

FUNCTIONAL SERVICING REPORT

YORK ROAD RESIDENTIAL INFILL

1317 York Road
Niagara-on-the-Lake, ON

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Attachments

Drawing – Conceptual Site Servicing: 24086-CSS

1.0 Introduction

This functional servicing report (FSR), prepared in support of the proposed Official Plan Amendment and Zoning By-Law Amendment for 1317 York Road, serves to demonstrate how servicing of the subject development can be appropriately achieved and to provide a basis for detailed engineering. This report will discuss the following key aspects of municipal design:

- Water Supply and Distribution
- Sanitary Sewerage
- Drainage and Site Grading
- Utility Servicing
- Servicing Locations

2.0 Background

The subject property is approximately 1718 m² (0.17 ha) in size and is located on the SE corner of the York Road and Tanbark Road intersection in Niagara-on-the-Lake – municipally referred to as 1317 York Road. The existing features on the site include a detached dwelling, granular driveway, concrete walkways, and grass/vegetated area. With the property being a corner lot, there is 49.4m of frontage along York Road and 41.1m along Tanbark Road. An aerial image showing the subject property is shown in Figure 1.

3.0 Development Proposal

The current proposal is to develop five (5) townhouse dwellings, in one (1) block, fronting Tanbark Road and one (1) detached dwelling which will front York Road.



Figure 1 – Aerial Image of Development Site
(Aerial image from Niagara Navigator)

4.0 Water Supply and Distribution

The Town of Niagara-on-the-Lake's water system is supplied by the DeCew Water Treatment Plant. The system is interconnected with the Niagara Falls water system. The supply area is divided into 11 pressure zones. Based on Niagara Region's *2021 Water and Wastewater Master Servicing Plan Update*, the existing peak hour minimum pressure at the development site ranges from 415-550 kpa (60-80 psi).

There is an existing 250mmØ PVC watermain located in Tanbark Road, and an existing 200mmØ PVC watermain located in York Road, along the west and north limits (respectively) of the subject property. There is a Regional 400mmØ ductile iron watermain on York Road as well.

The property is currently serviced with one (1) 19mmØ copper water service, connected to the 200mmØ York Road watermain, but the location of this service is unknown. This existing water service is to be properly decommissioned.

Water supply for the townhouse block will be taken from the 250mmØ Tanbark Road watermain. A 19mmØ Type 'K' soft copper water connection will be installed for each unit, as well as for the single detached dwelling. For the single detached dwelling, water supply will be taken from the 200mmØ York Road watermain.

The existing fire hydrant on the NE corner of the York Road and Tanbark Road intersection will provide adequate fire protection for this development based on the following: the hose-path distance to farthest principal entrance (i.e. the front door of the southernmost unit) would be significantly less than 90 m, so the OBC maximum distance of 45 m from hydrant to truck and 45 m from truck to principal entrance would be satisfied.

The fire demand flow rate for the block of townhouses (Units A-E) is computed at 7,000 L/min (117 L/s or 1854 USgpm) per the Fire Underwriter's Survey, using worst-case assumption of all-combustible construction. The NFPA colour code for the existing hydrant is blue, meaning it can deliver a flow rate of 1500 USgpm (95 L/s) or greater. Furthermore, the Region's 2016 Water and Wasterwater Master Servicing Plan states that the existing hydrant's available fire flow is in the range of 250 L/s or greater. The required fire demand flow rate falls below the available flow rate, so, the existing hydrant appears adequate to service this development.


| | | |
|--|--|--|
| Building Name: | 1317 York Road (NOTL) Townhouse Block |  |
| Project #: | 24086 | |
| Total Effective Area (sq. m): | | 1104 |
| Building Construction Coefficient: | | 1 |
| Initial Fire Flow: | | 7000 |
| Occupancy Adjustment: | | -1050 |
| Sprinkler Protection Adjustment: | | 0 |
| Standard Water Supply Adjustment: | | 0 |
| Supervised System Adjustments: | | 0 |
| Community Level Automatic Sprinkler Protection of Area Adjustment | | 0 |
| Fire Subdivision with Risk and/or Unprotected Openings Adjustment | | 0 |
| Total Exposure Charge Adjustment | | 770 |
| Total Fireflow with Adjustments - (Rounded to nearest 1000 L/min) | | 7000 L/min |

Figure 2 – 2020 Fire Underwriter’s Survey Calculation Parameters

5.0 Sanitary Sewerage

There is an existing 200mmØ PVC sanitary sewer located in Tanbark Road, and an existing 250mmØ PVC sanitary sewer located in York Road, along the west and north limits (respectively) of the subject property.

