the same time connect to existing inverts at the Drummond and Oldfield intersection. On the other hand, services under the existing rail, going south, are costly to construct and to maintain in the future and therefore should be avoided.

The EIS stated that the aquatic survey determined that Type 1 and Type 2 fish habitat are not presented within the Study Habitat. In additional, it was confirmed by DFO that SAR mussel habitat is not present in the Conrail Drainage Channel. Overall, the Conrail Drainage Channel was assessed as providing marginal Type 3 fish habitat to tolerant, low sensitive fish species based on receiving storm water and surface runoff from the surrounding area. There was limited habitat features in the Conrail Drainage Channel due to the channel morphology (linear and trapezoidal) and substrate type (rip rap bed and banks). The aquatic assessment shows that the ConRail Drain was designed as a SWM controlling feature only. Therefore, realignment of the ConRail drain would have minimum impact to the aquatic life based on being classified as Type 3 (Marginal) habitat within the existing ConRail Drain.

The width and depth, including the slope within the realigned Conrail Drain will be the same as the prior existing ConRail Drain, as it can be seen in Drawing CRDP, showing

the Plan and Profile of the realigned ConRail Drain. The area of City's Lands required to be purchased is around 1.40ha, in exchange the land provided to the proposed realigned Conrail Drain is around 2.70ha, as it can be seen in Figure 9.

The existing pedestrian bridge, currently crossing the ConRail Drain will be reused, relocated and incorporated into the proposed trail system along the new aligned ConRail Drain, allowing the crossing of Rail through the existing underpass, as seen in Figure 7.

6.3 Existing Storm Drainage

There are two major existing storm drainage areas, which are separated by the existing rail track, stated as South and North of the existing CP Rail corridor. For more details concerning the existing Storm Drainage, please refer to the SWM Report prepared by Burnside dated February 2020.

Please refer to Figure 4, which shows the Existing Stormwater Drainage Area Plan.

6.4 Proposed Storm Drainage

Two SWM Ponds are proposed, one for the north side and the second on the south side of the existing CP Rail, to meet the Region's SWM criteria concerning the Quantity, Quality, Erosion Control, Water Balance and Conveyance of storm drainage for this development site. For more details concerning the Proposed Drainage Area, please refer to the SWM Report prepared by Burnside dated February 2020.

The Post Development Drainage Areas are shown on Figure 5.

6.5 Foundation Drain Collection

All proposed foundation drains will be connected to storm sewer, if available, or pumped to surface if no storm sewer is available, as requested by the City of Niagara Falls Standards.

6.6 Minor System Conveyance

As per City of Niagara Falls standards, the minor system flow will be conveyed through a series of storm sewers sized in combination with catch basins (CB) located within the Right of Ways (ROW) and rear yards to convey the 5-year return storm design flow. Two Storm Management Ponds were introduced to collect the storm discharge, one on the north side and the second on the south side of the existing CP rail.

Drawing STM1 shows the overall layout for the preliminary Storm Sewer Network for north and south drainage areas.

6.7 Major System Conveyance

The major system will convey the 100-year storms within the proposed ROW curb lines and direct the flow into the proposed north and south SWM ponds as overland flows. For more details concerning the Major System Conveyance, please refer to the SWM Report prepared by Burnside, dated February 2020.

6.8 External Drainage Conveyance

There is currently a large external drainage area coming into the site from the east, just south the existing CP rail, label as EXT1 and EXT2 on Figure 4. The total area is 11.69 ha in size.

In addition, there are two external drainage area coming into our system on the north side, which are label as EXT3 and EXT 4 in Figure 4. The first is coming from the adjacent Thundering Water Village development site, at the north-east corner of the site and the second from the existing five back split lots along Eaglewood Drive from the north. These external drainage areas have a total area of 0.30 ha.

For more details concerning the External Drainage Conveyance, please refer to the SWM Report prepared by Burnside, dated February 2020.

7.0 Erosion and Sediment Control

The erosion and sediment control plan for the site will be developed in accordance with the City of Niagara Falls and the Niagara Peninsula Conservation Authority (NCPA) guidelines. The plan will be completed at detail design stage prior to the undertaking of any grading activity on site.

Erosion and sediment control will be implemented for all construction activities including topsoil stripping, foundation excavation and stockpiling of material. The following erosion and sediment control measures will be implemented.

- A temporary sediment control fence will be placed around perimeter of all areas to be disturbed prior to grading. Double row fencing may be appropriate adjacent to sensitive natural areas.
- Appropriate designed sediment control ponds will be provided.
- Catchbasin sediment traps will be provided on existing catchbasins being possible being affected by the construction as well as new installed catchbasins within the new development site.
- Check dams, etc., for erosion / velocity control will be provided.
- Gravel mud mats will be provided at all construction access points to minimize off-site tracking of sediment.

All temporary erosion and sediment control measures will be routinely inspected and repaired if required during construction. Temporary controls will not be removed until the areas they served have been restored and stabilized

Connection to LID measures will not be completed until the site is stabilized with vegetation to minimize sediment accumulation and maintenance issue.

All reasonable measures will be taken to ensure that sediment loading is minimized both during and following construction. Additional details will be provided as part of the detailed design.

8.0 Conclusions and Recommendations

The report addressed the requirements for submission of a Functional Servicing Report to support the current Draft Plan Application for the Niagara Village Subdivision Development. With the significance of realigning the existing ConRail Drain this Functional Servicing Report demonstrates that the proposed development site can be developed on full municipal services as seen in the Conceptual Underground Servicing Plan Drawing (CUSP).

BURNSIDE

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Figures

KEY MAP OF ONTARIO

BURNSIDE

Client

2592693 ONTARIO INC.

Figure Title

NIAGARA VILLAGE DEVELOPMENT

SITE LOCATION PLAN

Drawn	Checked	Date	Figure No.
KT	DN	19/12/13	**FIG1**
Scale		Project No.	
N.T.S.		041230.0500	

File: \\MONTY\Shared Work Areas\041230 - Niagara Village\041230.0500 FSR\07_Figures\FSR FIGURES\041230.0500 - SITE LOCATION PLAN.dwg Date Plotted: February 5, 2020 - 12:58 PM

LIONSHEAD AVE

Existing Residential

DRUMMOND ROAD

OLDFIELD ROAD

EXISTING CONRAIL DRAINAGE CHANNEL

CANADIAN PACIFIC RAIL CORRIDOR

EXISTING CONRAIL DRAINAGE CHANNEL

EXISTING WOODLOT

Salit Steel

Washington Mills Electro Minerals

Marineland Administration

Vacant

STANLEY AVE

RAMSEY ROAD

Provincially Significant Wetland

Chemtrade Logistics

EXISTING CONRAIL DRAINAGE CHANNEL

EXISTING WETLAND

CANADIAN PACIFIC RAIL CORRIDOR

Provincially Significant Wetland

Provincially Significant Wetland

EXISTING WATERCOURSE

Kister Road

KISTER ROAD

Existing Industrial / Residential

McClive St.

CP Rail

N

0 50 100 200 300 400

Metres

LEGEND:

PROPERTY BOUNDARY

BURNSIDE

Client

2592693 ONTARIO INC.

Figure Title

NIAGARA VILLAGE DEVELOPMENT

EXISTING CONDITIONS PLAN

Drawn	Checked	Date	Figure No.
KT	RS	19/12/13	**FIG2**
Scale		Project No.	
1:5000		041230.0500	

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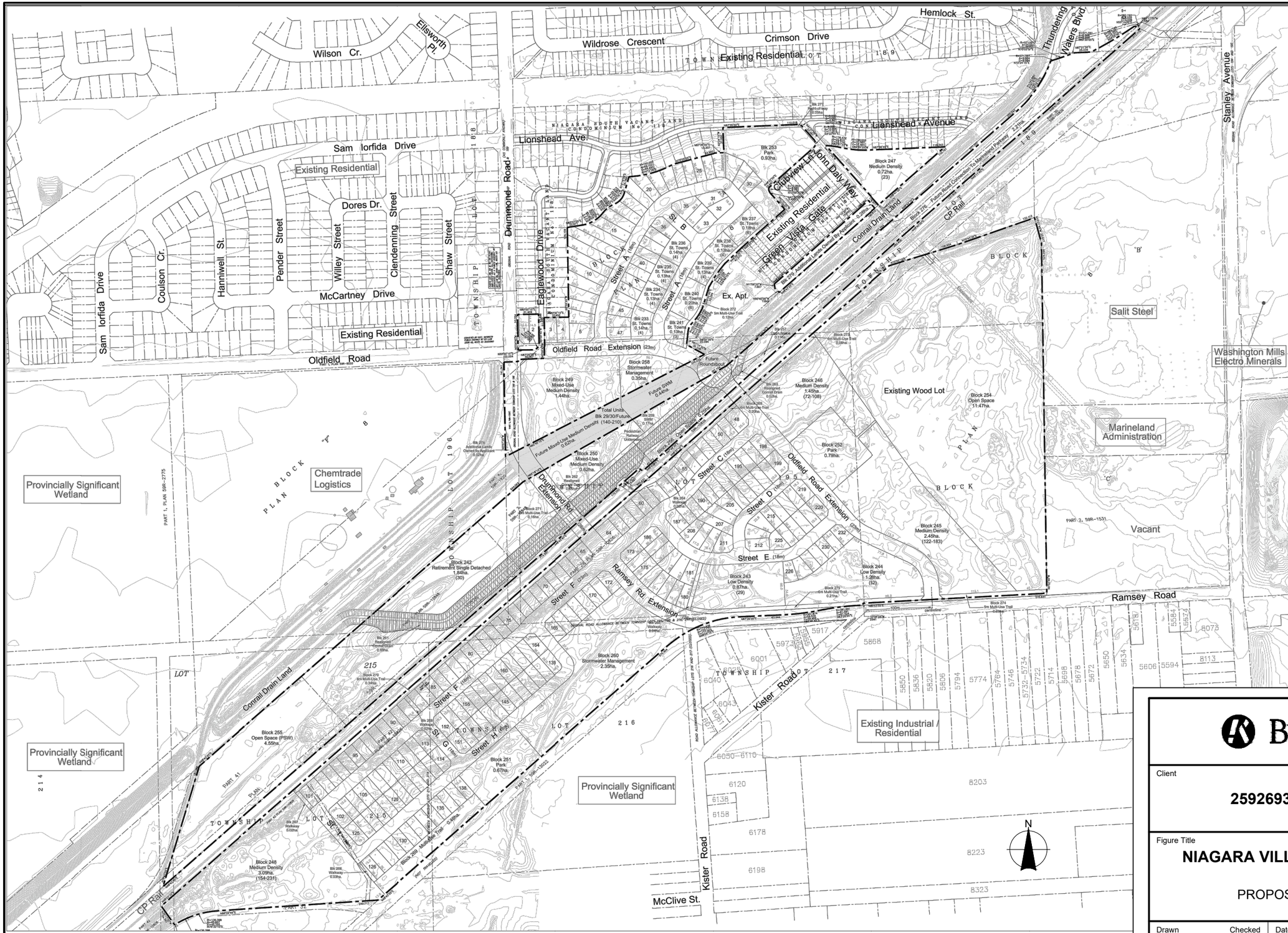
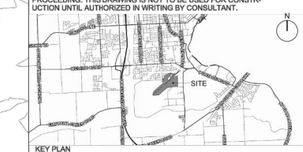


DRAFT PLAN OF SUBDIVISION AS PROVIDED BY GSP GROUP, JAN 29/2020

CONTRACTOR SHALL CHECK ALL DIMENSIONS ON THE WORK AND REPORT ANY DISCREPANCY TO THE CONSULTANT BEFORE PROCEEDING. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNTIL AUTHORIZED IN WRITING BY CONSULTANT.



