Functional Servicing Report

Norwood Park Subdivision – Phase 4
Township of Asphodel – Norwood
Engage Project No. 20120

Engage Engineering Ltd.

January 2022

Issued for Draft Plan Approval

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1.0 Introduction

1.1 Purpose

Engage Engineering Limited (Engage) has been retained by DPH Developments Inc. (DPH) to prepare a Water and Sanitary Servicing Report to support a Draft Plan Application for Phase 4 of the Norwood Park residential subdivision in the Township of Asphodel-Norwood (Township) Phase 4 of the development will consist of 96 single family homes, and 52 townhomes, an extension of Albine Street, and the construction of three internal right-of-way's (ROW). This report is being prepared to confirm the following:

- Water servicing capacity and configuration
- Sanitary servicing capacity and configuration

Recommendations made in this report will be in accordance with the MOECP and Township of Asphodel-Norwood requirements, in addition to current best practices.

Please note this report is to be read in conjunction with the *Infrastructure Assessment for Growth Plan* (IA Reort), prepared by Engage Engineering (2021), which analyzes the existing sanitary and water infrastructure in the Township. Additionally, this report utilizes information from the functional servicing reports completed for the previous phases of the Norwood Park development and builds on the recommendations provided in the Engineering Due Diligence Report (DDR), prepared by Engage Engineering, dated March 2021.

1.2 Site Description

The subject development is a 14.1 ha parcel of land in the Township of Asphodel-Norwood (Town). The property is bounded to the north by the hydro corridor and agricultural lands, the west by agricultural lands, to the south by Albine Street and agricultural lands, and to the east by the Norwood Park Phase 3 Subdivision. The location of the subject property is identified on the Location Plan attached as **Figure 1**.

2.0 Water Servicing

2.1 Existing Conditions

The existing water distribution system that services the Village of Norwood is owned and operated by the Township of Asphodel-Norwood. The municipal drinking water system is comprised of the following infrastructure:

- Four municipal wells, low lift pumping stations and treatment systems
- One municipal water tower (standpipe) with a capacity of 1,264m³
- Approximately 13km of watermain piping ranging in size (from 32mm to 250mm) and material type (black iron, ductile iron, asbestos cement, and PVC)

Phases 1 to 3 of the Norwood Park development are serviced with 200 mm diameter watermain within Albine Street which connects the recently replaced (2006) 200mm watermain located on County Road 40. The watermain within Albine Street terminates with a fire hydrant at Keeler Court.

The DDR prepared by Engage Engineering investigated the remaining capacity in the drinking water treatment system and the treated water storage in the Village. As stated in the report, the existing water treatment plant has remaining capacity to service the development, however the report did identify existing capacity issues within the existing water standpipe in the Village. The existing standpipe is just adequate for the existing population with essentially no reserve capacity for any future development areas. The Township is investigating and planning to upgrade the treated water capacity to service the expected growth in the Village, and capacity has been allocated for the Phase 4 development. It is to Engage's understanding the Township is currently in the design phase for this project with a likely construction timeline of 2022/2023 for completion.

Relevant background information has been included in **Appendix A**.

2.2 Proposed Conditions

Water servicing for Phase 4 of the development is proposed to extend and connect to the existing 200mm diameter watermain on Albine Street. The watermain will be looped through the proposed road allowances to provide service to the 148 lots. The proposed watermain will be 200mm PVC DR18 watermain with a pressure class rating of 1034 kPa (150 psi), consistent with the previous phases.

The drinking water system can support the development of 356 additional residential units, or 962 m^3/s, prior to upgrades being required and has adequate remaining capacity to service the proposed development under the current conditions. As noted above, the existing standpipe is at 96% capacity and therefore the proposed development or any other future development cannot be serviced in the Village until upgrades are made to the standpipe.

Fire hydrants will be provided at a spacing of 150m maximum between hydrants. Water valves will be proposed at each leg of the intersections to ensure sections of the watermain can be shut down for maintenance and repair in the future. Refer to the **Preliminary Water Design** included as **Figure 4**.

2.3 Design Criteria

The design criteria used in this report is outlined below:

- Residential water demand of 450 L/person/day.
- Single detached residential lots to have capacity of 3.0 persons/unit
- Townhomes to have capacity of 2.4 persons/unit
- Phase 4-unit count: 96 single detached homes, and 52 townhomes
- Maximum day factor of 2.50 (based on population of 1,441)

- Peak hour factor of 3.75 (based on population of 1,441)
- Minimum fire flow of 2000 L/min
- The minimum pressure of the system shall meet or exceed 40 psi (275 kPa) during normal operating conditions.
- The minimum pressure of the system shall meet or exceed 20 psi (138 kPa) during maximum day plus fire flow conditions.

2.4 Design Flow Rates

Based on a Statistics Canada Census Profile from 2016 the Village of Norwood has a population of 1,441. Calculations for the domestic water demand and fire demand for the proposed development were determined based on the design criteria listed above. Detailed calculations have been provided in **Appendix A** and have been summarized in **Table 1** below.

Table 1 – Water Demand

Flow Type	Flow (L/min)
Average Day Flow	129.0
Maximum Day Flow	322.5
Peak Hour Flow	483.8
Fire Flow	2,000.0
Maximum Day + Fire Flow	**2,322.5**

Utilizing the information presented in Section 3.3 of the IA Report, the capacity of the existing Norwood drinking water system was analyzed to confirm if it can accommodate the additional flows to service the other future developments. The average maximum daily flow measured over the last nine years was utilized for the existing condition. The analysis is summarized in **Table 2** below.

Table 2 – Norwood Drinking Water System Capacity

Flow Type	Maximum Daily Flow (m^3/day)	Rated Capacity of Drinking Water System (m^3/day)	Drinking Water System Capacity (%)
Existing Flows (Average to date)	1,003	1,965	51
Existing Flows + NWP Ph.4 Flows	1,236	1,965	67

As shown in **Table 2** the existing Drinking Water System in Norwood has adequate capacity in its existing condition to service the development of Norwood Park Phase 4.

2.5 Distribution System Pressures

With the addition of 148 lots in Phase 4 of the development, system pressures were reviewed to ensure they fall within the MOE guidelines, as outlined below:

- Normal Operating Pressure — from 350 to 480 kPa (50 to 70 psi)
- Minimum Operating Pressure — >275 kPa (40 psi)
- Maximum Operating Pressure — <700 kPa (100 psi)
- Maximum day demand plus fire flow — >140kPa (20 psi)

To review system pressures and ensure adequate flow is available for Phase 4, the hydrant flow testing results for Phase 2 were utilized. The Phase 2 flow test location was also in close proximity to the Albine Street hydrant so the data should be representative.

The hydrant used for Phase 2 flow testing was located on Lot 2 on Darrell Drain Crescent in the northeast corner of Phase 2, at an approximate elevation of 213.80 m. The highest elevation in the boulevard in Phase 4 is 213.40 and represents the worst-case scenario. The highest elevation in the boulevard of Phase 4 does not exceed the elevation of the existing hydrant, and thus the data from the Phase 2 hydrant was not translated as it is a conservative estimation. The hydrant meets the minimum operating pressure of 40 psi required by the MOE Drinking Water Guidelines. Additionally, the construction of the proposed water tower will improve pressures to the proposed development.

The hydrant flow testing was performed by Lakeshore Hydrant Services Inc. to support Phase 2 of the development. Flows from the 1 port scenario were utilized for a conservative approach. Refer to **Appendix A** for flow and pressure testing results. Flow and pressure test results for the translated location in Phase 4 are summarized in **Table 3** below.

Table 3 – Flow and Pressure Test Results

Hydrant	Field Test Flow (L/min)	Field Test Pressure (psi)
Flow (1 port)	2,248	18
Residual (Static)	n/a	45
Residual (1 port)	3,342	20

To confirm the available flow at a pressure of 40 psi the Hazen-Williams formula was employed, and a flow of 1,401 L/min was calculated at the Flow Hydrant under a 1 port scenario. For detailed calculations refer to **Appendix A**. Given the results of the flow and pressure test we can confirm that the domestic water demand and fire flow can be accommodated for the proposed Phase 4 of the development. **Table 4** below identifies flows and pressures available to meet the demand requirements of Phase 4.

Table 4 – Phase 4 Flows and Pressures

Flow Condition	Flow Required Phase 4 (L/min)	Pressure Required (psi)	Flow Available (L/min)	Pressure Available (psi)
Average Day Flow	147.0	40	1,401	1,254
Maximum Day Flow	367.5	40	1,401	1,034
Peak Hour Flow	551.3	40	1,401	850
Maximum Day + Fire Flow	2,367.5	20	3,342	974

The calculated pressure is representative of the worst-case scenario for the development as it is equivalent in elevation to the high point of the site, uses the 1 port scenario, and was calculated prior to the upgrades to the water tower. Additionally, the flow test was completed when the Albine Street watermain was a 150mm diameter, the watermain has since been upgraded to a 200mm diameter PVC watermain which will improve operating pressures in the area. The elevation of the remainder of Phase 4 will be lower so pressures in the majority of Phase 4 water distribution system should be slightly higher than those represented above.

Based upon the above information, the development of Phase 4 can be serviced at minimum operation pressures and required flow rates per the MOE Guidelines with existing infrastructure.

3.0 Sanitary Servicing

3.1 Existing Conditions

The existing sanitary collection system and sewage treatment plant that services the Village of Norwood is owned and operated by the Township of Asphodel-Norwood. The sewage system is comprised of the following infrastructure:

- One sewage treatment plant located on Industrial Drive.
- Three municipal pumping stations.
- Gravity collection system consisting generally of 200mm sanitary sewer with varying material types (asbestos concrete, vitrified clay, PVC)

The first three phases of the Norwood Park development were each serviced by 200mm gravity sewer which all contribute to the sanitary sewer within Country Road 40 and ultimately the sewage treatment plan on Industrial Drive. Phase 3 of the development is serviced off of the 200mm diameter gravity sewer within Albine Street which terminates just east of the proposed site at Maryann Lane.