The property is currently serviced with one (1) 100mmØ PVC sanitary service, connected to the Tanbark Road sanitary sewer. This existing sanitary service is to be properly decommissioned.

Each new townhouse unit will be serviced through individual 135mmØ PVC sanitary laterals connected to the 200mmØ sanitary sewer in Tanbark Road. The single detached dwelling will also be serviced through a 135mmØ PVC sanitary lead, but it will be connected to the 250mmØ sanitary sewer in York Road.

Key design data for sanitary servicing are as follows:

Townhouse Units:

| | |
|--------------------------|------------------|
| No. of Dwelling Units | 5 units |
| Population Density | 3.0 persons/unit |
| Total Design Population | 15 |
| Peaking Factor | Babbitt |
| Mean sewage flow | 320 L/cap/day |
| Sewage shed area (total) | 0.136 ha |
| Infiltration Rate | 0.28 L/ha•s |
| Manning’s ‘n’ | 0.013 |

Average Sewage Flow for Units A-E: $320 \times 15 / (24 \times 3600) = 0.056$ L/s

Peaking Factor: $5 / (15 / 1000)^{0.2} = 11.6 > 4.5$, so use 4.5

I/I Flow: $0.28 \times 0.136 = 0.038$

Peak Sewage Flow: $0.056 \times 4.5 + 0.038 = 0.29$ L/s

From the above, we estimate the peak sewage flow at 0.29 L/s for townhouse Units A to E.

It is noted that the capacity of the receiving sewer, the 200mmØ sanitary sewer in Tanbark Road with a slope of ±0.49% based on Quartek's survey, is 23.0 L/s. This additional flow represents 1.3% of the sewer's capacity (assuming uncharged operation).

Single Detached Unit:

| | |
|--------------------------|------------------|
| No. of Dwelling Units | 1 unit |
| Population Density | 3.0 persons/unit |
| Total Design Population | 3 |
| Peaking Factor | Babbitt |
| Mean sewage flow | 320 L/cap/day |
| Sewage shed area (total) | 0.035 ha |
| Infiltration Rate | 0.28 L/ha•s |
| Manning's 'n' | 0.013 |

Average Sewage for Unit: $320 \times 3 / (24 \times 3600) = 0.011$ L/s

Peaking Factor: $5 / (3 / 1000)^{0.2} = 16.0 > 4.5$, so use 4.5

I/I Flow: $0.28 \times 0.035 = 0.010$

Peak Sewage Flow: $0.011 \times 4.5 + 0.010 = 0.06$ L/s

From the above, we estimate the peak sewage flow at 0.06 L/s for the single detached unit.

It is noted that the capacity of the receiving sewer, the 250mmØ sanitary sewer in York Road with a slope of ±1.16% based on reference drawings supplied by the Town, is 64.0 L/s. This additional flow represents 0.09% of the sewer's capacity (assuming uncharged operation).

We expect that there will be no impediments to sanitary servicing for the development using currently existing municipal sewage works.

6.0 Drainage and Site Grading

The subject property's current drainage system is overland, with no pronounced/functioning swales, and much of the property is grass area. Topographical data shows the land has minimal slopes that aim towards both bounding roads, but the majority of the property drains northeast. Existing elevations of the property vary from ± 122.30 to ± 123.70 . Stormwater eventually reaches the existing curb & gutter on either York or Tanbark Road, to ultimately be conveyed by the respective storm sewer. There is an existing 600mm \varnothing concrete storm sewer located on the west side of Tanbark Road and a 300mm \varnothing concrete storm sewer on the south side of York Road, east of the property.

The proposed site grading design will ensure positive drainage away from the buildings and neighbouring properties to the east and south. Side and rear yard swales will convey the majority of the site's runoff and two (2) catchbasins will capture those flows. A 200mm \varnothing PVC storm sewer is proposed between CB1 and CB2, and then a 250mm \varnothing PVC storm sewer will outlet to the 600mm \varnothing storm sewer on Tanbark Road from CB1. The only impervious area runoff that will not be captured/conveyed by the proposed storm network will be from the driveways.