KEY PLAN

REVISION

NO.	DATE	DESCRIPTION
01	23/05/2019	DRAFT SUBDIVISION PLAN
02	28/05/2019	DRAFT SUBDIVISION PLAN
03	29/05/2019	DRAFT SUBDIVISION PLAN
04	19/08/2019	DRAFT SUBDIVISION PLAN (GSP)
05	05/09/2019	DRAFT SUBDIVISION PLAN (GSP)
06	09/19/2019	DRAFT SUBDIVISION PLAN (GSP)
07	12/12/2019	DRAFT SUBDIVISION PLAN (GSP)
08	28/01/2020	DRAFT SUBDIVISION PLAN (GSP)

LEGEND

- Property Line
- City Owned Land to be Acquired
- Realigned Conrail Drain

LAND USE SCHEDULE

USE	LOTS / BLOCKS	UNITS	AREA (ha.)
Single Detached Residential	1-232	232	13.66
Street Townhouses	233-241	39	1.31
Retirement Singles	242	30	1.84
Low Density Residential	243,244	81	2.15
Medium Density Residential	245-248	371-545	7.71
Mixed-Use Medium Density Residential	249,250	140-210	2.06
Park / Parkette	251-253		2.39
Open Space	254-257		16.38
Stormwater Management	258-260		2.87
Realigned Conrail Drain	261-263		1.55
Walkway	264-268		0.13
Multi-Use Trail	269-275		1.52
Future Road Connection	276		2.21
Right-of-way	277		0.05
Additional Lands	278,279		0.30
Roads			7.93
TOTAL		893-1137	64.06

UNIT BREAKDOWN

Singles	232
Retirement Singles Condo	30
Street Townhouses	39
Low Density Residential (towns, back-to-back towns)	81
Medium Density Residential (towns, back-to-back towns, or low rise apartments)	371-545
Total	753-927

ADDITIONAL INFORMATION
(UNDER SECTION 51(17) OF THE PLANNING ACT)
INFORMATION REQUIRED BY CLAUSES a,b,c,d,e,f,g,j and I ARE AS SHOWN ON THE DRAFT PLAN.
h) Municipal water supply
i) Silt clay and minor sand
k) All sanitary and storm sewers as required

OWNER'S CERTIFICATE
I AUTHORIZE THE GSP GROUP INC. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE CITY OF NIAGARA FALLS.

2592693 ONTARIO INC. DATE

SURVEYOR'S CERTIFICATE
I CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE CORRECTLY SHOWN.

Dasha Page, O.L.S. DATE
J.D. BARNES LIMITED

Client Information:

BURNSIDE

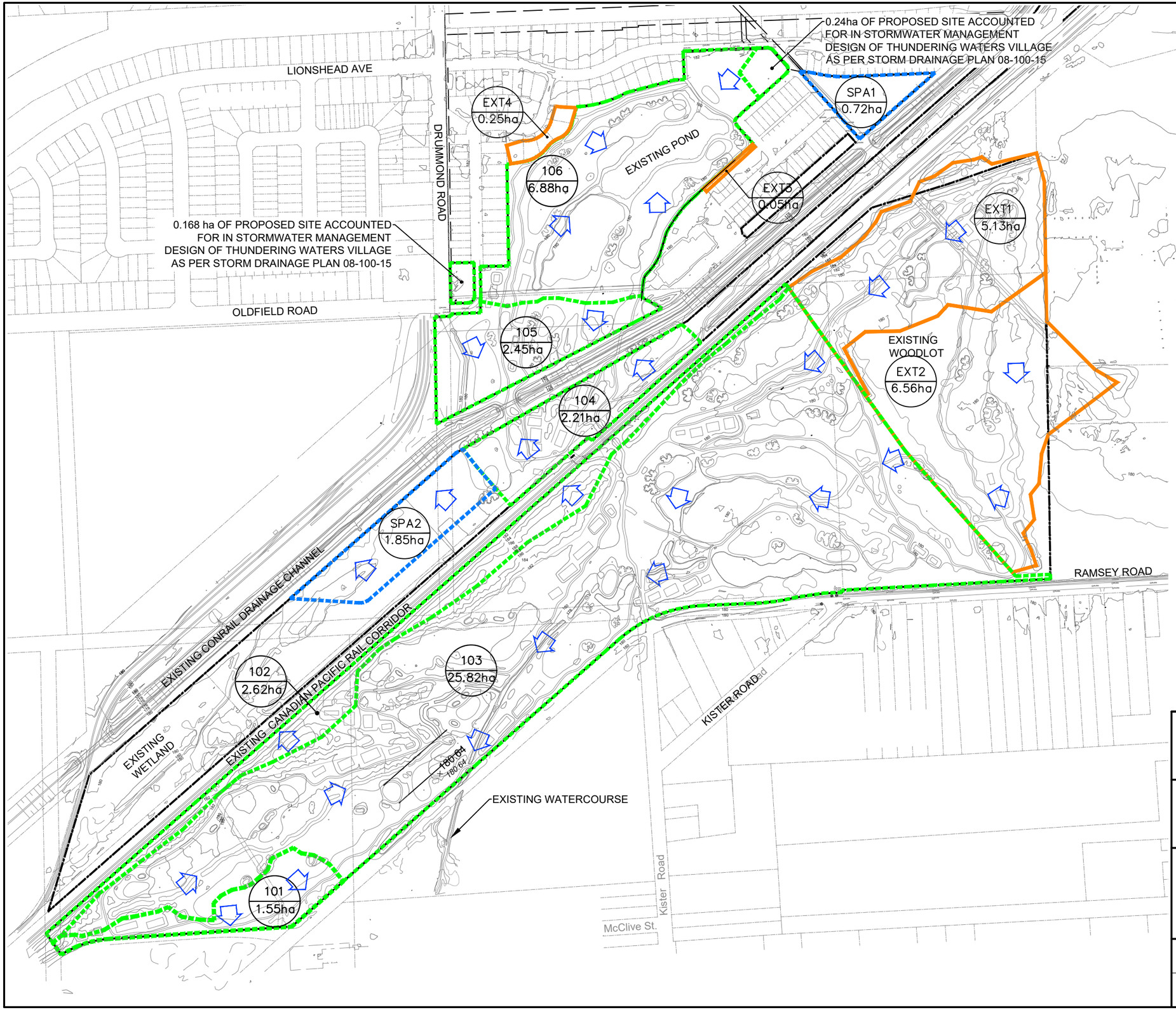
Client
2592693 ONTARIO INC.

Figure Title
NIAGARA VILLAGE DEVELOPMENT

PROPOSED DRAFT PLAN

Drawn	Checked	Date	Figure No.
BF	RS	19/12/13	FIG3
Scale N.T.S.		Project No. 041230.0500	

File: \\MONTY\Shared Work Areas\041230 - Niagara Village\041230.0500 FSR\07_Figures\FSR FIGURES\041230.0500 - PROPOSED DRAFT PLAN.dwg Date Plotted: February 5, 2020 - 11:32 AM