The IA Report prepared by Engage Engineering investigated the remaining capacity in the wastewater treatment plant (WWTP), the Lions Park sanitary pumping station (SPS) and associated forcemain, and the downstream sanitary sewer system to service the proposed

development. The remaining capacity in the WWTP was determined to be adequate to service the proposed development. However, the IA determined that the Lions Park SPS is currently operating at 84% capacity and can only accommodate 94 single family homes prior to requiring upgrades. Upgrades will be required for the balance of units above 94 in Phase 4 as well as other future development lands identified in the IA Report. Phasing of the occupancy for the development may be possible to utilize some of the available capacity in the pumping station, however consultation with the Town would be required. It is to Engage's understanding that the Township is investigating and planning for the upgrade of the Lions Park SPS, and associated forcemain, with a likely timeline of 2022 for completion, which will include allocation for Phase 4 and other future development lands.

Additionally, during the due diligence period Engage Engineering investigated the profile of the existing Albine Street alignment and determined the proposed development would not be serviceable by a gravity network. The downstream sanitary sewer was also investigated and six lengths of sewer within County Road 40, and four stretches within Wellington Street ROW will require upgrades to service the proposed development and other future development lands identified in the IA Report.

3.2 Proposed Conditions

Proposed sanitary servicing for Phase 4 of the development will be serviced by an internal sanitary sewer network, and a proposed sanitary pumping station and associated forcemain system. The existing 200mm sanitary sewer within Albine Street terminates just east of the proposed development at Maryann Lane and is to be extended west to provide gravity service for the four existing houses fronting Albine Street and connect to the proposed forcemain servicing Phase 4.

The proposed sanitary sewer will be installed along the centerline of the proposed roadway at a depth of approximately 2.8m to provide gravity service to the basements of the proposed homes. The proposed sanitary sewer will be 200mm PVC DR35 sanitary sewer with a hydrostatic rating of 345 kPa (50 psi), consistent with the previous phases.

Sanitary maintenance holes will be provided at all intersections, change in pipe direction, and straight runs exceeding 120m. The proposed sanitary sewer configuration is displayed on the **Preliminary Sanitary Design** included as **Figure 3**.

As noted above, the proposed development will require an on-site sanitary sewer pump station due to the elevation profile of Albine Street. Space has been allocated for the SPS within the SWM block on the **Draft Plan** included as **Figure 2**. The design of the proposed SPS and associated forcemain will be completed at the detailed design stage and will be submitted under separate cover.

3.3 Design Criteria

The design criteria used in this report is outlined below:

- Residential sewage demand of 450 L/person/day.
- Single detached residential lots to have capacity of 3.0 persons/unit
- Townhomes to have capacity of 2.4 persons/unit
- Phase 4-unit count: 96 single detached homes, and 52 townhomes
- Harmon peaking formula to be applied to residential flows
- Infiltration rate of 0.28 L/ha/s

3.4 Sewage Flow Rates & Wastewater Treatment Plant Capacity

Sewage flow rates for the existing and proposed flows were analyzed based on MOE guidelines. Based on the design criteria above, the sewage flows for the proposed site have been calculated and summarized in **Table 5** below, and calculations are included in **Appendix B** for the detailed calculations.

Table 5 – Proposed Sewage Flows

Flow Type	Flow (m^3/day)	Flow (L/s)
Average Residential Flow	187.43	2.15
Peak Residential Flow	752.14	8.71
Infiltration Flow	341.11	2.95
Peak Design Flow	**1,093.25**	**12.65**

The capacity of the existing wastewater treatment plant was analyzed based upon the highest demand year to confirm the residual capacity available to accommodate other future development within the Village.

Table 6 – Wastewater Treatment Plant Capacity

Flow Type	Average Daily Flow (m^3/day)	Rated Capacity of Wastewater Treatment Plant (m^3/day)	Wastewater Treatment Plant Capacity (%)
Existing Flows (to date)	579	1,500	39
Existing Flows + NWP Ph. 4 Flows	766	1,500	51

The results indicate that based upon the existing flow data, the wastewater treatment plant has adequate capacity to support the development of Phase 4.

3.5 Lion's Park Sanitary Pumping Station

Flows from the proposed development will contribute to the Lion's Park SPS. The capacity of the Lion's Park SPS and associated forcemain was investigated in the IA Report. Using

the proposed sewage flows presented in **Table 5** the capacity of the Lion's Park SPS was analyzed to determine if it has remaining capacity to service the 148 residential units for the proposed development. The analysis is summarized in **Table 7** below

Table 7 – Peak Pumping Station Capacity

Flow Type	Peak Flow (L/s)	Rated Capacity of Pumping Station (L/s)	Pumping Station Capacity (%)
Existing Flows (Actual)	46.5	55.1	84
Existing + NWP Ph.4 Flows	58.3	55.1	106

As shown in **Table 7** above, the SPS does not have the residual capacity to service the entirety of the proposed development without upgrades. The proposed development will exceed the remaining capacity which can accommodate up to 94 units and upgrades will be required to be made by the Town prior to full occupancy of the development. Phasing of the occupancy development may be possible to utilize some of the available capacity in the pumping station, however consultation with the Town would be required.

Additionally, the existing 200mm diameter forcemain at the Lions Park pumping station is sufficient for existing peak flows. As noted in the IA report, the forcemain is projected to exceed the reaming capacity at some point between existing conditions and the construction of an additional 589 residential units within the Village. The IA report recommends assessing forcemain capacity in conjunction with the SPS upgrades. It is to Engage's understanding that the Township is investigating and planning for these projects with a likely timeline of 2022 for completion.

3.6 Downstream Sanitary Sewer

Flows from the proposed development will contribute to the Albine Street sanitary sewer and continue south within County Road 40 towards the Lions Park pumping station, and ultimately the existing WWTP. The capacity of the existing sanitary system and the ability to service the other future development has been analyzed in the IA Report. Relevant background information is included in **Appendix C**.

The IA Report identified three main areas of sanitary sewer that would require upgrades prior to the development of these lands.

- Albine Street between MH 17A to MH 261
- County Road 40 between MH 201 to MH 59
- Wellington Street between MH 59 to MH 111
- Victoria Street between MH 124 to MH 101

Sanitary sewer locations and manhole ID's are included on the Downstream Sanitary Drainage Area Plan included as **Figure 5**.

The Albine Street sanitary sewer between MH17A to MH261 has been upgraded to a 300 mm diameter PVC sanitary sewer as per the IA Report. This sewer includes allocation for Phase 4 and no additional upgrades are required. Sanitary sewer terminates at Maryann Ln. and plan and profile drawings of the upgraded sewer are included in **Appendix C**. As noted above, the sanitary sewer within the Albine ROW will be extended to service the Phase 4 developments, and additionally design details will be provided during the detailed design process.

To support the Phase 4 development, there are six stretches within the County Road 40 ROW between Albine Street and Wellington Street that will require upgrades to service to Phase 4, that equates to approximately 430m of sanitary sewer. The existing sewer within County Road 40 is a 200mm diameter sanitary sewer and is required to be upgraded to a 250mm diameter sanitary sewer to service the existing flows and the proposed development. This was determined utilizing the information from the IA Report and is summarized below. Supporting documentation is provided in **Appendix B** and summarized in **Table 8** below

Table 8 - County Road 40 Sanitary Sewer (MH201 to MH59)

Scenario	Size (mm)	Flow (L/s)	Percent Capacity (%)
Existing	200	20.68	75 %
Existing + Phase 4	200	33.34	107 %
Existing + Phase 4	250	33.34	59 %

*** Existing flows included flows from Phase 1,2 and 3 of the Norwood Park Development*

It is noted that the County Road sanitary sewer upgrades were identified in the IA report to be sized as a 375mm diameter PVC sanitary sewer to support other future growth to the north. The sizes presented in **Table 8** above represent only the upgrades to existing infrastructure that is required to support the development of Phase 4 and existing flows in the County Road 40 sanitary sewer and does not include allowance for other future development flows.

Additionally, the existing 200mm diameter sanitary sewer within the Wellington ROW will be required to be upgraded to a 250mm diameter sanitary sewer to convey all existing flows, and the increased flows from Phase 4. This was determined utilizing the information from the IA Report and is summarized below. Supporting documentation is provided in **Appendix B** and summarized in **Table 9** below.

Table 9 - Wellington Sanitary Sewer (MH59 to MH111)

Scenario	Size (mm)	Flow (L/s)	Percent Capacity (%)
Existing	200	22.05	80 %
Existing + Phase 4	200	34.71	112 %
Existing + Phase 4	250	34.71	62 %

*** Existing flows included flows from Phase 1,2 and 3 of the Norwood Park Development*

It is noted that the Wellington Street sanitary sewer upgrades were identified during the detailed design of Phase 3 and was sized as a 375mm diameter PVC sanitary sewer to support the Phase 3 development and other future growth as identified in the IA Report. The sizes presented in **Table 9** represent the upgrades to existing infrastructure that is required to just support the development of Phase 4 and existing flows in the Wellington ROW and does not include allowance for other future development flows. The Township proceeded with the Wellington Street reconstruction design based on the results of the IA Report. The design has been prepared with a 375 mm sewer to allow for other future development and is currently in for ECA Approval. Plan and profile drawings of the proposed Wellington Design were completed by Engage Engineering and are included in **Appendix C** for reference.

Finally, the Victoria Street upgrades have been designed, approved, and are currently under construction. Construction is underway and is expected to be completed in 2022. The Victoria Street upgrades were identified within the IA Report and are required to be constructed to service the proposed development. The upgrades included allocation for Phase 4 and additional other future development. Plan and profile drawings detailing the Victoria Street upgrades were completed by Engage Engineering and are included in **Appendix C** for reference.