7.0 Utility Servicing

Utilities have been notified of the proposed development plan and have not expressed any challenges in servicing this development. However, we note that there is Bell telephone plant in conflict with several proposed driveway locations. Bell Canada has been contacted and we are awaiting their response regarding what will be required in order to achieve relocation.

8.0 Service Locations

Please refer to the attached drawing which shows approximate locations of the existing municipal services along with the proposed services for the development.

Prepared by:



Tyler Crawford, C.E.T.
Civil Engineering Designer

Reviewed by:



Doug Peters, P.Eng.
Senior Civil Engineer



GENERAL

- 1. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND EXISTING ELEVATIONS WHICH INCLUDE BUT ARE NOT LIMITED TO THE BENCHMARK ELEVATIONS, EXISTING SERVICE CONNECTIONS, AND EXISTING INVERTS. ANY INCONSISTENCIES AND OMISSIONS ON THIS DRAWING SET SHALL BE REPORTED TO THE ENGINEER FOR CLARIFICATION BEFORE COMMENCING THE WORK.
2. THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND ABOVE GROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.
3. SURVEY EVIDENCE (MONUMENTS, IRON BARS, ETC.) SHALL NOT BE DISTURBED, DAMAGED, OR REMOVED.
4. COMPUTER DRAWING FILE CO-ORDINATES FOR THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION LAYOUT UNLESS SPECIFICALLY DIRECTED BY THE ENGINEER.
5. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT. THE GENERAL CONTRACTOR SHALL BE DEEMED TO BE THE CONSTRUCTOR AS DEFINED IN THE ACT.
6. ALL CONSTRUCTION SIGNAGE SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR CANADA (MUTDC) AND THE ONTARIO TRAFFIC MANUAL (OTM).
7. TOWN OF NIAGARA-ON-THE-LAKE STANDARD DRAWINGS AND ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) SHALL APPLY WHEREVER RELEVANT, WHETHER SPECIFICALLY REFERENCED OR NOT.
8. ALL WORK SHALL BE IN ACCORDANCE WITH THE RELEVANT SECTIONS OF THE ONTARIO PROVINCIAL STANDARD SPECIFICATIONS (OPSS) AND DRAWINGS (OPSD), AND THE NIAGARA PENINSULA STANDARD CONTRACT DOCUMENT (NPSCD) UNLESS OTHERWISE NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS.
9. ALL MEASUREMENTS ARE IN METRES UNLESS OTHERWISE NOTED.
10. ALL GRANULAR MATERIAL SHALL BE COMPACTED TO 100% STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD) AND ALL NATIVE BACKFILL SHALL BE COMPACTED TO 95% SPMDD UNLESS OTHERWISE NOTED.
11. ALL AREAS DISTURBED BY THE CONTRACTOR DURING THE CONSTRUCTION OF THE WORKS HEREIN, SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER AS DETERMINED BY THE ENGINEER. ALL GRASS AND VEGETATION COVERED AREAS SHALL BE RESTORED BY PLACING TOPSOIL (MINIMUM 100mm) AND SOD TO ESTABLISH A GRASS COVER TO THE SATISFACTION OF THE TOWN, UNLESS NOTED OTHERWISE.
12. SOD SHALL BE IN ACCORDANCE WITH OPSS 803. PLACED TOPSOIL SHALL BE IN ACCORDANCE WITH OPSS 802 AND FREE OF ALL GRANULAR PARTICLES OR OTHER MATERIALS DELETERIOUS TO PLANT GROWTH.