BURNSIDE

Client

2592693 ONTARIO INC.

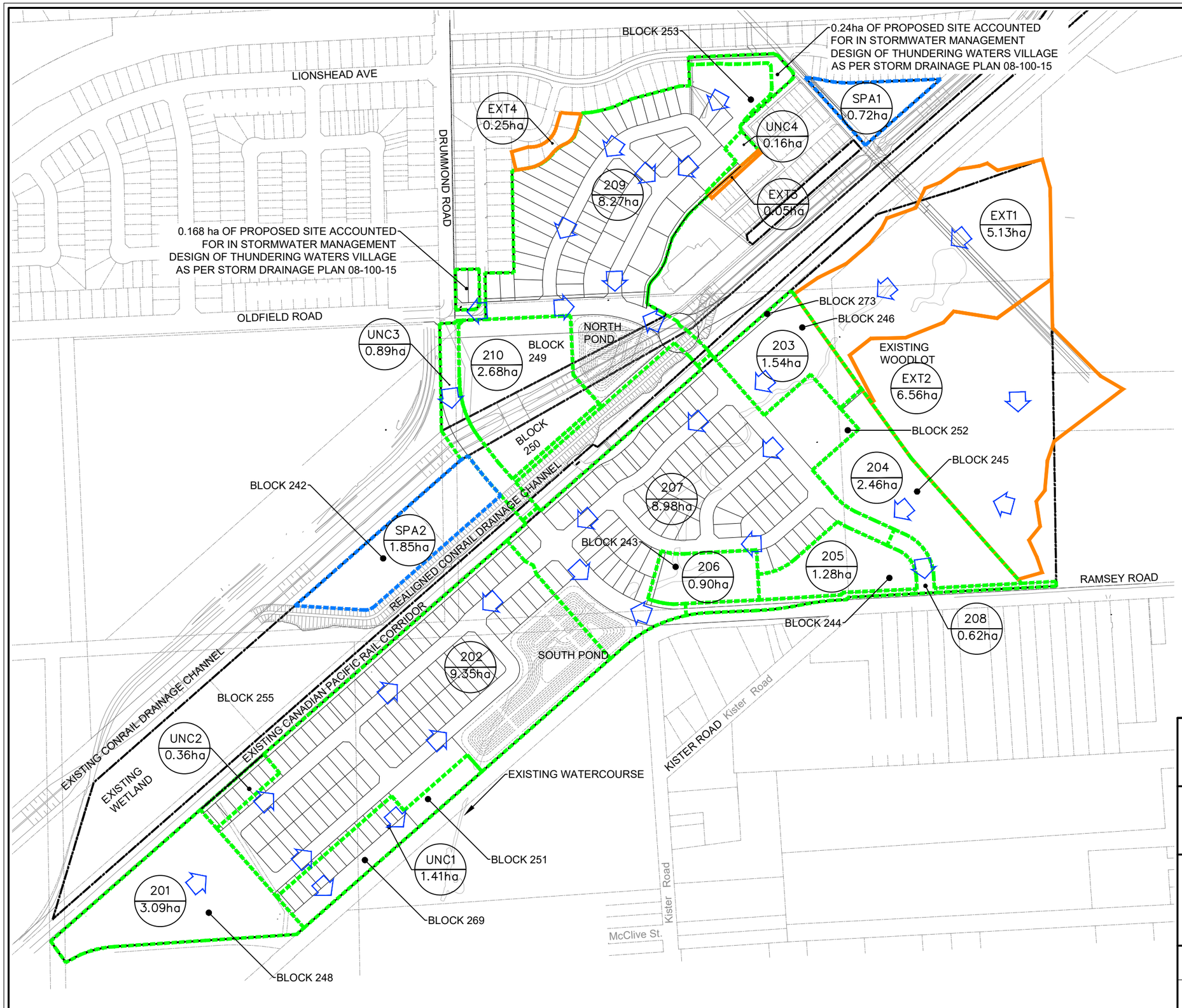
Figure Title

NIAGARA VILLAGE DEVELOPMENT

EXISTING STORMWATER DRAINAGE AREA PLAN

Drawn	Checked	Date	Figure No.
BF	RS	19/12/13	**FIG4**
Scale		Project No.	
1:5000		041230.0500	

File: \\MONTY\Shared Work Areas\041230 - Niagara Village\041230.0500 FSR\07_Figures\FSR FIGURES\041230.0500 - PRE & POST DRAINAGE AREA PLAN.dwg Date Plotted: February 5, 2020 - 11:32 AM



BURNSIDE

Client

2592693 ONTARIO INC.

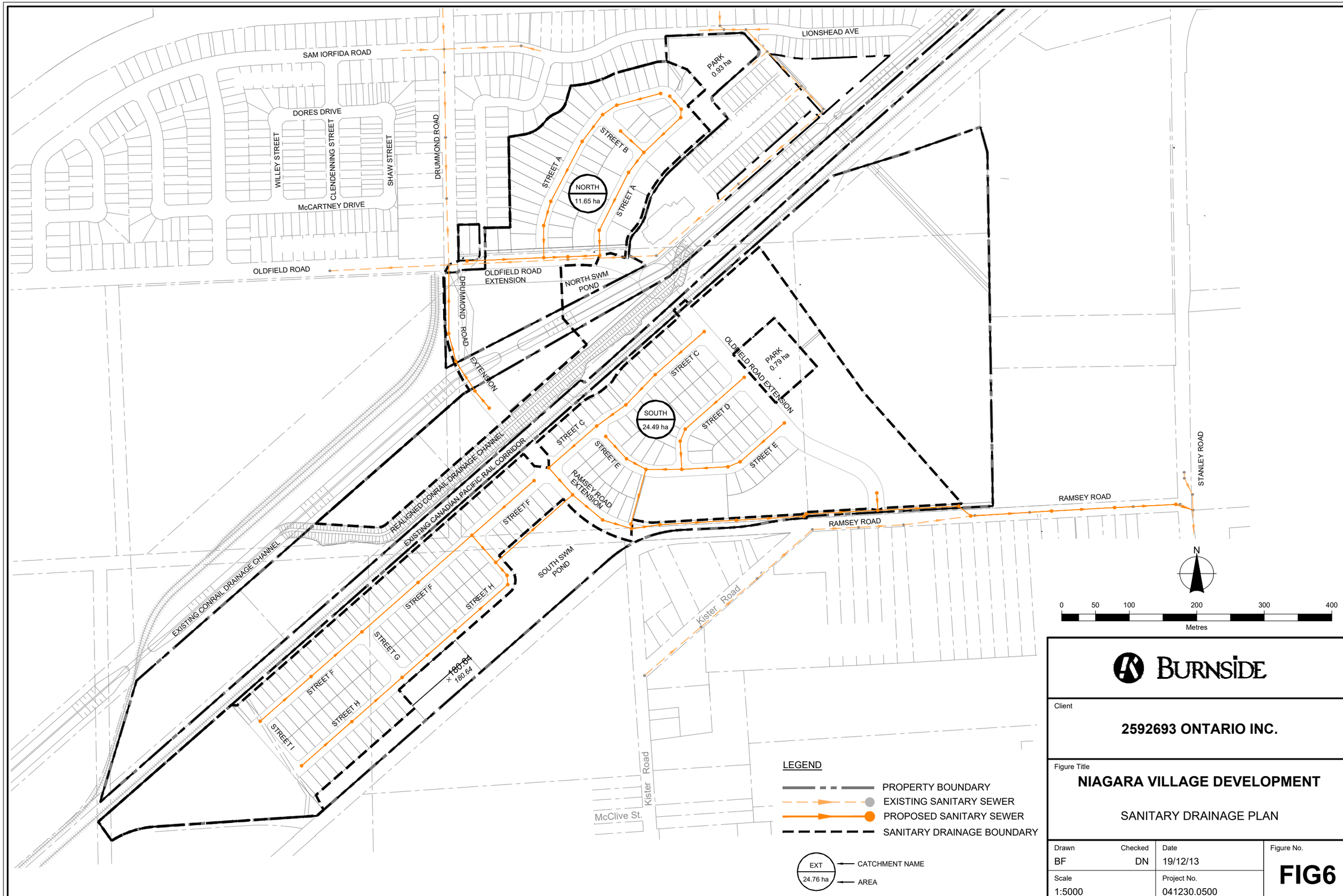
Figure Title

NIAGARA VILLAGE DEVELOPMENT

POST-DEVELOPMENT STORMWATER DRAINAGE AREA PLAN

Drawn	Checked	Date	Figure No.
BF	RS	19/12/13	**FIG5**
Scale 1:5000		Project No. 041230.0500	

File: \\MONTY\Shared Work Areas\041230 - Niagara Village\041230.0500 FSR\07_Figures\FSR FIGURES\041230.0500 - PRE & POST DRAINAGE AREA PLAN.dwg Date Plotted: February 5, 2020 - 12:58 PM



BURNSIDE

Client

2592693 ONTARIO INC.

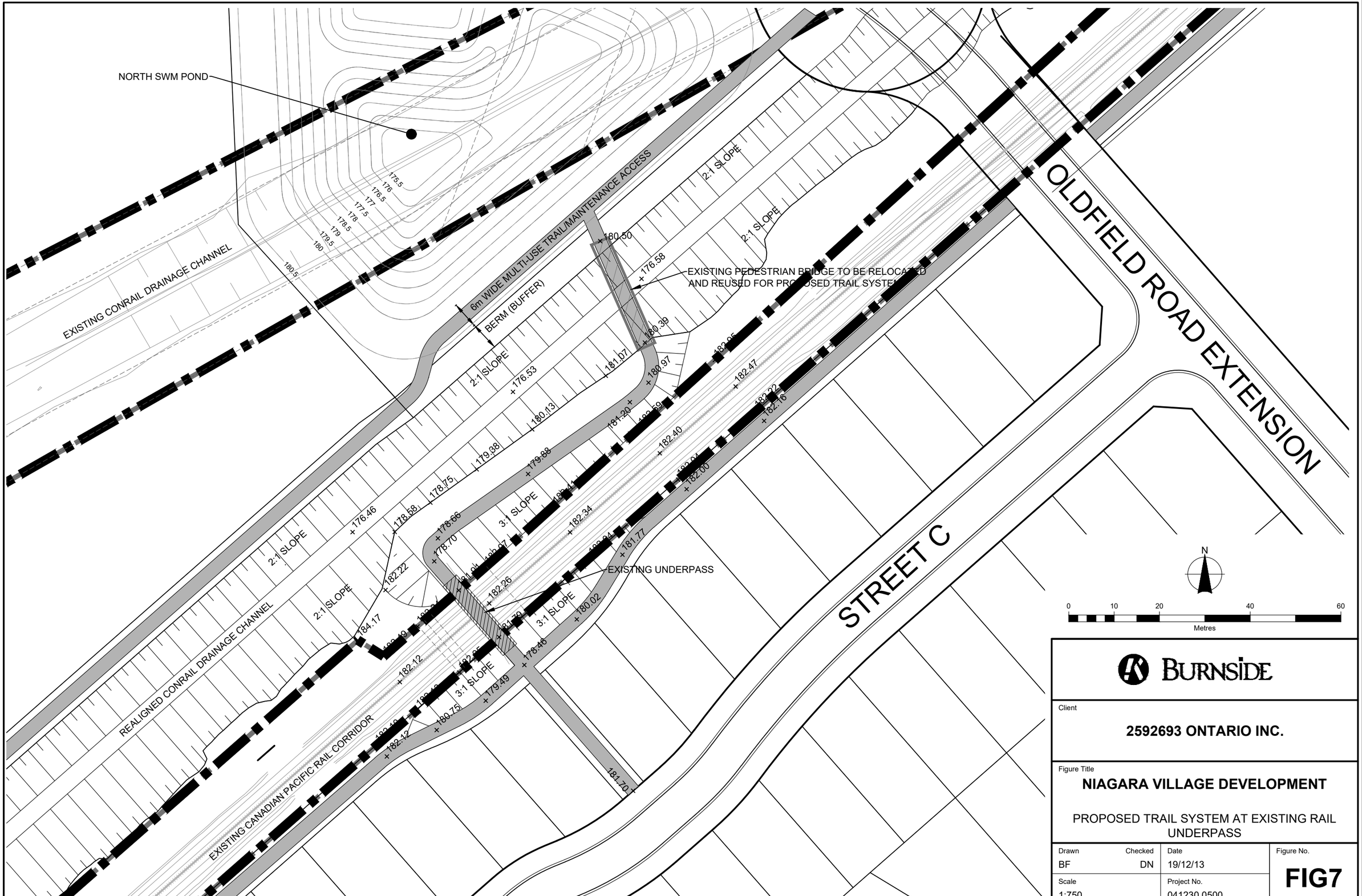
Figure Title

NIAGARA VILLAGE DEVELOPMENT

SANITARY DRAINAGE PLAN

Drawn	Checked	Date	Figure No.
BF	DN	19/12/13	**FIG6**
Scale		Project No.	
1:5000		041230.0500	