4.0 Roadway and Utility Servicing

4.1 Typical Cross Section

The development will be serviced by a network of proposed municipal roadways that will connect to existing roadways in one location. The main entrance will be off Albine Street from Country Road 40. In total there will be approximately 1,429m of roadway based on the current Draft Plan.

The urban typical cross section that has been constructed on Albine street up to the Phase 3 entrance, will be extended to provide access to Phase 4 of the development. This cross section will accommodate vehicular and pedestrian connectivity to the adjacent streets as well as provide the required utility services needed to support the proposed residential units. The Right-of-Way (ROW) is proposed at a width of 20.0m and will encompasses all elements of the cross section identified below. **Figure 6** attached outlines the proposed ROW cross section.

To convey vehicular traffic and provide access to the residential units, two asphalt travel lanes at 4.5m width have been proposed for a total pavement width of 9.0m. The asphalt and base granular matrix will be confirmed by the Geotechnical Report and in accordance with Township standards. Bordering the asphalt will be concrete curb and gutter as per OPSD 600.040. This standard specifies a 0.3m wide gutter with a 0.2m wide barrier curb for a total curb width of 0.5m. A 100mm subdrain will be provided to ensure proper drainage of the road base granular.

A 1.5m wide sidewalk on one side of the ROW will provide pedestrians with connectivity to adjacent roadways. The sidewalk will be located 1.0m from the property line.

As previously noted, a proposed 200mm watermain will service the development. The watermain will be located in the boulevard with a 7.50m offset from the centerline of the ROW. Hydrants will be located 0.3m from property line.

The proposed 200mm sanitary sewer will be located along the centerline of the ROW.

The main storm sewer is proposed to be under the curb line with a 4.70m offset from the centerline of the ROW. Additional catchbasin leads will be shown in the detail design to provide for proper drainage of the ROW.

A joint utility trench will be provided to supply hydro, gas and communication services. The trench will be located in the boulevard on both sides of the street. The hydro transformer will be located on the inside of the sidewalk as identified on the cross section.

4.2 Utility Servicing & Street Lighting

As part of this development shallow utility servicing will be required to provide electrical, natural gas and communication services to the residential units. Street lighting will also be required. The following services are available for Phase 4 of the development.

Based on site investigation, there is existing primary overhead electrical wiring located on the south side of Albine Street which terminates just east of the subject property. Electrical service to feed the proposed development will require routing underground from the existing hydro poles on Albine Street. Electrical detailed design will be required to determine proposed transformer load demand and sizing.

Preliminary investigation confirmed there is an existing gas main on the south side of the Albine Street ROW, which terminates directly east of the site. Significant gas infrastructure was upgraded to support the Norwood Park Phase 3 subdivision and included allocation for other future development in the area. Gas design will be required to determine proposed demand and sizing for the proposed site.

There is underground bell service along the north side of Albine Street which terminates just west of the subject property. Telecommunications providers be that Bell and Eastlink shall need to be consulted as part of the detailed design phase to determine individual service requirements.

As part of the detailed design a Composite Utility Plan will be prepared to ensure no conflicts between shallow services. A joint utility trench as identified in the typical road cross section will be used to provide internal servicing. The joint trench is located in the boulevard on both sides of the roadway and will accommodate both primary and secondary servicing as required.

5.0 Summary

Engage was retained by DPH Developments Inc. to review the municipal services available for Phase 4 of the Norwood Park residential subdivision. The existing municipal infrastructure was reviewed to confirm that water, sanitary and storm servicing is available for the proposed 148 lots in the residential development. The Norwood water treatment plant and sewage treatment plant, including the water distribution network and wastewater collection system, and SPS were analyzed to confirm that the services could provide the required servicing to the development.

Water servicing to the proposed development is to be connected to the existing 200mm watermain within the Albine Street ROW. A review of the existing capacity in the Norwood drinking water system determined upgrades will be required to be made to the existing treated storage water facility prior to connection to the system. Additionally, the Town is currently in the design stage for the construction of additional treated water storage. The additional storage must be operational prior to the developments connection into the existing system for the treated drinking water capacity.

Sanitary servicing to the proposed development will require an onsite sanitary pumping station to connect to the existing sanitary sewer infrastructure within the Albine Street ROW. A review of the existing capacity in the Norwood sanitary system determined the development will require upgrades to the existing Lions Park sanitary pumping station capacity and the construction of an additional forcemain to be completed by the Township prior to connection to the system. The Lions Park SPS is currently operating at 84% capacity and can only accommodate 94 single family homes prior to requiring upgrades. Upgrades will be required for the balance of units in Phase 4 as well as other future development lands. The development will also require upgrades to six stretches (430m) of sanitary sewer within the County Road 40 ROW, and four stretches within the Wellington Street ROW (272m), and an extension of the Albine Street sanitary sewer to service the development and other future development lands.

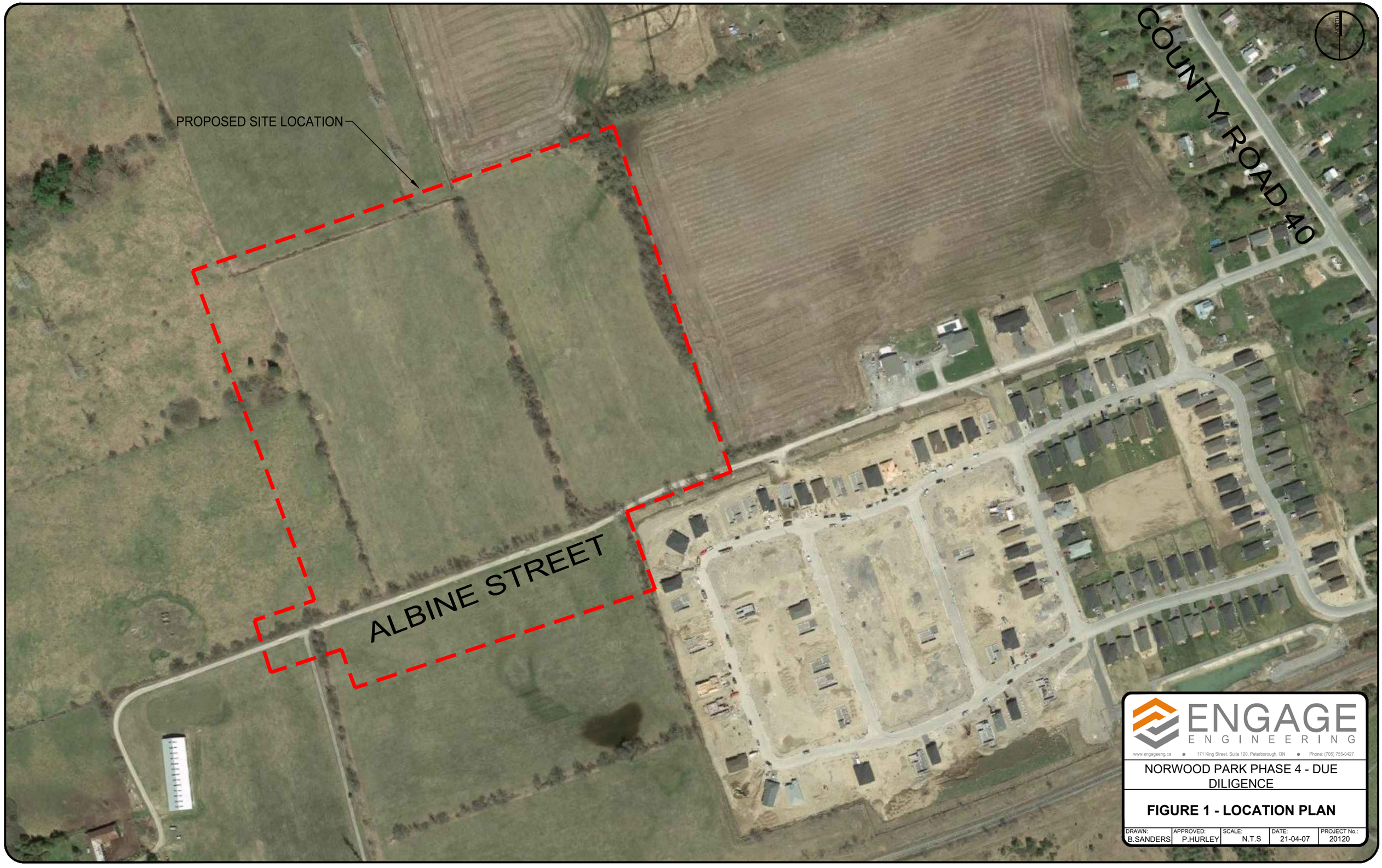
Prepared by:

Brooke Sanders,
E.I.T

Reviewed by:

Paul Hurley, P.Eng
Principal

Figure 1 - Location Plan



ENGAGE ENGINEERING

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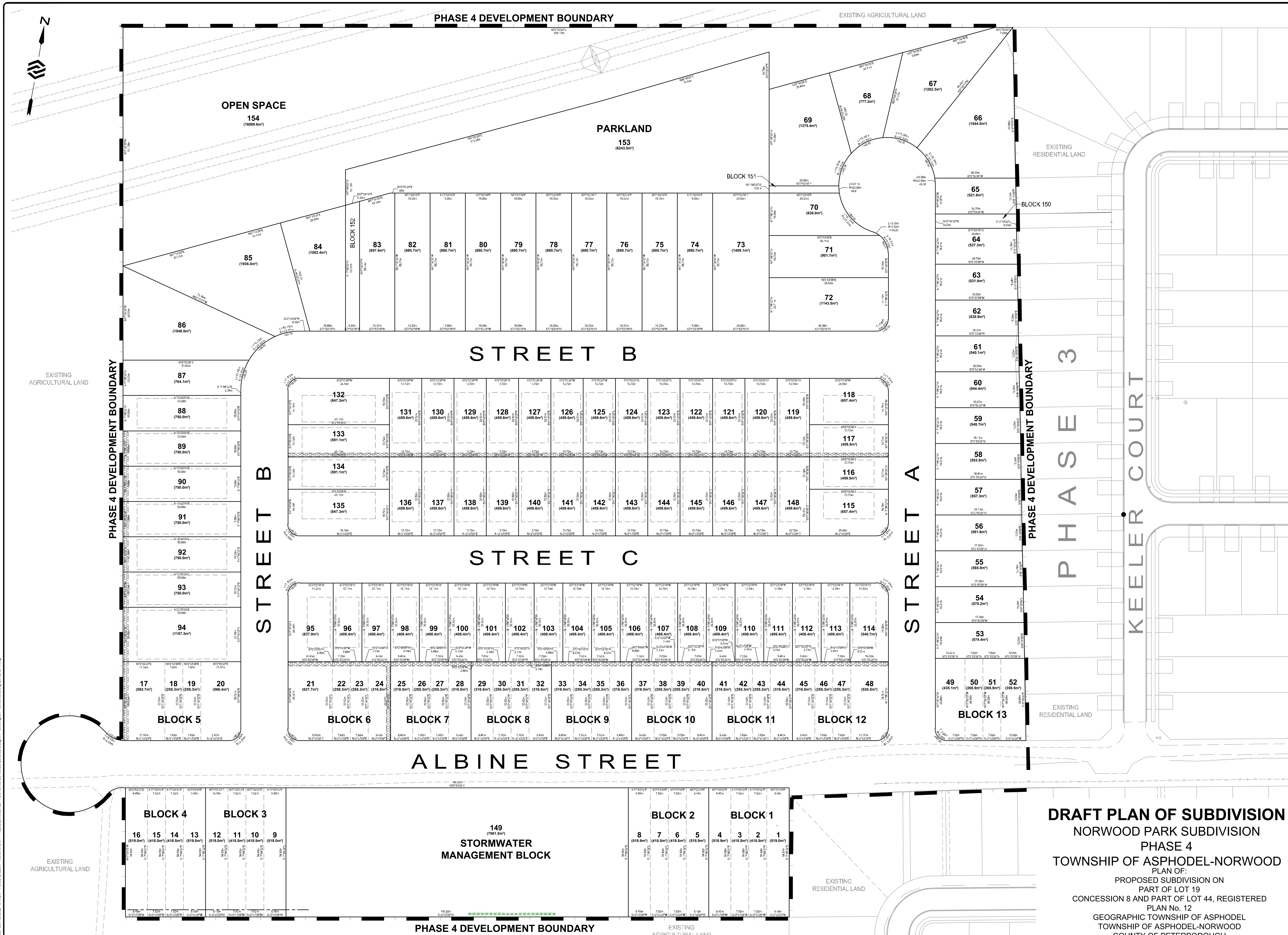
NORWOOD PARK PHASE 4 - DUE DILIGENCE

FIGURE 1 - LOCATION PLAN

DRAWN:	APPROVED:	SCALE:	DATE:	PROJECT No.:
B.SANDERS	P.HURLEY	N.T.S	21-04-07	20120

Figure 2 – Draft Plan



DRAFT PLAN OF SUBDIVISION

NORWOOD PARK SUBDIVISION
PHASE 4
TOWNSHIP OF ASPHODEL-NORWOOD

PLAN OF:
PROPOSED SUBDIVISION ON
PART OF LOT 19
CONCESSION 8 AND PART OF LOT 44, REGISTERED
PLAN No. 12
GEOGRAPHIC TOWNSHIP OF ASPHODEL
TOWNSHIP OF ASPHODEL-NORWOOD
COUNTY OF PETERBOROUGH

BENCHMARK

CUT CROSS IN CONCRETE GUTTER ON KEELER COURT AT THE INTERSECTION OF KEELER COURT AND MARYANN LANE. CUT CROSS IS ON THE WEST SIDE OF THE ROAD APPROXIMATELY 100m NORTH OF THE INTERSECTION OF ALBINE STREET AND KEELER COURT.

ELEV: 213.160m

OWNER'S CERTIFICATE

I AUTHORIZE ECOVUE CONSULTING SERVICES INC. TO SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE COUNTY OF PETERBOROUGH.

DATE: 2021-12-10

DPH DEVELOPMENTS INC.

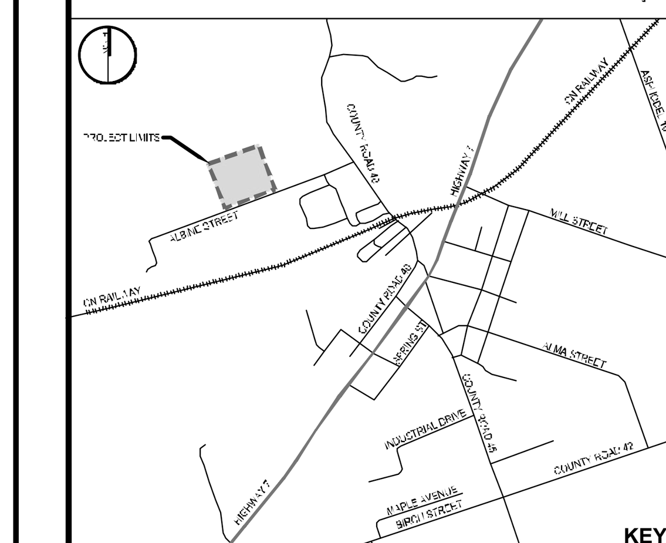
SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND ARE IN ACCORDANCE WITH THE SURVEYS ACT , THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.

DATE: 2021-12-10

SHAWN M. O'CONNOR
Ontario Land Surveyor



KEY MAP

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51-17 (A-L) OF THE PLANNING ACT:

a. AS SHOWN ON THIS DRAFT PLAN
b. AS SHOWN ON THIS DRAFT PLAN
c. AS SHOWN ON THIS DRAFT PLAN
d. RESIDENTIAL DWELLINGS
e. AS SHOWN ON THIS DRAFT PLAN
f. AS SHOWN ON THIS DRAFT PLAN
g. AS SHOWN ON THIS DRAFT PLAN
h. REFER TO FUNCTIONAL SERVICING REPORT BY ENGAGE ENGINEERING
i. REFER TO STORMWATER MANAGEMENT REPORT BY ENGAGE ENGINEERING
j. AS SHOWN ON THIS DRAFT PLAN
k. HYDRO, TELEPHONE, MUNICIPAL SEWAGE SERVICING, MUNICIPAL WATER SERVICING AND STORMWATER MANAGEMENT PONDS
l. N/A

LAND USE SUMMARY

LAND USE	AREA (m^2)	AREA (%)	UNITS
TOWNHOMES BLOCKS 1-13	19,026.30m^2	13.60%	52
SINGLE-FAMILY LOTS 53-148	61,558.10m^2	43.90%	96
SWM BLOCK 149	7981.50m^2	5.70%	-
SERVICING BLOCKS 150-152	621.30m^2	0.40%	-
PARKLAND BLOCK 153	6,243.50m^2	4.50%	-
OPEN SPACE BLOCK 154	16,069.60m^2	11.50%	-
20.0m MUNICIPAL ROAD ALLOWANCE	28,578.30m^2	20.40%	-
TOTAL AREA	140,078.60m^2	100.00%	148

No.	REVISION	BY	DATE
1.	ISSUED FOR DRAFT PLAN SUBMISSION	JD	2021-12-10

ENGAGE ENGINEERING
www.engageeng.ca • 171 King Street, Suite 120 Peterborough, ON • Phone: (705) 755-0427

NORWOOD PARK SUBDIVISION PHASE 4

TOWNSHIP OF ASPHODEL NORWOOD

DRAFT PLAN

NORWOOD, ONTARIO

DRAWN BY: J.DUNN
DESIGNED BY: J.DUNN
APPROVED BY: P.HURLEY
DATE: 2021-08-30
STAMP:
SCALE: 1:750

PROJECT NUMBER: 20120
SHEET NAME: DP1
SHEET: 1 of 1

Figure 3 - Preliminary Sanitary Design

DEVELOPMENT BOUNDARY

OPEN SPACE
154 (16069.6m²)

PARKLAND
153 (6243.5m²)

BLOCK 151

BLOCK 152

BLOCK 150

DEVELOPMENT BOUNDARY

DEVELOPMENT BOUNDARY

STREET 'B'

STREET 'A'

STREET 'C'

KEELER COURT

ALBINE STREET

DARRELL DRAIN CRES

PHASE 3

PHASE 2

BLOCK 5

BLOCK 6

BLOCK 7

BLOCK 8

BLOCK 9

BLOCK 10

BLOCK 11

BLOCK 12

BLOCK 13

BLOCK 4

BLOCK 3

BLOCK 2

BLOCK 1

149 (7981.5m²)
STORMWATER MANAGEMENT BLOCK

MH4A — 90.0m-200mm ∅ SAN @ 0.5% — MH3A — 90.0m-200mm ∅ SAN @ 0.5% — MH2A — 82.5m-200mm ∅ SAN @ 0.6% — MH1A

MH5A — 15.8m-200mm ∅ SAN @ 1.0%

MH5A — 77.1m-200mm ∅ SAN @ 0.5% — MH7A

MH6A — 40.0m-200mm ∅ SAN @ 0.5% — MH16A — 66.0m-200mm ∅ SAN @ 0.5% — MH15A — 90.0m-200mm ∅ SAN @ 0.5% — MH14A — 85.0m-200mm ∅ SAN @ 0.5% — MH11A