EROSION AND SEDIMENT CONTROL

- 13. EROSION AND SEDIMENT CONTROL WORKS SHALL BE INSTALLED AS SHOWN ON DRAWING 24086-CSS. SILTATION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO THE START OF CONSTRUCTION AND MAINTAINED FOR THE DURATION.
14. SILT FENCE SHALL BE HEAVY-DUTY AS PER OPSD 219.130. GEOTEXTILE MATERIAL FOR ANY APPLICATION SHALL BE WOVEN WITH A WEAVE DENSITY OF 270R OR EQUIVALENT.
15. SILT FENCE INSTALLATION AND MAINTENANCE CONSIDERATIONS:
15.1. GEOTEXTILE MATERIAL SHALL BE STRETCHED TIGHT DURING INSTALLATION AND THE BOTTOM EDGE BURIED A MINIMUM OF 150mm WITH COMPACTION OF THE EXCAVATED BACKFILL.
15.2. CLEAR GRANULAR STONE PLACEMENT CAN BE USED IN FROZEN OR UNFROZEN CONDITIONS TO ASSIST IN FILTERING SEDIMENT LADEN WATERS.
15.3. SILT FENCE SHALL BE INSPECTED REGULARLY AND AFTER EVERY RAINFALL TO IDENTIFY FAILED SECTIONS. ANY FAILURE SHALL BE REPAIRED IMMEDIATELY.
15.4. WHEN SEDIMENT ACCUMULATES TO HALF THE HEIGHT OF THE GEOTEXTILE MATERIAL IT SHALL BE REMOVED AND DISPOSED OF IN A CONTROLLED AREA.
15.5. A SUPPLY OF SILT FENCE SHALL BE KEPT ON SITE TO PROVIDE FOR QUICK REPAIRS OR ADDITIONAL FENCING REQUIREMENTS.
16. GEOTEXTILE MATERIAL SHALL BE PLACED UNDER THE GRATES IN ALL CATCH BASINS TO TRAP SEDIMENT. SILT TRAPS SHALL BE CLEANED REGULARLY BY THE CONTRACTOR AND SHALL NOT BE REMOVED UNTIL PAVEMENT OPERATION IS COMPLETED AND ALL VEGETATED AREAS ARE STABILIZED.

ROADS AND EARTHWORKS

- 17. WHERE DISTURBED OR DAMAGED, REINSTATEMENT OF EXISTING ROADS MUST COMPLY WITH THE REQUIREMENTS OF THE ROAD AUTHORITY. PAVEMENT REINSTATEMENT MUST COMPLY WITH OPSD 509.010 AND OPSS 310 & 314. SERVICE TRENCHES ARE TO BE SAWCUT SQUARE PRIOR TO PAVING OPERATION. MINIMUM ASPHALT AND GRANULAR THICKNESS FOR ROADWAY REINSTATEMENT SHALL MATCH EXISTING CONDITIONS, OR THE SCHEDULE BELOW, WHICHEVER IS GREATER.

Table with 2 columns: COURSE, THICKNESS. Rows include SURFACE COURSE (40mm HL3-HS), BINDER COURSE (80mm HL8-HS), GRANULAR BASE (450mm GRAN. 'A'), and TOTAL THICKNESS (570mm).