File: \\MONTY\Shared Work Areas\041230 - Niagara Village\041230.0500 FSR\07_Figures\FSR FIGURES\041230.0500 - PROPOSED SANITARY DRAINAGE PLAN.dwg Date Plotted: February 5, 2020 - 11:34 AM



BURNSIDE

Client

2592693 ONTARIO INC.

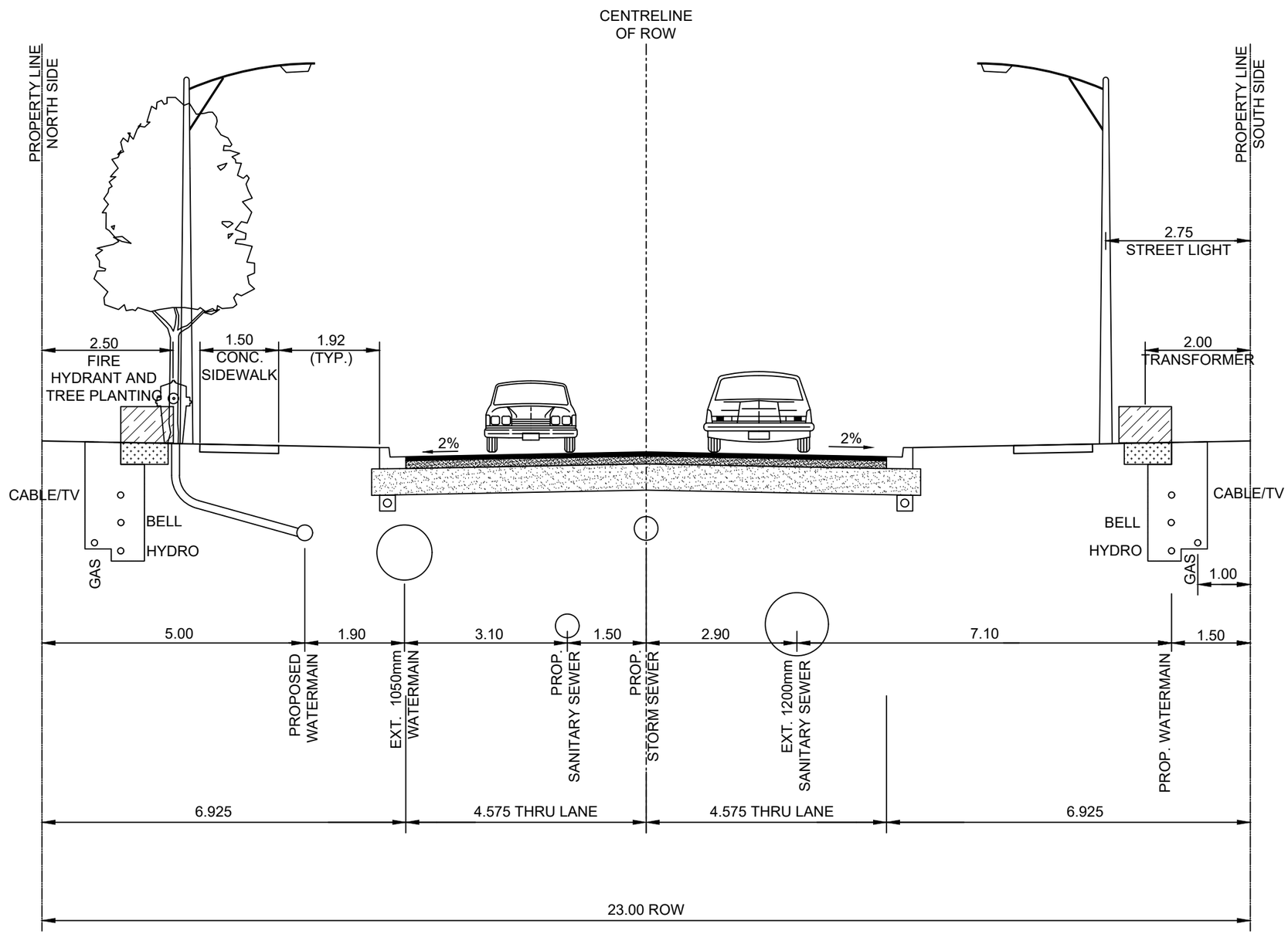
Figure Title

NIAGARA VILLAGE DEVELOPMENT

PROPOSED TRAIL SYSTEM AT EXISTING RAIL UNDERPASS

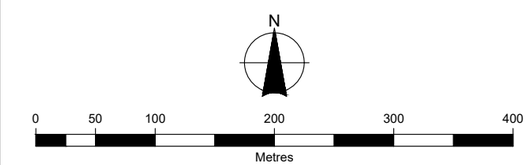
Drawn	Checked	Date	Figure No.
BF	DN	19/12/13	**FIG7**
Scale 1:750		Project No. 041230.0500	

File: \\MONTY\Shared Work Areas\041230 - Niagara Village\041230.0500 FSR\07_Figures\FSR FIGURES\041230.0500 - TRAIL UNDERPASS GRADING.dwg Date Plotted: February 5, 2020 - 11:34 AM



TYPICAL STREET CROSS SECTION
PROPOSED OLDFIELD ROAD EXTENSION
23m ROW - 2 Lanes

NTS



BURNSIDE

Client

2592693 ONTARIO INC.

Figure Title

NIAGARA VILLAGE DEVELOPMENT

TYPICAL STREET CROSS SECTION OF PROPOSED OLDFIELD ROAD EXTENSION

Drawn	Checked	Date	Figure No.
BF	DN	19/12/13	**FIG8**
Scale		Project No.	
N.T.S.		041230.0500	

File: \\MONTY\Shared Work Areas\041230 - Niagara Village\041230.0500 FSR\07_Figures\FSR FIGURES\041230.0500 - OLDFIELD EXTENSION ROW.dwg Date Plotted: February 5, 2020 - 11:35 AM

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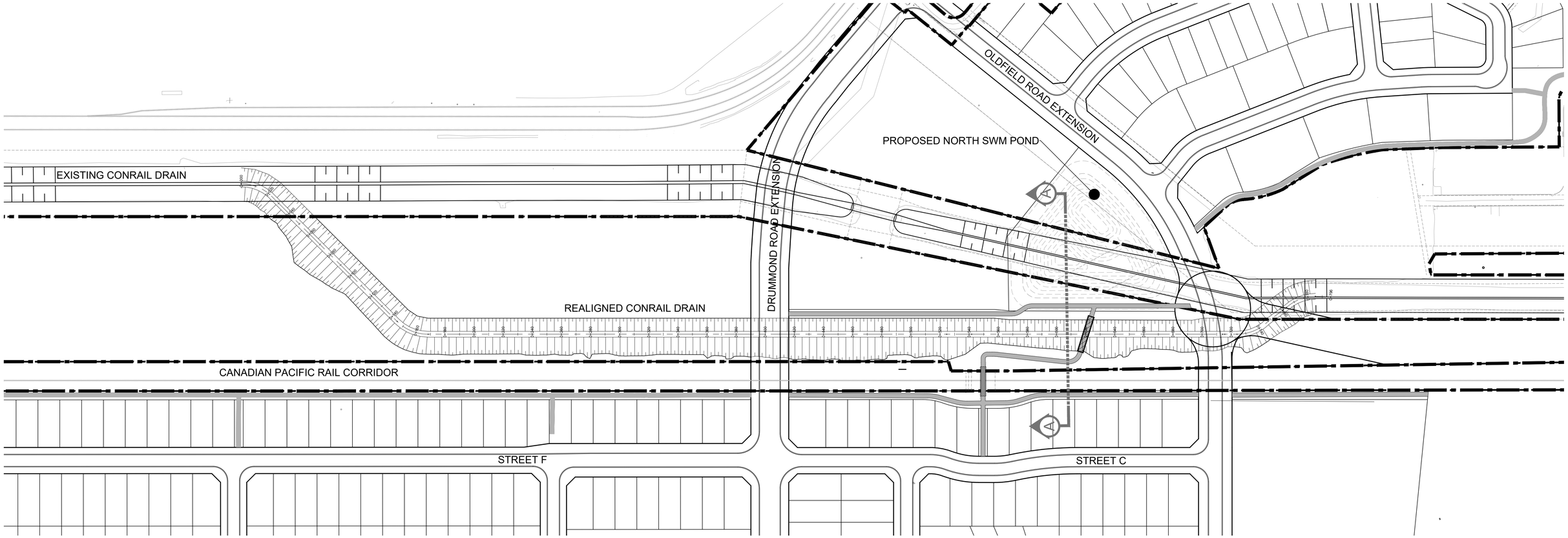
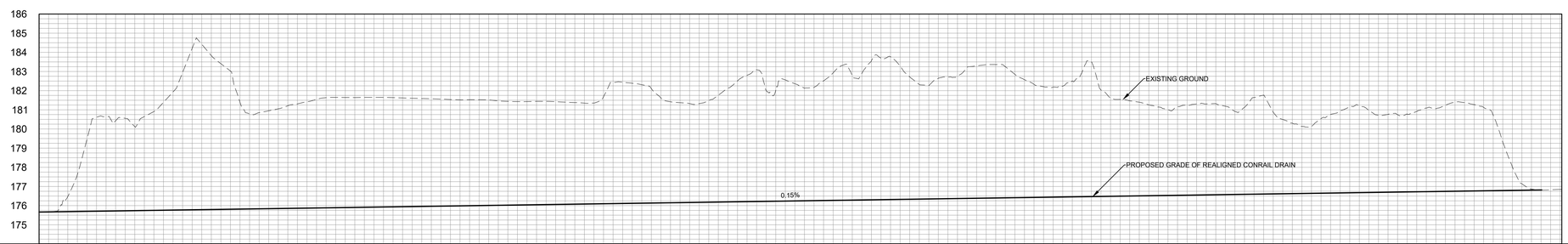
Drawings