MH7A — 47.0m-200mm ∅ SAN @ 0.5% — MH8A

MH8A — 40.0m-200mm ∅ SAN @ 1.0% — MH12A

MH19A — 77.4m-200mm ∅ SAN @ 1.0% — MH8A — 82.6m-200mm ∅ SAN @ 0.5% — MH20A — 66.0m-200mm ∅ SAN @ 0.5% — MH18A — 50.0m-200mm ∅ SAN @ 1.5% — MH17A — 82.4m-200mm ∅ SAN @ 0.5% — MH13A — 62.6m-200mm ∅ SAN @ 0.5% — MH24A — 65.0m-200mm ∅ SAN @ 0.8%

14.5m-200mm ∅ SAN @ 1.0%

PROP SAN FORCEMAIN

PROP SAN FORCEMAIN

MH9A — 23.2m-200mm ∅ SAN @ 1.0%

MH10A — 54.1m-200mm ∅ SAN @ 0.7%

87.0m-200mm ∅ SAN @ 1.2%

43.3m-200mm ∅ SAN @ 0.6%

43.5m-200mm ∅ SAN @ 1.5%

REFER TO SHEET X FOR FUTURE SERVICING ON ALBINE STREET

BENCHMARK
CUT CROSS IN CONCRETE GUTTER ON KEELER COURT AT THE INTERSECTION OF KEELER COURT AND MARYANN LANE. CUT CROSS IS ON THE WEST SIDE OF THE ROAD APPROXIMATELY 10m NORTH OF THE INTERSECTION OF ALBINE STREET AND KEELER COURT.
ELEV: 213.160m

NOTES:

SANITARY MANHOLE

SANITARY SEWER

No.	REVISION	BY	DATE
1.	ISSUED FOR REVIEW	JD	2021-12-01

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NORWOOD PARK SUBDIVISION PHASE 4

TOWNSHIP OF ASPHODEL-NORWOOD

FUNCTIONAL SANITARY SEWER DESIGN

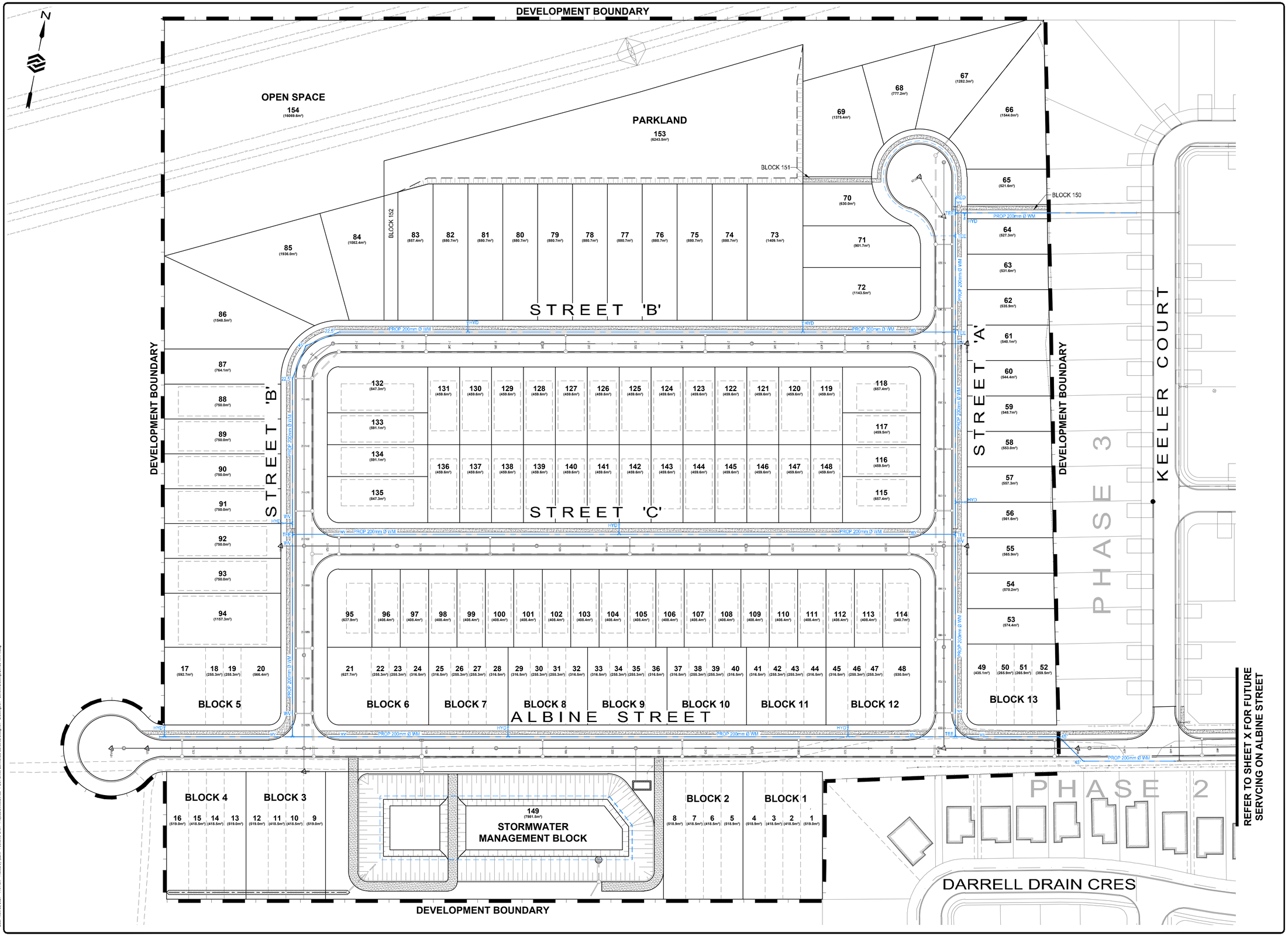
NORWOOD, ONTARIO

DRAWN BY: J.DUNN	STAMP:
DESIGNED BY: J.DUNN	
APPROVED BY: J.ARMSTRONG	
DATE: 2021-11-17	
SCALE:	

PROJECT NUMBER:	SHEET NAME:	SHEET:
20120	SAN1	#### of ####

20120-SAN1
Date: Nov. 30, 2021 - 3:40 pm File name: S:\01 - Projects\2020\20120 - Pine Homes Carmichael Lane\02 Design\01 - Drawings\01 - Current Drawings\20120-SAN1.dwg
Plotted by: jdunn

Figure 4 – Preliminary Water Design



BENCHMARK

CUT CROSS IN CONCRETE GUTTER ON KEELER COURT AT THE INTERSECTION OF KEELER COURT AND MARYANN LANE. CUT CROSS IS ON THE WEST SIDE OF THE ROAD APPROXIMATELY 10m NORTH OF THE INTERSECTION OF ALBINE STREET AND KEELER COURT.

ELEV: 213.160m

NOTES:

- WATERMAIN
- FIRE HYDRANT
- WATER VALVE
- TEE
- 45° BEND
- 22.5° BEND
- REDUCER

No.	REVISION	BY	DATE
1.	ISSUED FOR REVIEW	JD	2021-12-01

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NORWOOD PARK SUBDIVISION PHASE 4

TOWNSHIP OF ASPHODEL-NORWOOD

FUNCTIONAL WATERMAIN DESIGN

NORWOOD, ONTARIO

DRAWN BY:	J.DUNN
DESIGNED BY:	J.DUNN
APPROVED BY:	J.ARMSTRONG
DATE:	2021-11-17
SCALE:	
STAMP:	

PROJECT NUMBER:	SHEET NAME:	SHEET:
20120	WAT1	#### of ####

20120-WAT1
Date: Nov. 30, 2021 - 11:54 am Plotted by: jdunn File name: S:\01 - Projects\2020\20120 - Pino Homes Carmichael Lands\02 Design\01 - Drawings\01 - Current Drawings\20120-WAT1.dwg

‘

Figure 5 – Downstream Sanitary Drainage Area Plan

INFILTRATION AREA: 31.51ha
RESIDENTIAL UNITS: 363
RETIREMENT HOME UNITS: 100
TOWNHOUSE UNITS: 146

INFILTRATION AREA: 21.45ha
SCHOOL POPULATION: 300
FAIR FLOWS: 10,000 PEOPLE @25L/PERSON/DAY

MILL POND

BELMONT PUMPING STATION

LION'S PARK PUMPING STATION

WASTEWATER TREATMENT PLANT

MAPLE AVE PUMPING STATION

OUSE RIVER

COUNTY ROAD 45

ALBINE ST

MILLPOND LN

HELEN ST

MARGARET AVE

WELLINGTON ST

MILL ST

LEGION ST

CEDAR ST

QUEEN ST

KING ST

ELM ST

ALMA ST

FLORA ST

INDUSTRIAL DR

VICTORIA ST

BAKER ST

SPRUCE DR

MAPLE AVE

BIRCH ST

OAK ST

PINE ST

RIDGE ST

SPRING ST

ROBERT RD

MURRAY ST

LEGEND

- VILLAGE BOUNDARY
- EXISTING SANITARY SEWER (AS-BUILTS NEEDED)
- EXISTING SANITARY SEWER
- SANITARY SEWER UPGRADES
- COMMERCIAL AREA (ha): 2 / 1 / 1.50 — No. OF RESIDENTIAL UNITS; INFILTRATION AREA (ha)
- INDUSTRIAL AREA (ha): 2 / 1+ / 1.50 — No. OF RESIDENTIAL UNITS; INFILTRATION AREA (ha)
- TOWNHOUSE UNITS: 2 / 1* / 1.50 — No. OF RESIDENTIAL UNITS; INFILTRATION AREA (ha)
- RETIREMENT HOME UNITS: 2 / 1* / 1.50 — No. OF RESIDENTIAL UNITS; INFILTRATION AREA (ha)
- SCHOOL POPULATION: 2 / 1' / 1.50 — No. OF RESIDENTIAL UNITS; INFILTRATION AREA (ha)
- EXISTING SCHOOL AREA
- EXISTING COMMERCIAL AREA
- EXISTING RETIREMENT HOME AREA
- KNOWN PROPOSED DEVELOPMENTS
- FUTURE DEVELOPMENTS
- DISTANT FUTURE DEVELOPMENTS