STORM SEWERS

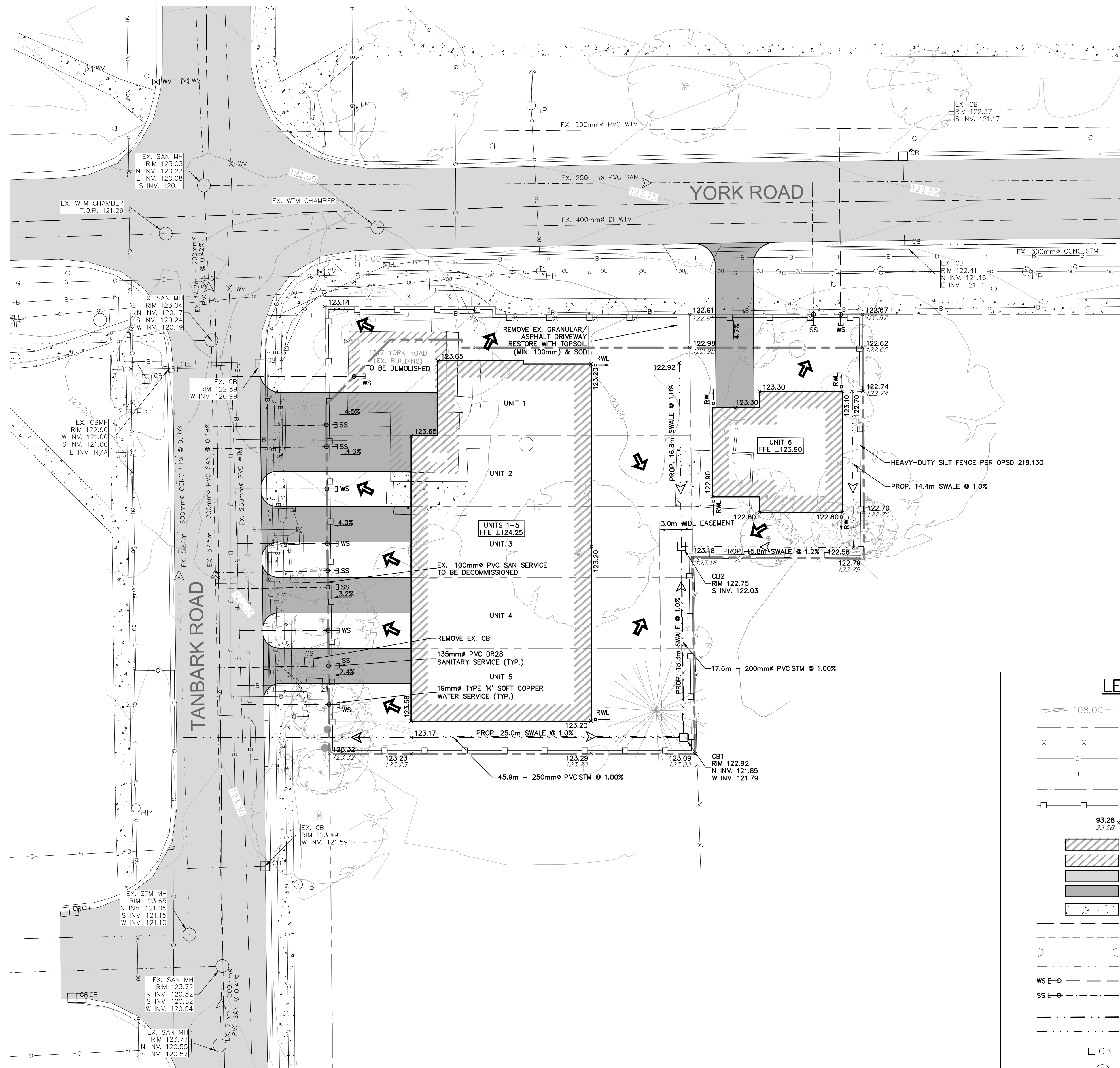
- 18. CONSTRUCTION OF STORM SEWERS SHALL BE IN ACCORDANCE WITH TOWN STANDARDS & SPECIFICATIONS (LATEST EDITION) AND MINISTRY OF ENVIRONMENT (MOE) GUIDELINES (LATEST EDITION).
19. SINGLE CATCH BASINS SHALL BE IN ACCORDANCE WITH OPSD 705.010.
20. CATCH BASIN FRAME AND GRATES SHALL BE PER OPSD 400.020.
21. ALL STORM SEWERS AND CATCHBASIN LEADS SHALL BE EITHER CONCRETE, CLASS III PER CSA A257.1 & A257.2 WITH CLASS 'B' BEDDING PER OPSD 802.030, OR PVC SDR-35 PER CSA 182.1 & 182.2 WITH GRANULAR 'A' EMBEDMENT PER OPSD 802.010, UNLESS OTHERWISE NOTED.
22. STORM SEWER BEDDING SHALL BE PER OPSD 802 SERIES, WITH GRANULAR 'A' COVER. ALL BEDDING AND COVER MATERIAL SHALL BE COMPACTED TO 100% SPMDD.
23. MINIMUM CLEARANCE OF 200mm SHALL BE PROVIDED BETWEEN THE OUTSIDE OF THE PIPE BARRELS AT THE POINT OF PIPE CROSSING FOR SEWERS AND OTHER UTILITIES EXCEPT FOR WATERMAIN CROSSINGS WHEN THE MINIMUM CLEARANCE SHALL NOT BE LESS THAN 500mm. FOR WATERMAIN CROSSINGS WHERE A MINIMUM CLEARANCE OF 500mm CANNOT BE OBTAINED, THE CROSSING SHALL BE CONCRETE ENCASED.