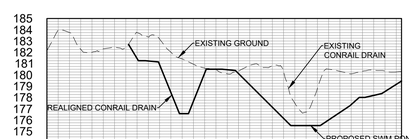
Drawings



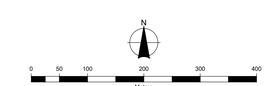


CHAINAGE	EXIST\PROP CENTERLINE ELEVATION
0+000	175.663
0+020	175.692
0+040	175.722
0+060	175.751
0+080	175.781
0+100	175.810
0+120	175.839
0+140	175.869
0+160	175.898
0+180	175.928
0+200	175.957
0+220	175.986
0+240	176.016
0+260	176.045
0+280	176.075
0+300	176.104
0+320	176.133
0+340	176.163
0+360	176.192
0+380	176.222
0+400	176.251
0+420	176.280
0+440	176.310
0+460	176.339
0+480	176.369
0+500	176.398
0+520	176.427
0+540	176.457
0+560	176.486
0+580	176.516
0+600	176.545
0+620	176.574
0+640	176.604
0+660	176.633
0+680	176.663
0+700	176.692
0+720	176.721
0+740	176.751
0+760	176.780
0+780	176.810
0+795.03	176.85

SECTION A-A
SCALE 1:1250



CHAINAGE	EXIST\PROP CENTERLINE ELEVATION
0+000	182.14
0+020	182.273
0+040	182.00
0+060	182.029
0+080	183.76
0+100	181.445
0+120	181.41
0+140	176.56
0+157.33	180.09
	180.456
	180.80
	177.138
	178.78
	175.500
	180.22
	178.000
	180.30
	179.453



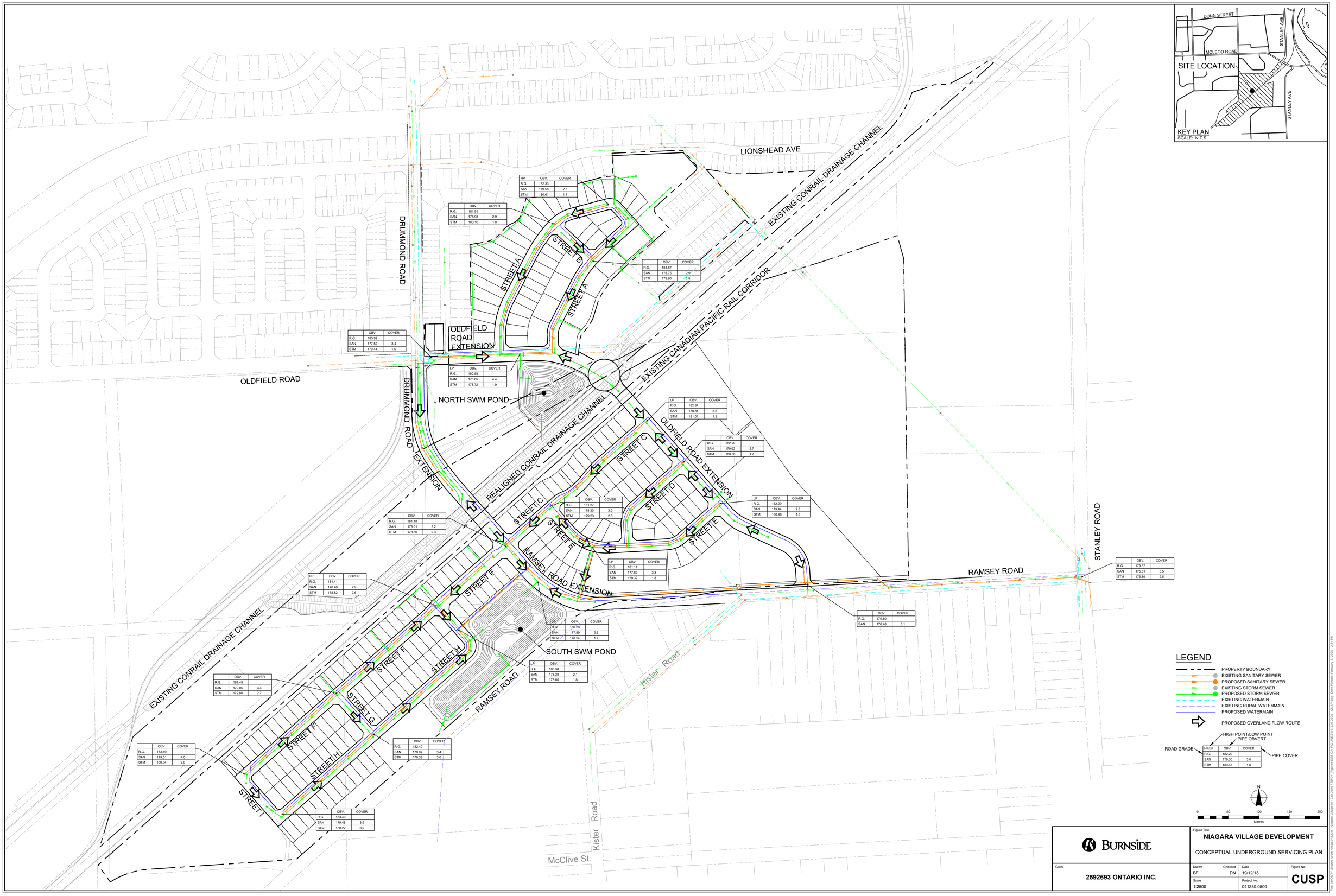
BURNSIDE

Client: 2592693 ONTARIO INC.

Figure Title: **NIAGARA VILLAGE DEVELOPMENT**

REALIGNED CONRAIL DRAIN - PLAN AND PROFILE

Drawn	Checked	Date	Figure No.
BF	DN	19/12/13	CRDP
Scale 1:1250		Project No. 041230.0500	


LIONSHEAD AVE
EXISTING CONRAIL DRAINAGE CHANNEL
EXISTING CANADIAN PACIFIC RAIL CORRIDOR
DRUMMOND ROAD
OLDFIELD ROAD
OLDFIELD ROAD EXTENSION
STREET A
STREET B
STREET C
STREET D
STREET E
STREET F
STREET G
STREET H
STREET I
NORTH SWM POND
SOUTH SWM POND
REALIGNED CONRAIL DRAINAGE CHANNEL
RAMSEY ROAD EXTENSION
RAMSEY ROAD
STANLEY ROAD
Kister Road
McClive St.
DUNN STREET
MCLEOD ROAD
SITE LOCATION
KEY PLAN
SCALE: N.T.S.
LEGEND
PROPERTY BOUNDARY
EXISTING SANITARY SEWER
PROPOSED SANITARY SEWER
EXISTING STORM SEWER
PROPOSED STORM SEWER
EXISTING WATERMAIN
EXISTING RURAL WATERMAIN
PROPOSED WATERMAIN
PROPOSED OVERLAND FLOW ROUTE
HIGH POINT/LOW POINT
PIPE OBVERT
ROAD GRADE
PIPE COVER
HP/LP | OBV. | COVER
R.G. | 182.29 |
SAN | 179.30 | 3.0
STM | 180.48 | 1.8
N
0 50 100 150 200
Metres
BURNSIDE
Figure Title
NIAGARA VILLAGE DEVELOPMENT
CONCEPTUAL UNDERGROUND SERVICING PLAN
Client
2592693 ONTARIO INC.
Drawn BF
Checked DN
Date 19/12/13
Scale 1:2500
Project No. 041230.0500
Figure No. CUSP


LIONSHEAD AVENUE
DRUMMOND ROAD
EAGLEWOOD DRIVE
OLDFIELD ROAD
OLDFIELD ROAD EXTENSION
STREET A
STREET B
STREET C
CLUBVIEW LANE
JOHN DALY WAY
GREEN VISTA GATE
EXISTING CONRAIL DRAINAGE CHANNEL
EXISTING CANADIAN PACIFIC RAIL CORRIDOR
REALIGNED CONRAIL DRAINAGE CHANNEL
WOODLOT
15m WOODLOT BUFFER
SITE LOCATION
KEY PLAN
SCALE: N.T.S.
DUNN STREET
MCLEOD ROAD
STANLEY AVE
LEGEND
LOT TYPE:
SPLIT DRAINAGE
FRONT DRAINAGE
BACK SPLIT
WALK OUT
LOOK OUT
PROPERTY BOUNDARY
EXISTING GRADE
PROPOSED GRADE
PROPOSED SLOPE
Metres
BURNSIDE
Figure Title
NIAGARA VILLAGE DEVELOPMENT
PRELIMINARY GRADING PLAN - NORTH
Client
2592693 ONTARIO INC.
Drawn
BF
Checked
DN
Date
19/12/13
Scale
1:1000
Project No.
041230.0500
Figure No.
GRD1

EXISTING CHANNEL TO BE REGRADED SURROUNDING THE WOODLOT IN ACCORDANCE WITH EIS REPORT (FEB. 2020). DETAILED GRADING WILL BE COMPLETED AS PART OF DETAILED DESIGN

EXISTING CHANNEL TO BE REGRADED SURROUNDING THE WOODLOT IN ACCORDANCE WITH EIS REPORT (FEB. 2020). DETAILED GRADING WILL BE COMPLETED AS PART OF DETAILED DESIGN

EXISTING CHANNEL TO BE REGRADED SURROUNDING THE WOODLOT IN ACCORDANCE WITH EIS REPORT (FEB. 2020). DETAILED GRADING WILL BE COMPLETED AS PART OF DETAILED DESIGN

LEGEND

LOT TYPE:

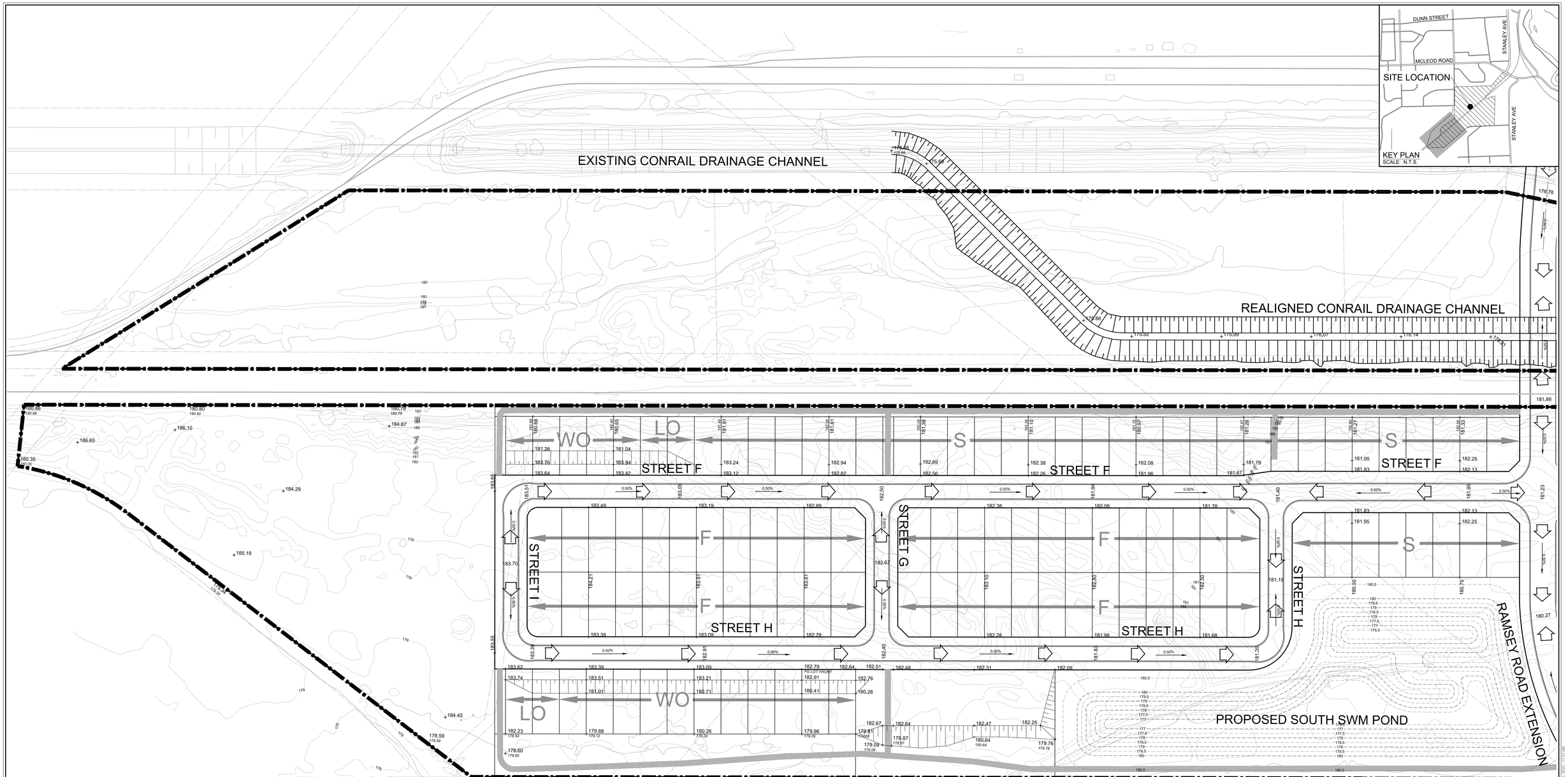
SPLIT DRAINAGE	S
FRONT DRAINAGE	F
BACK SPLIT	BS
WALK OUT	WO
LOOK OUT	LO
PROPERTY BOUNDARY	
EXISTING GRADE	×179.36
PROPOSED GRADE	×190.20
PROPOSED SLOPE	0.55%
MAX. 3:1 SLOPE	

0 20 40 60 80
Metres

BURNSIDE

Figure Title
NIAGARA VILLAGE DEVELOPMENT
PRELIMINARY GRADING PLAN - SOUTH-EAST

Client	Drawn	Checked	Date	Figure No.
2592693 ONTARIO INC.	BF	DN	19/12/13	GRD2
	Scale		Project No.	
	1:1000		041230.0500	



LEGEND

LOT TYPE:

- SPLIT DRAINAGE — S
- FRONT DRAINAGE — F
- BACK SPLIT — BS
- WALK OUT — WO
- LOOK OUT — LO
- PROPERTY BOUNDARY
- EXISTING GRADE — ×179.36
- PROPOSED GRADE — ×190.20
- PROPOSED SLOPE — 0.55%
- MAX. 3:1 SLOPE

0 20 40 60 80
Metres

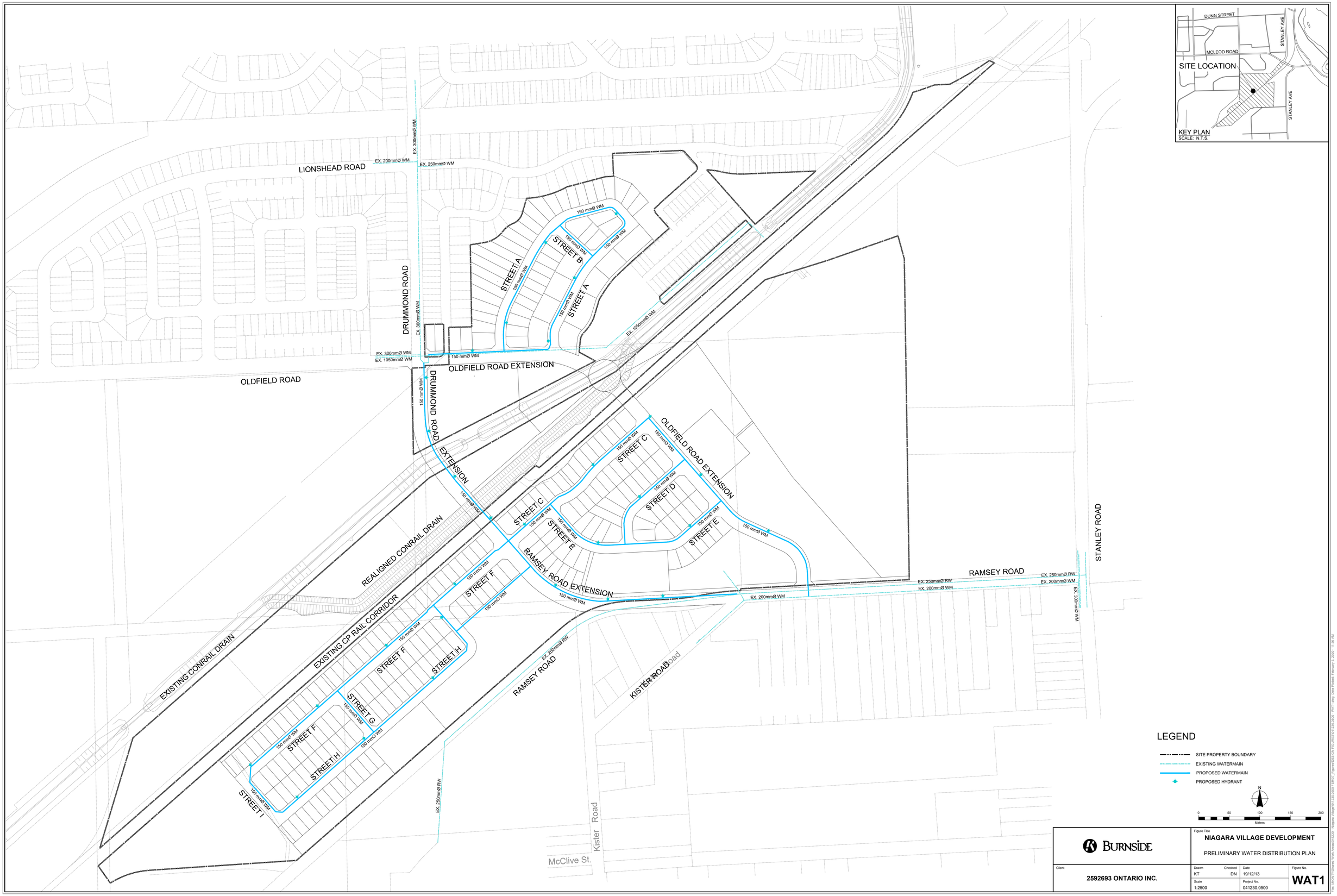
BURNSIDE

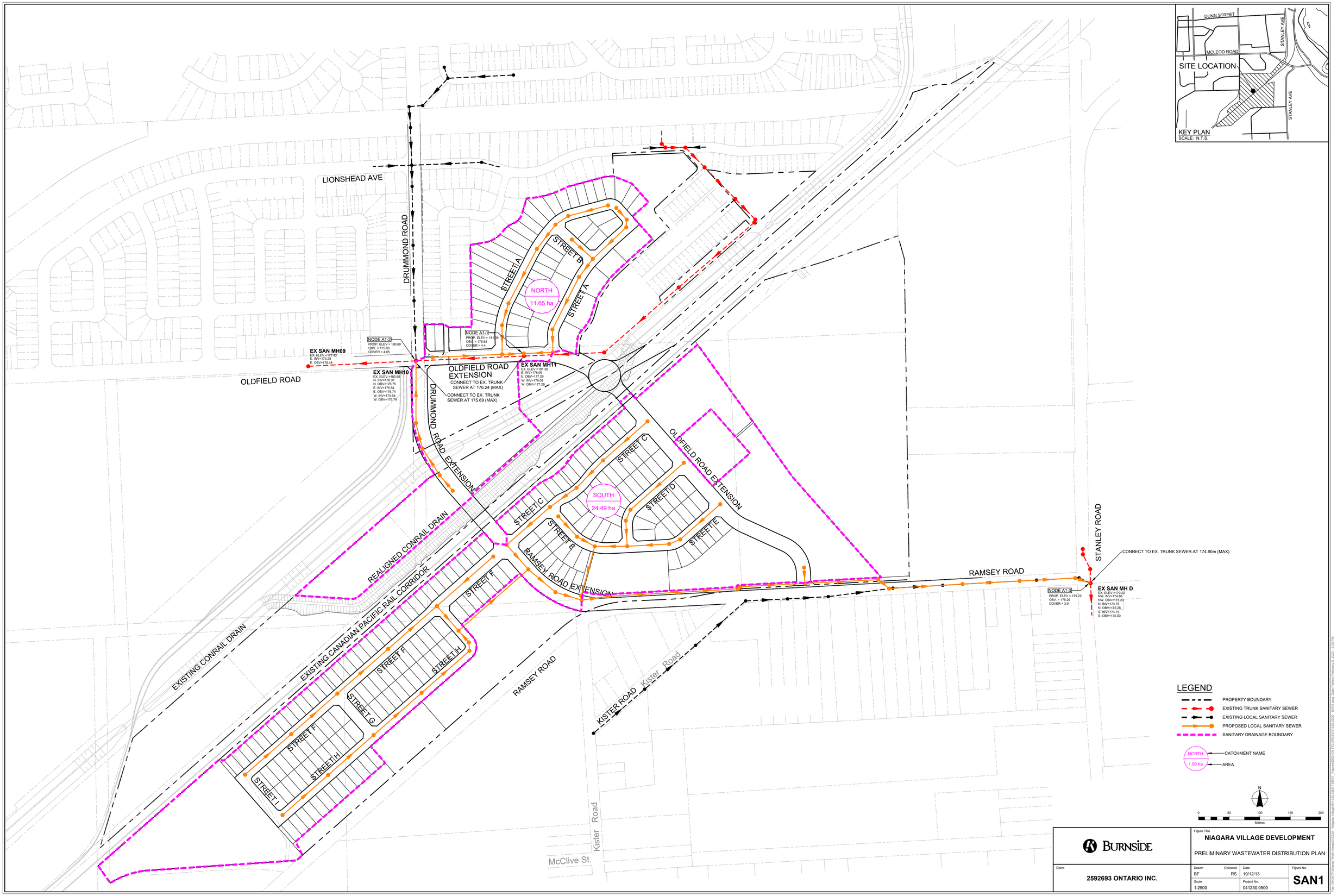
Figure Title
NIAGARA VILLAGE DEVELOPMENT
PRELIMINARY GRADING PLAN - SOUTH-WEST

Client
2592693 ONTARIO INC.