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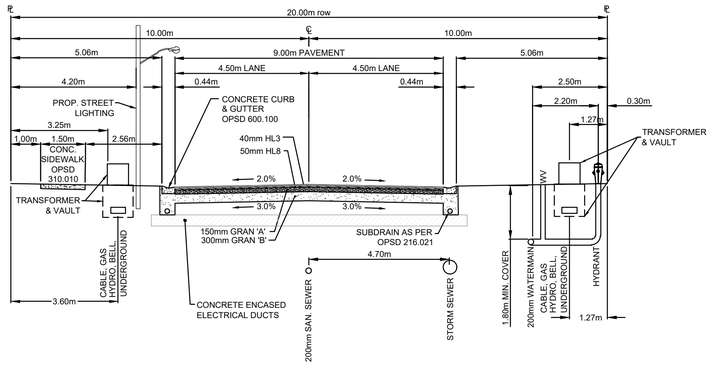
NORWOOD INFRASTRUCTURE ASSESSMENT

FIGURE 3 - FUTURE WORKS SANITARY DRAINAGE AREA PLAN

DRAWN:	APPROVED:	SCALE:	DATE:	PROJECT No.:
A.LAUTENBACH	P.HURLEY	1:5000	2020-02-04	19055

S:\01 - Projects\1900019055 - Infrastructure Assessment for Growth Plan\02 Design\01 - Drawings\Current Drawings\19055 - SAN_DA.dwg PRINTED: May 26, 2020

Figure 6 –Details & Typical Cross Section



1 TYPICAL 20m RIGHT-OF-WAY CROSS SECTION
SCALE: 1:100

2 ALBINE STREET RECONSTRUCTION
SCALE: 1:500

BENCHMARK
CUT CROSS IN CONCRETE GUTTER ON KEELER COURT AT THE INTERSECTION OF KEELER COURT AND MARYANN LANE. CUT CROSS IS ON THE WEST SIDE OF THE ROAD APPROXIMATELY 10m NORTH OF THE INTERSECTION OF ALBINE STREET AND KEELER COURT.
ELEV: 213.160m

NOTES:

No.	REVISION	BY	DATE
1.	ISSUED FOR REVIEW	JD	2021-12-01

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NORWOOD PARK SUBDIVISION PHASE 4

TOWNSHIP OF ASPHODEL-NORWOOD

ALBINE STREET RECONSTRUCTION / DETAILS SHEET

NORWOOD, ONTARIO

DRAWN BY: J.DUNN	STAMP:
DESIGNED BY: J.DUNN	
APPROVED BY: J.ARMSTRONG	
DATE: 2021-11-17	
SCALE:	

PROJECT NUMBER:	SHEET NAME:	SHEET:
20120	DT1	#### of ####

20120-DT1
Date: Nov. 30, 2021 - 4:10 pm Plotted by: jdunn File name: S:\01 - Projects\2020\20-220 - Pino Homes Carmichael Lane\02 Design\01 - Drawings\01 - Current Drawings\20120-DT1.dwg

Appendix A: Water Design Sheets

Water Demand

Project Name:	Norwood Park - Phase 4	**Designed By:**	BS
Project No:	20120	**Date:**	2021-12-10

Design Criteria			
Domestic Water Demand:	450	L/p/day	A
No. of Units (Single Family):	96		B
No. of Persons/Unit (Single Family):	3.0	p/unit	C
No. of Units (Townhouse):	52.0		D
No. of Persons/Unit (Townhouse):	2.4	p/unit	E
Max. Day Peak Factor (MOE):	2.50		F
Peak Hour Peak Factor (MOE):	3.75		G
Fire Flow:	2,000	L/min	H

Calculations				
Average Day Demand				
	Q_{AVG}	=	A x (B x C + D x E)	
		=	185760	L/day
		=	129.0	L/min
		=	185.8	m³/day
Maximum Day Demand				
	Q_{MDD}	=	Q_{AVG} x F	
		=	464400	L/day
		=	322.5	L/min
		=	464.4	m³/day
Peak Hour Demand				
	Q_{PHD}	=	Q_{AVG} x G	
		=	696600	L/day
		=	483.8	L/min
		=	696.6	m³/day
Total Demand (MDD + Fire Flow)				
	Q_{TD}	=	Q_{MDD} + H	
		=	3344400	L/day
		=	2322.5	L/min
		=	**3344.4**	**m³/day**

LAKESHORE HYDRANT SERVICES INC.
Box 712, Cobourg, ON K9A 4R5
Tel: 1-866-622-4022
Fax 905 377-1715
Email: info@lakeshorehydrant.com
www.lakeshorehydrantservices.com
Proudly providing our services for 20 years

FIRE FLOW TEST RESULTS

CLIENT: Engage Engineering Ltd.
420 George Street, Suite 207
Peterborough, ON
K9H 3R5

LOCATION: Norwood Park Development, Norwood, ON

DATE: October 6, 2016

Time	FLOW HYDRANT NO.	Pitot Reading 1 port - psi	FIELD TEST FLOW US gpm (1 port)	Pitot Reading 2 port - psi per port	FIELD TEST FLOW US gpm (2 port)	Outlet Diameter	RESIDUAL HYDRANT NO.	Static (psi)	Residual Reading 1 port (psi)	Residual Reading 2 port (psi)	AVAILABLE FLOW @ 20 psi. in US gpm 1 port	AVAILABLE FLOW @ 20 psi. in US gpm 2 port
10:40 AM	Temporary hydrant #1 at Lot 2	18	594	12	970	2 1/2"	Lot 63 Dudley St.	45	33	22	**883**	**1015**

LHS Operators: Bob & Mike

cc: Jeff Waldon, Township of Asphodel-Norwood

Hazen-Williams
Desired Pressure

Project Name:	Norwood Park Phase 4	**Designed By:**	BS
Project No:	20120	**Date:**	2021-11-16

Design Criteria			
GPM to LPM Conversion:	3.785	L/min = 1gpm	A
Field Flow Test:	594	gpm	B
Static Pressure at Residual Hydrant:	45	psi	C
Minimum Operating Pressure:	40	psi	D
Residual Pressure during Flow Test:	33	psi	E

Calculations			
Residual Pressure			
H_R	=	C - D	
	=	5	psi
Flow Pressure			
H_F	=	C - E	
	=	12	psi
Flow at 40psi			
Q_R	=	B x $(H_R/H_F)^{0.54}$	
	=	370	gpm
	=	**1401**	**L/min**

Appendix B: Sanitary Design Sheets

Sewage Flows

Project Name:	Norwood Park Subdivison - Phase 4	**Designed By:**	BS
Project No:	20120	**Date:**	2021-12-10

Design Criteria			
Residential Sewage Flows:	450	L/p/day	A
No. of Units (Single Family):	96		B
No. of Persons/Unit (Single Family):	3.0	p/unit	C
No. of Units (Townhomes):	52		D
No. of Persons/Unit (Townhomes):	2.40	p/unit	E
Drainage Area:	14.10	ha	F
Inflow and Infiltration Rate	0.28	L/s/ha	G

Calculations

Peaking Factor

K_H = 1+(14 / 4+(B*C + D*E)^1/2)

K_H = 4.05

Residential Sewage Flows

F_{RES} = (B x C + D x E)*A

= 185760 L/day

= 2.15 L/s

= 185.76 m³/day

Peaked Residential Sewage Flows

F_{PEAK} = F_{RES} X K_H

= 752142 L/day

= 8.71 L/s

= 752.14 m³/day

Inflow and Infiltration Rate

$F_{I\&I}$ = D x E

= 341107 L/day

= 3.95 L/s

= 341.11 m³/day

Total Proposed Sewage Flows

F_{TOT} = F_{PEAK} + $F_{I\&I}$

= 1093249 L/day

= 12.65 L/s

= **1093.25** **m³/day**

Sanitary Sewer Design Sheet
Existing

Project Name: Norwood Park Phase 4
Project Number: 20120

Flow Rate: 450 L/person/day
Infiltration: 0.28 L/s/ha
Max Capacity: 80 %
Location: City of Peterborough

Designed By: BS
Date: 2021-12-10

Flow	Type	Value	Unit
Single Family	Residence	3.0	person/unit
Townhomes	Residence	2.4	person/unit
Extraneous	Peak Flow	1.0	L/s

Location			Single Family		Townhomes		Extraneous		Area		Population		Flow				Pipe Properties					Hydraulics			
Location/Street Name	From Structure	To Structure	Number of Units	Population	Number of Units	Population			Catchment Area (ha)	Cumulative Catchment Area (ha)	Cumulative Population	Harmon Factor	Resedential Peak Flow (L/s)	Extranenous Peak Flow (L/s)	Infiltration Flow (L/s)	Total Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Pipe Length (m)	Pipe Material	Mannings 'n'	Velocity in Sewer (m/s)	Pipe Capacity (L/s)	% Capacity	Actual Velocity (m/s)
CR40	MH205	MH201	0	0	0	0	1.040	1.040	0.000	0.000	0	4.50	0.00	1.04	0.00	1.04	200	0.70	259.7	Concrete	0.013	0.87	27.4	4%	0.42
Albine Street	MH17A	MH201	0	0	0	0	8.270	8.270	0.000	0.000	0	4.50	0.00	8.27	0.00	8.27	300	0.50	167.0	PVC	0.013	0.97	68.4	12%	0.65
CR40	MH201	MH59	0	0	0	0	19.640	20.680	0.000	0.000	0	4.50	0.00	20.68	0.00	20.68	200	0.70	430.2	PVC	0.013	0.87	27.4	75%	0.96
Wellington	.	MH59	0	0	0	0	0.490	0.490	0.000	0.000	0	4.50	0.00	0.49	0.00	0.49	200	0.70	105.0	Concrete	0.013	0.87	27.4	2%	0.33
CR40 S	.	MH59	0	0	0	0	0.430	0.430	0.000	0.000	0	4.50	0.00	0.43	0.00	0.43	200	0.70	99.0	Concrete	0.013	0.87	27.4	2%	0.32
Wellington	MH59	MH111	0	0	0	0	0.450	22.050	0.000	0.000	0	4.50	0.00	22.05	0.00	22.05	200	0.70	272.0	PVC	0.013	0.87	27.4	80%	0.97

Note:

1 - Sanitary Design Sheet summerizes information presented in the Norwood Infrastructure Assesment, prepared by Engage Engineering, dated May 19th 2021. This report should be read in conjuction with this analysis.