SANITARY SEWERS

- 24. CONSTRUCTION OF SANITARY SEWERS SHALL BE IN ACCORDANCE WITH CITY STANDARDS & SPECIFICATIONS (LATEST EDITION) AND MINISTRY OF ENVIRONMENT (MOE) GUIDELINES (LATEST EDITION).
25. ALL SANITARY LATERALS TO BE 135mm DR-28 PVC LAID AT 2% SLOPE AND CONNECTED TO EXISTING SEWER WITH APPROVED MANUFACTURED TEE AND CAPPED & STAKED NEAR THE STREETLINE. SANITARY SERVICE LATERALS SHALL BE CONSTRUCTED WITH A 100mm PVC VERTICAL CLEANOUT CONNECTION AT THE PROPERTY LINE. ALL PROPOSED WYES AND BENDS SHALL BE OF 'SWEEP' OR 'LONG-RADIUS' TYPE.
26. ALL SANITARY LATERALS SHALL HAVE CLASS 'B' BEDDING PER OPSD 802.010, GRANULAR 'A' COVER MATERIAL AND SELECT NATIVE BACKFILL UNLESS OTHERWISE NOTED.
27. IN EXISTING ROADWAYS, SANITARY SEWER BEDDING SHALL BE AS PER OPSD 802 SERIES, WITH FULL GRANULAR 'A' COVER. ALL BEDDING AND COVER MATERIAL SHALL BE COMPACTED TO 100% SPMDD.
28. MINIMUM CLEARANCE OF 200mm SHALL BE PROVIDED BETWEEN THE OUTSIDE OF THE PIPE BARRELS AT THE POINT OF PIPE CROSSING FOR SEWERS AND OTHER UTILITIES EXCEPT FOR WATERMAIN CROSSINGS WHEN THE MINIMUM CLEARANCE SHALL NOT BE LESS THAN 500mm. FOR WATERMAIN CROSSINGS WHERE A MINIMUM CLEARANCE OF 500mm CANNOT BE OBTAINED, THE CROSSING SHALL BE CONCRETE ENCASED.

WATERMAIN

- 29. WATER SERVICES SHALL BE 19mm TYPE 'K' SOFT COPPER AS PER OPSD 1104.010 & TOWN OF NIAGARA-ON-THE-LAKE STANDARDS. ALL DOMESTIC WATER SERVICE CONNECTIONS SHALL HAVE MAINSTOPS (COMPRESSION TYPE FITTINGS) INSTALLED AT THE WATERMAIN EQUAL TO THE WATER SERVICE CONNECTION DIAMETER. CURB STOP AND VALVE BOX SHALL BE INSTALLED ON PROPERTY LINE. AT EACH SERVICE SADDLE WATERMAIN PIPE SHALL BE CORED BY A 19mm 'SHELL' OR 'CORE' CUTTER AS RECOMMENDED BY THE PIPE MANUFACTURER. A HOLESAW, TWIST DRILL, SPADE OR AUGERING BIT WILL NOT BE PERMITTED UNDER ANY CIRCUMSTANCE.
30. CONNECTIONS TO EXISTING TOWN WATERMANS SHALL BE BY TOWN FORCES UNLESS AUTHORIZED OTHERWISE.
31. MINIMUM DEPTH OF COVER OVER WATERMAIN AND SERVICES SHALL BE 1.7m FROM THE TOP OF PIPE TO THE FINISHED GROUND ELEVATION.



LEGEND section containing symbols and descriptions for ground contours, property lines, existing and proposed buildings, asphalt, concrete, watermain, sanitary sewers, storm sewers, swales, catchbasins, maintenance holes, trees, and flow directions.

10 Jul 2025 PRELIMINARY

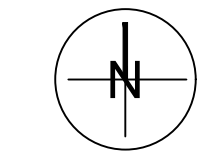


Table with 4 columns: A, OPA/ZBA APPLICATION, 10 JULY 2025, TC. Rows for issue, date, and int.

Table with 4 columns: A, OPA/ZBA APPLICATION, 10 JULY 2025, TC. Row for issue, date, and int.

Do not scale drawings. Report any discrepancies to Quartek Group Inc. before proceeding.

Drawings must be sealed by the Architect and / or Engineer prior to the use for any building permit applications and / or government approval. Seals must be signed by the Architect and / or Engineer before drawings are used for any construction.

All construction to be in accordance with the current Ontario Building Code and all applicable Ontario regulations. All drawings and related documents remain the property of Quartek Group Inc., all drawings are protected under copyright and under contract.

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project title

YORK ROAD RESIDENTIAL INFILL

1317 YORK ROAD, NIAGARA-ON-THE-LAKE

drawing title

CONCEPTUAL SITE SERVICING

drawn by TC, designed by TC

scale 1:200, date 10 JULY 2025

job number 24086, issue A

drawing number 24086-CSS

Vertical text on the left margin: P:\2024\Projects\24086_1317 York Rd\NOTL\Drawings\Conceptual\24086-CSS.dwg drawing job: 24086-CSS posted by: tsawford on Jul 10, 2025 - 4:46pm