Drawn	Checked	Date	Figure No.
BF	DN	19/12/13	GRD3
Scale 1:1000		Project No. 041230.0500	


LIONSHEAD AVE
DRUMMOND ROAD
OLDFIELD ROAD
OLDFIELD ROAD EXTENSION
NORTH SWM POND:
INLET OBV. 179.05
1050Ø STM SEWER
NWL 178.00 m
BLOCK 253
BLOCK 249
BLOCK 250
BLOCK 246
BLOCK 252
BLOCK 245
BLOCK 244
BLOCK 243
BLOCK 242
BLOCK 255
BLOCK 248
BLOCK 251
BLOCK 269
STREET A
STREET B
STREET C
STREET D
STREET E
STREET F
STREET G
STREET H
STREET J
REALIGNED CONRAIL DRAINAGE CHANNEL
EXISTING CONRAIL DRAINAGE CHANNEL
EXISTING CANADIAN PACIFIC RAIL CORRIDOR
RAMSEY ROAD EXTENSION
RAMSEY ROAD
STANLEY ROAD
Kister Road
McClive St.
SOUTH SWM POND:
NE INLET OBV. 179.20
SW INLET OBV. 179.20
1200Ø STM SEWER
NWL 178.00 m
DUNN STREET
MCLEOD ROAD
SITE LOCATION
KEY PLAN
SCALE: N.T.S.
LEGEND
PROPERTY BOUNDARY
PROPOSED DRAINAGE BOUNDARY
EXISTING STORM SEWER
PROPOSED STORM SEWER
PROPOSED OVERLAND FLOW ROUTE
MH100 OBV. 178.49
PROPOSED STORM SEWER OBVERT
180.84
PROPOSED FINISHED ELEVATION
N
0 50 100 150 200
Metres
BURNSIDE
Figure Title
NIAGARA VILLAGE DEVELOPMENT
PRELIMINARY STORM SERVICING PLAN
Client
2592693 ONTARIO INC.
Drawn BF
Checked RS
Date 19/12/13
Scale 1:2500
Project No. 041230.0500
Figure No. STM1


LIONSHEAD ROAD
EX. 200mmØ WM
EX. 250mmØ WM
EX. 300mmØ WM
DRUMMOND ROAD
OLDFIELD ROAD
OLDFIELD ROAD EXTENSION
EX. 300mmØ WM
EX. 1050mmØ WM
150 mmØ WM
DRUMMOND ROAD EXTENSION
STREET A
STREET B
STREET C
STREET D
STREET E
STREET F
STREET G
STREET H
STREET I
RAMSEY ROAD EXTENSION
REALIGNED CONRAIL DRAIN
EXISTING CP RAIL CORRIDOR
EXISTING CONRAIL DRAIN
RAMSEY ROAD
EX. 250mmØ RW
EX. 200mmØ WM
EX. 300mmØ WM
STANLEY ROAD
KISTER ROAD
Kister Road
McClive St.
DUNN STREET
MCLEOD ROAD
STANLEY AVE
SITE LOCATION
KEY PLAN
SCALE: N.T.S.
LEGEND
SITE PROPERTY BOUNDARY
EXISTING WATERMAIN
PROPOSED WATERMAIN
PROPOSED HYDRANT
N
0 50 100 150 200
Metres
BURNSIDE
Figure Title
NIAGARA VILLAGE DEVELOPMENT
PRELIMINARY WATER DISTRIBUTION PLAN
Client
2592693 ONTARIO INC.
Drawn KT
Checked DN
Date 19/12/13
Scale 1:2500
Project No. 041230.0500
Figure No. WAT1

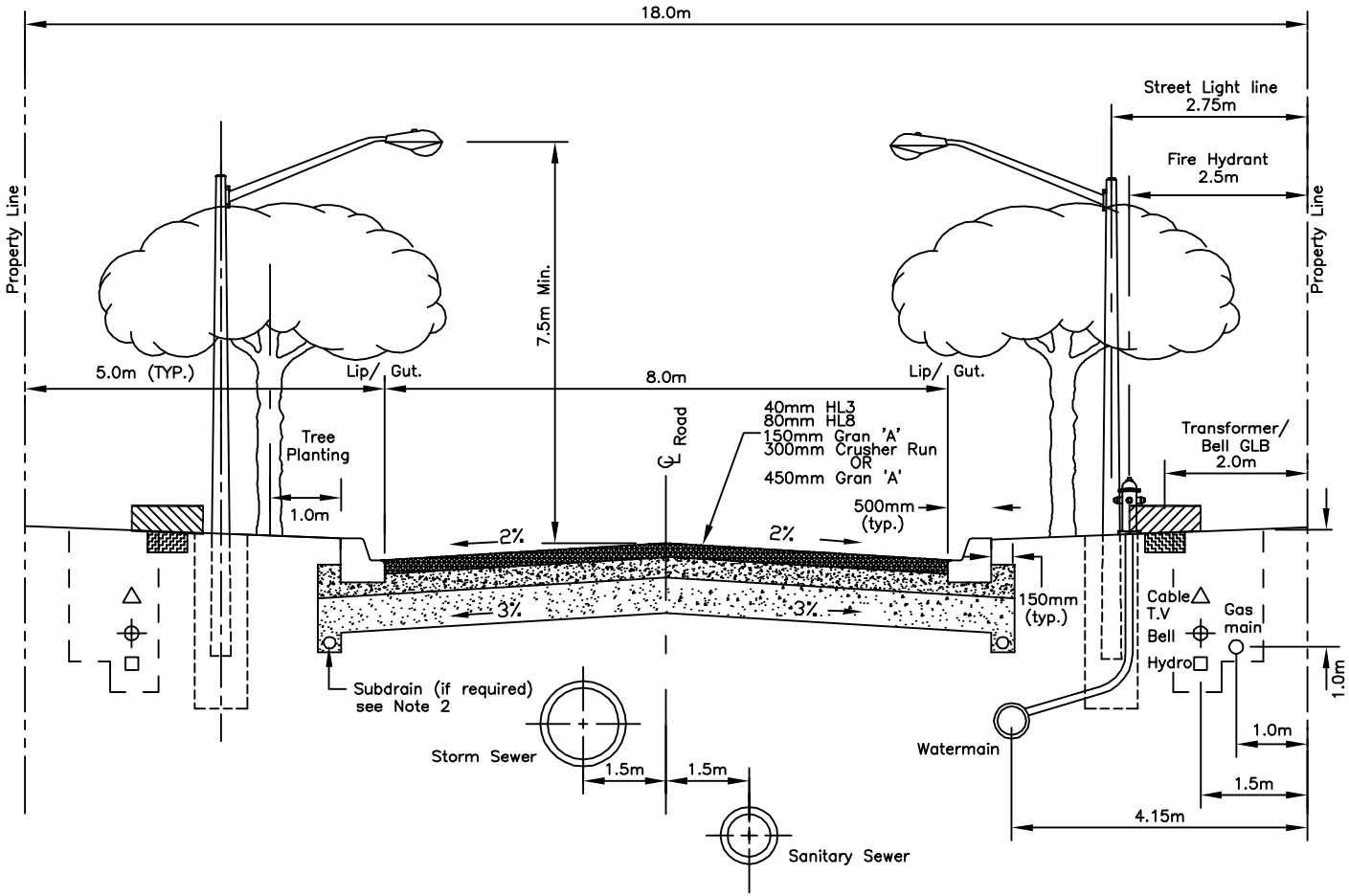

LIONSHEAD AVE
DRUMMOND ROAD
OLDFIELD ROAD
NODE A1-2
PROP. ELEV = 180.68
OBV. = 175.83
COVER = 4.85
EX SAN MH09
EX. ELEV=177.42
E. INV=175.28
E. OBV=176.48
EX SAN MH10
EX. ELEV=180.98
N. INV=176.37
N. OBV=176.75
E. INV=175.54
E. OBV=176.74
W. INV=175.54
W. OBV=176.74
NODE A1-1
PROP. ELEV = 181.00
OBV. = 176.65
COVER = 4.4
OLDFIELD ROAD EXTENSION
CONNECT TO EX. TRUNK SEWER AT 176.24 (MAX)
CONNECT TO EX. TRUNK SEWER AT 175.69 (MAX)
EX SAN MH11
EX. ELEV=181.39
E. INV=178.09
E. OBV=177.29
W. INV=178.09
W. OBV=177.29
STREET A
STREET B
STREET A
NORTH
11.65 ha
DRUMMOND ROAD EXTENSION
OLDFIELD ROAD EXTENSION
STREET C
STREET C
SOUTH
24.49 ha
STREET D
STREET E
STREET E
RAMSEY ROAD EXTENSION
REALIGNED CONRAIL DRAIN
EXISTING CANADIAN PACIFIC RAIL CORRIDOR
EXISTING CONRAIL DRAIN
STREET F
STREET F
STREET H
STREET H
STREET G
STREET I
RAMSEY ROAD
KISTER ROAD
Kister Road
Kister Road
McClive St.
RAMSEY ROAD
STANLEY ROAD
CONNECT TO EX. TRUNK SEWER AT 174.90m (MAX)
NODE A1-3
PROP. ELEV = 179.22
OBV. = 175.29
COVER = 3.9
EX SAN MH D
EX. ELEV=179.22
NW. INV=174.86
NW. OBV=175.23
N. INV=174.75
N. OBV=175.28
S. INV=174.75
S. OBV=175.00
DUNN STREET
MCLEOD ROAD
STANLEY AVE
STANLEY AVE
SITE LOCATION
KEY PLAN
SCALE: N.T.S.
LEGEND
PROPERTY BOUNDARY
EXISTING TRUNK SANITARY SEWER
EXISTING LOCAL SANITARY SEWER
PROPOSED LOCAL SANITARY SEWER
SANITARY DRAINAGE BOUNDARY
NORTH
1.00 ha
CATCHMENT NAME
AREA
N
0 50 100 150 200
Metres
BURNSIDE
Figure Title
NIAGARA VILLAGE DEVELOPMENT
PRELIMINARY WASTEWATER DISTRIBUTION PLAN
Client
2592693 ONTARIO INC.
Drawn BF
Checked RS
Date 19/12/13
Scale 1:2500
Project No. 041230.0500
Figure No.
SAN1