Sanitary Sewer Design Sheet
Proposed

Project Name: Norwood Park Phase 4
Project Number: 20120

Flow Rate: 450 L/person/day
Infiltration: 0.28 L/s/ha
Max Capacity: 80 %
Location: City of Peterborough

Designed By: BS
Date: 2021-12-10

Flow	Type	Value	Unit
Single Family	Residence	3.0	person/unit
Townhomes	Residence	2.4	person/unit
Extraneous	Peak Flow	1.0	L/s

Location			Single Family		Townhomes		Extraneous		Area		Population		Flow				Pipe Properties					Hydraulics			
Location/Street Name	From Structure	To Structure	Number of Units	Population	Number of Units	Population			Catchment Area (ha)	Cumulative Catchment Area (ha)	Cumulative Population	Harmon Factor	Resedential Peak Flow (L/s)	Extranenous Peak Flow (L/s)	Infiltration Flow (L/s)	Total Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Pipe Length (m)	Pipe Material	Mannings 'n'	Velocity in Sewer (m/s)	Pipe Capacity (L/s)	% Capacity	Actual Velocity (m/s)
CR40	MH205	MH201	0	0	0	0	1.040	1.040	0.000	0.000	0	4.50	0.00	1.04	0.00	1.04	200	0.70	259.7	Concrete	0.013	0.87	27.4	4%	0.42
Albine Street	MH17A	MH201	96	288	52	125	8.270	8.270	14.100	14.100	413	4.50	8.71	8.27	3.95	20.93	300	0.50	167.0	PVC	0.013	0.97	68.4	31%	0.85
CR40	MH201	MH59	0	0	0	0	19.640	20.680	0.000	14.100	413	4.02	8.71	20.68	3.95	33.34	200	0.70	430.2	PVC	0.013	0.87	27.4	121%	0.87
Wellington	.	MH59	0	0	0	0	0.490	0.490	0.000	0.000	0	4.50	0.00	0.49	0.00	0.49	200	0.70	105.0	Concrete	0.013	0.87	27.4	2%	0.33
CR40 S	.	MH59	0	0	0	0	0.430	0.430	0.000	0.000	0	4.50	0.00	0.43	0.00	0.43	200	0.70	99.0	Concrete	0.013	0.87	27.4	2%	0.32
Wellington	MH59	MH111	0	0	0	0	0.450	22.050	0.000	14.100	413	4.02	8.71	22.05	3.95	34.71	200	0.70	272.0	PVC	0.013	0.87	27.4	126%	0.87

Note:

1 - Sanitary Design Sheet summerizes information presented in the Norwood Infrastructure Assesment, prepared by Engage Engineering, dated May 19th 2021. This report should be read in conjuction with this analysis.

Sanitary Sewer Design Sheet
Future

Project Name: Norwood Park Phase 4
Project Number: 20120

Flow Rate: 450 L/person/day
Infiltration: 0.28 L/s/ha
Max Capacity: 80 %
Location: City of Peterborough

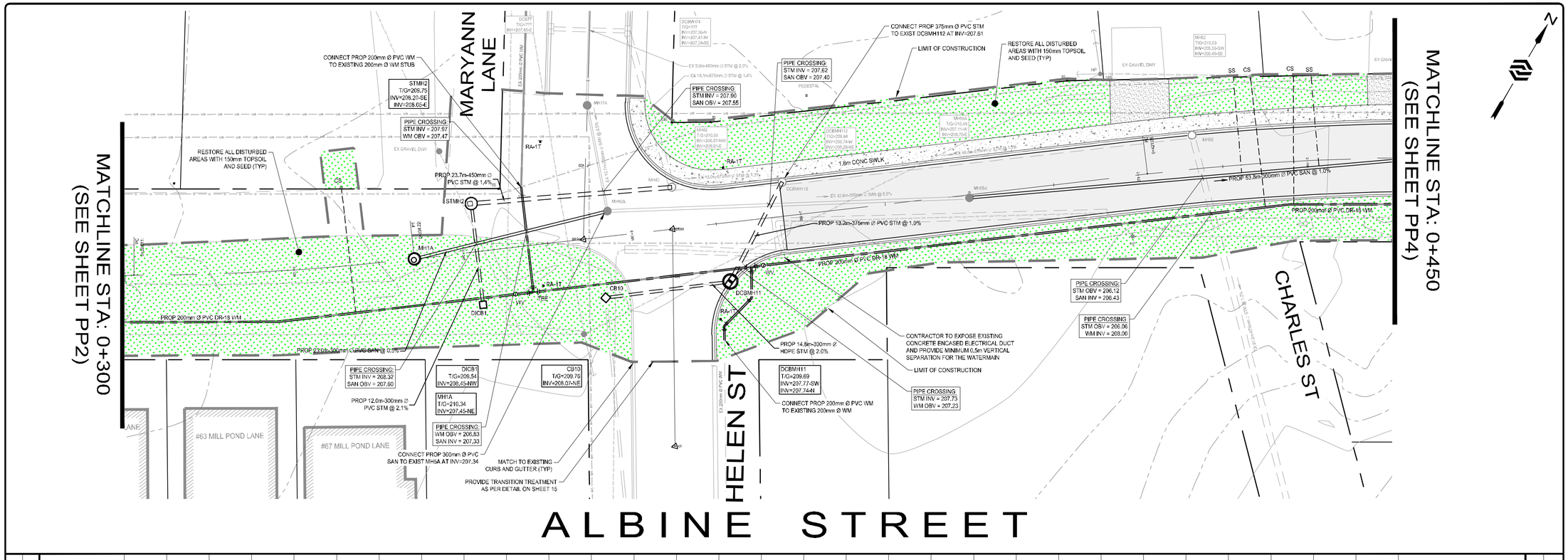
Designed By: BS
Date: 2021-12-10

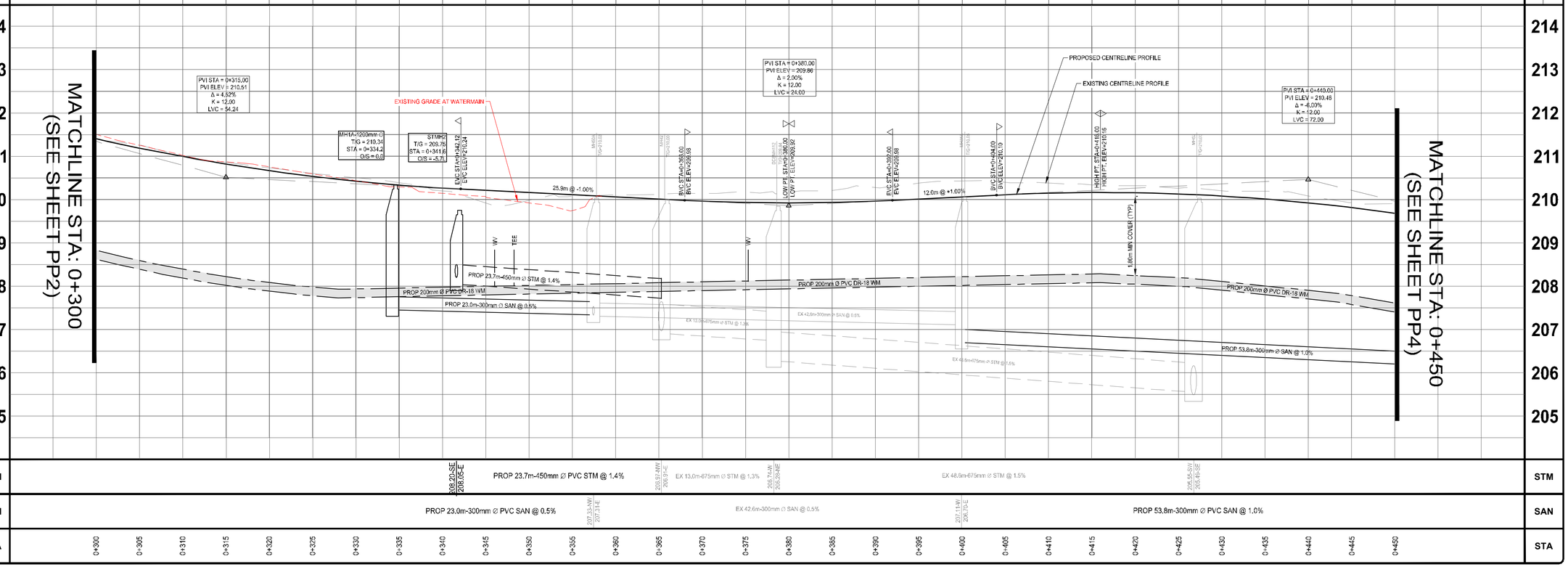
Flow	Type	Value	Unit
Single Family	Residence	3.0	person/unit
Townhomes	Residence	2.4	person/unit
Extraneous	Peak Flow	1.0	L/s