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix A

Typical Road Cross Sections



Notes:

1. Reduction in cover may be approved in certain situations
2. Subdrains to be constructed in accordance with city standards
3. All roadway designs are subject to recommendations and considerations addressed in a geotechnical investigation report
4. Locations shown are applicable to both sides
5. All dimensions are in metres unless otherwise shown
6. Street Light arms to be 1.75m (6')

URBAN ROAD SECTION

(18.0m WIDTH - LOCAL ROAD)

CITY OF NIAGARA FALLS

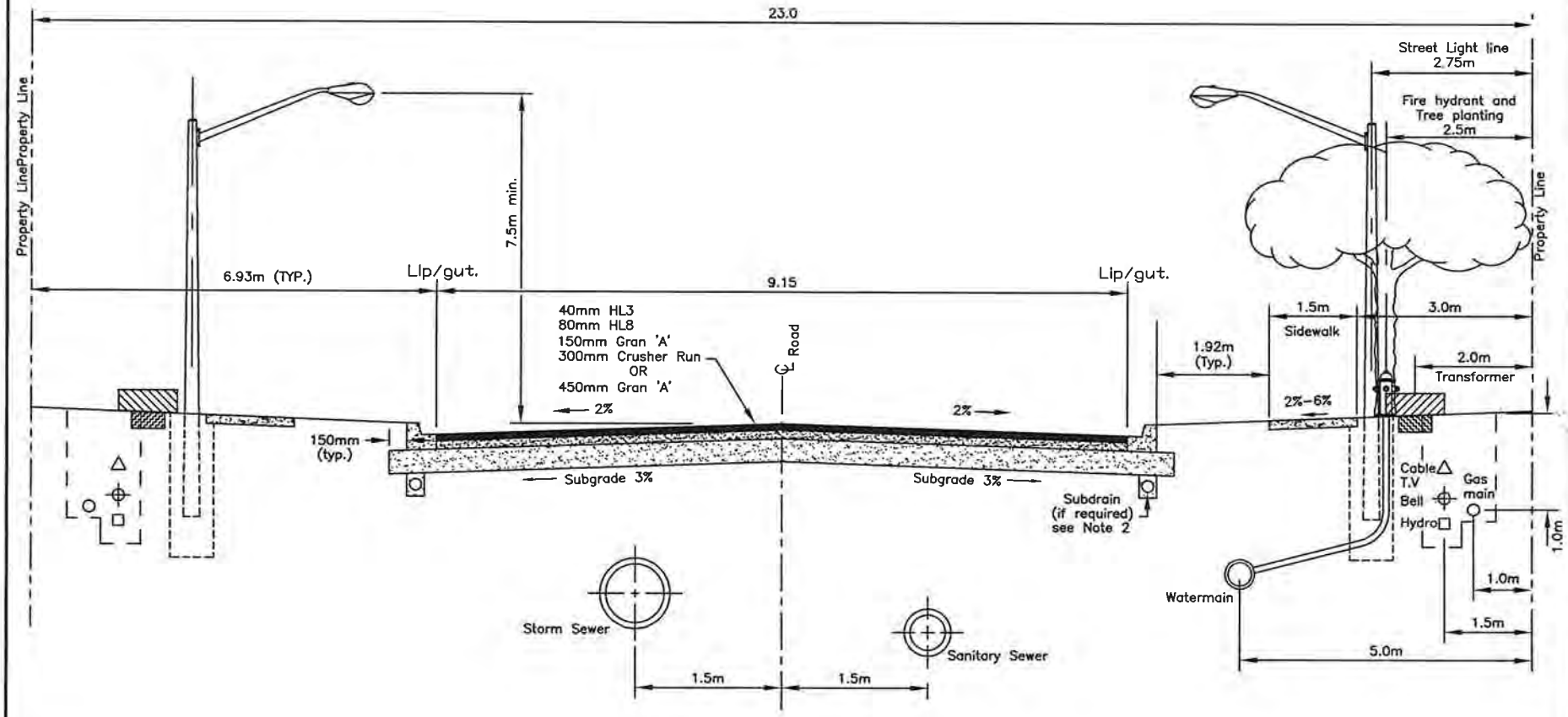
STANDARD DRAWING

NF-STD-200

Rev. No.:5 | Date: Nov. 2010

Scale: N.T.S.

DWG NAME: T:\Drawings\Niagara Falls Standard Dwg's\NF-Drawings\NF-STD-200 (Urban Road Section - 18.0m).dwg



Notes:

1. Reduction in cover may be approved in certain situations
2. Subdrains to be constructed in accordance with city standards
3. All roadway designs are subject to recommendations and considerations addressed in a geotechnical investigation report
4. Locations shown are applicable to both sides
5. All dimensions are in metres unless otherwise shown
6. Street light arms to be 3.0m (10')
7. Where possible, manhole lids to be located out of traffic tire lanes

URBAN ROAD SECTION

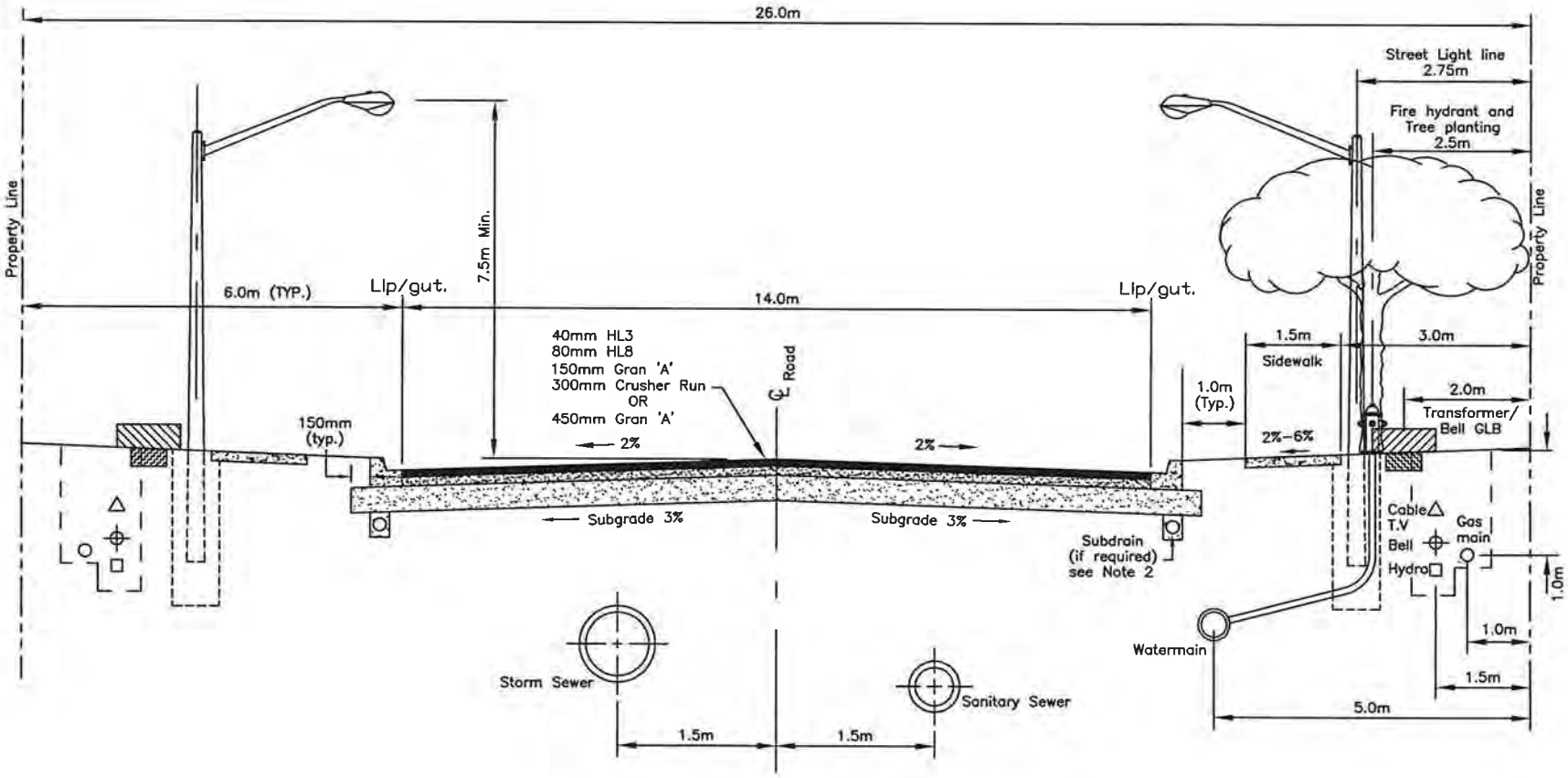
(23.0m WIDTH - COLLECTOR ROAD)

CITY OF NIAGARA FALLS

STANDARD DRAWING

NF-STD-202-C	Rev. No.: 4	Date: Nov. 2010
	Scale: N.T.S.	

DWG NAME: T:\Drawings\Niagara Falls Standard Dwg's\NF-Drawings\NF-STD-202-C (Urban Road Section - 23.0m Collector).dwg



Notes:

1. Reduction in cover may be approved in certain situations
2. Subdrains to be constructed in accordance with city standards
3. All roadway designs are subject to recommendations and considerations addressed in a geotechnical investigation report
4. Locations shown are applicable to both sides
5. All dimensions are in metres unless otherwise shown
6. Street light arms to be 3.0m (10')
7. Where possible, manhole lids to be located out of traffic tire lanes

URBAN ROAD SECTION

(26.0m WIDTH - COLLECTOR/ARTERIAL ROAD)

NiagaraFalls

CITY OF NIAGARA FALLS

STANDARD DRAWING

NF-STD-203	Rev. No.: 4	Date: Nov 2010
	Scale: N.T.S.	

DWG NAME: T:\Drawings\Niagara Falls Standard Dwg's\NF-Drawings\NF-STD-203 (Urban Road Section – 26.0m Collector – Arterial).dwg