Location			Single Family		Townhomes		Extraneous		Area		Population		Flow				Pipe Properties					Hydraulics			
Location/Street Name	From Structure	To Structure	Number of Units	Population	Number of Units	Population			Catchment Area (ha)	Cumulative Catchment Area (ha)	Cumulative Population	Harmon Factor	Resedential Peak Flow (L/s)	Extranenous Peak Flow (L/s)	Infiltration Flow (L/s)	Total Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Pipe Length (m)	Pipe Material	Mannings 'n'	Velocity in Sewer (m/s)	Pipe Capacity (L/s)	% Capacity	Actual Velocity (m/s)
CR40	MH205	MH201	0	0	0	0	1.040	1.040	0.000	0.000	0	4.50	0.00	1.04	0.00	1.04	200	0.70	259.7	Concrete	0.013	0.87	27.4	4%	0.42
Albine Street	MH17A	MH201	96	288	52	125	8.270	8.270	14.100	14.100	413	4.50	8.71	8.27	3.95	20.93	300	0.50	167.0	PVC	0.013	0.97	68.4	31%	0.85
CR40	MH201	MH59	0	0	0	0	19.640	20.680	0.000	14.100	413	4.02	8.71	20.68	3.95	33.34	250	0.70	430.2	PVC	0.013	1.01	49.8	67%	1.09
Wellington	.	MH59	0	0	0	0	0.490	0.490	0.000	0.000	0	4.50	0.00	0.49	0.00	0.49	200	0.70	105.0	Concrete	0.013	0.87	27.4	2%	0.33
CR40 S	.	MH59	0	0	0	0	0.430	0.430	0.000	0.000	0	4.50	0.00	0.43	0.00	0.43	200	0.70	99.0	Concrete	0.013	0.87	27.4	2%	0.32
Wellington	MH59	MH111	0	0	0	0	0.450	22.050	0.000	14.100	413	4.02	8.71	22.05	3.95	34.71	250	0.70	272.0	PVC	0.013	1.01	49.8	70%	1.10

Note:
1 - Sanitary Design Sheet summerizes information presented in the Norwood Infrastructure Assesment, prepared by Engage Engineering, dated May 19th 2021. This report should be read in conjuction with this analysis.

Appendix C: Background Information





SURVEY
TOPOGRAPHIC AND LEGAL SURVEY PROVIDED BY JO BARNES AND WAS PERFORMED IN SEPTEMBER OF 2018.

BENCHMARK
TOP OF GRATE FOR DCBMH74 LOCATED ON THE EAST SIDE OF MARYANN LANE 20m NORTH OF MARYANN/ALBINE INTERSECTION.

ELEV: 209.89m

NOTES:

1. SERVICE CONNECTION INFORMATION MAY BE INCOMPLETE, OR ONLY GENERALLY ACCURATE.
2. FOR PARALLEL INSTALLATION OF WATERMAIN AND A SANITARY/STORM SEWER (INCLUDING A CATCHBASIN LEAD), PROVIDE MINIMUM 2.5m CLEAR HORIZONTAL SEPARATION DISTANCE FROM PIPE EDGE TO PIPE EDGE. FOR CROSSING OF A WATERMAIN BELOW OR ABOVE A SANITARY/STORM SEWER (INCLUDING A CATCHBASIN LEAD) PROVIDE A 0.5m CLEAR VERTICAL SEPARATION DISTANCE BETWEEN CROWN WATERMAIN AND INVERT OF SEWER.
3. ALL WATER SERVICE CONNECTIONS ARE 19mm Ø P.E. PIPE WITH SERVICE BOXES SET ON PROPERTY LINE, UNLESS OTHERWISE NOTED.
4. FOR MANHOLES, CATCHBASIN MANHOLES AND CATCHBAINS, GRATE ELEVATIONS ARE THE FINISHED PAVEMENT ELEVATION AT THE CENTRE OF THE STRUCTURE. SIDE INLET CATCHBASIN GRATE ELEVATIONS ARE THE TOP OF CURB ELEVATION.
5. MANHOLE TAPER CONES AND FRAMES SHALL BE ROTATED TO ENSURE THE COVER IN NOT POSITIONED IN THE WHEEL PATH.
6. TEMPORARY SUPPORT OF EXISTING UTILITY POLES MUST BE APPROVED BY THE OWNER. ALL ASSOCIATED COSTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
7. THE POSITION OF THE POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER 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.
8. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL CONFIRM THE POSITION AND EXACT LOCATION OF ALL SUCH UTILITIES, AND SHALL ASSUME ALL LIABILITY FOR ANY DAMAGE TO THEM MADE DURING THE COURSE OF THE CONTRACT WORK.

No.	REVISION	BY	DATE
7.			
6.			
5.			
4.			
3.	ISSUED TO CONTRACTOR	JD	2021-05-10
2.	REVISED WATERMAIN ALIGNMENT	JD	2021-04-30
1.	ISSUED FOR 90% REVIEW	JD	2021-03-24

ENGAGE ENGINEERING
www.engageeng.ca 171 King Street, Suite 120 Peterborough, ON Phone: (705) 755-0427

ALBINE STREET RECONSTRUCTION

TOWNSHIP OF ASPHODEL-NORWOOD

PLAN & PROFILE ALBINE STREET STA:0+300 TO 0+450

NORWOOD, ONTARIO

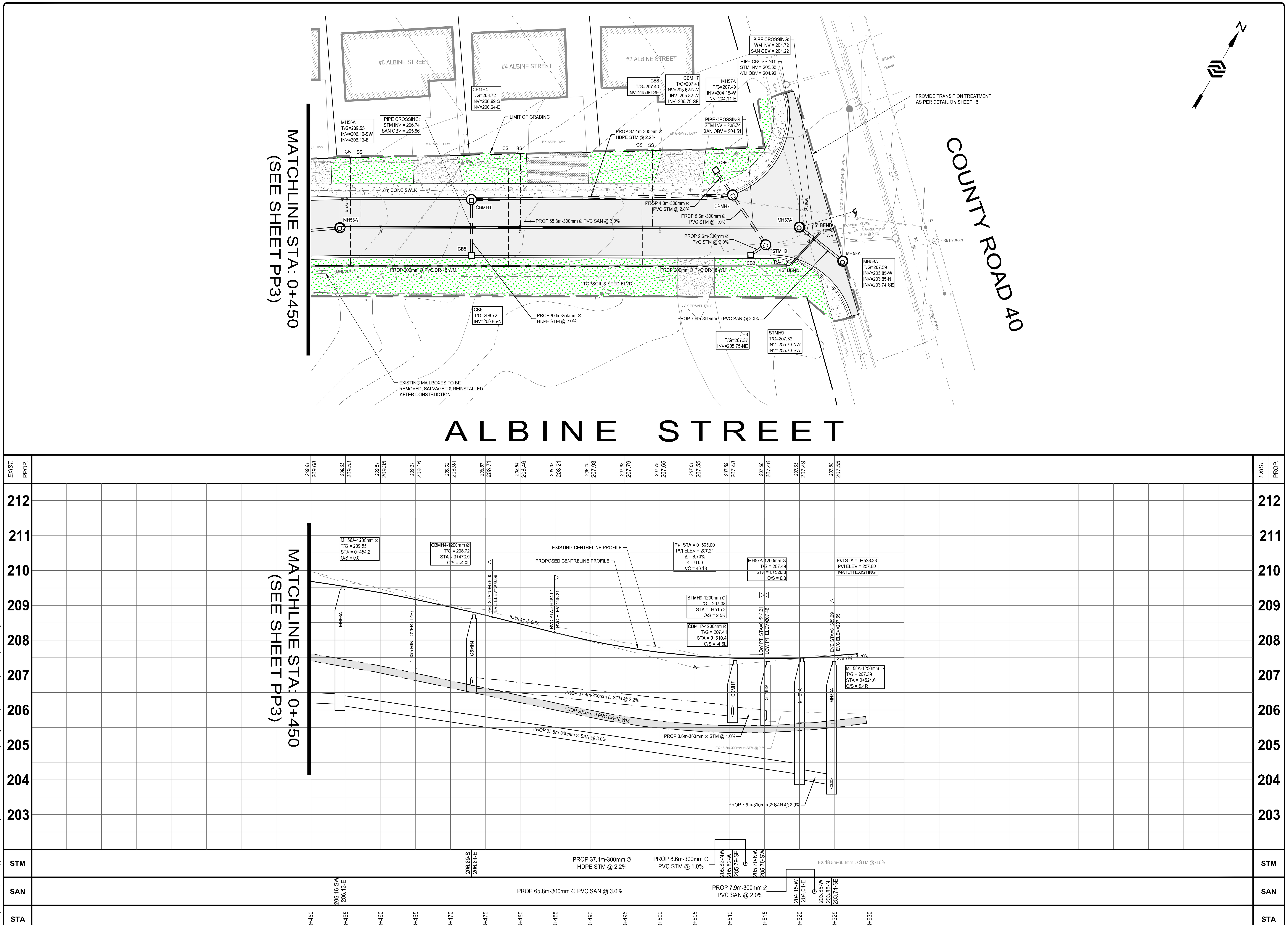
DRAWN BY: J.DUNN
DESIGNED BY: J.DUNN
APPROVED BY: P.HURLEY
DATE: 2020-04-28

STAMP: LICENSED PROFESSIONAL ENGINEER P.D. HURLEY 100062172 2021-11-16 PROVINCE OF ONTARIO

SCALE: 0 H 1:250 10; 0 V 1:50 2

PROJECT NUMBER:	FILE NAME:	SHEET:
20080	20080-PP1	6 of 11

20080-PP1
Date: May. 10, 2021 - 2:49 pm Plotted by: jdunn Filename: S:\Gis - Projects\20000-20099 - Albine Street Functional Design\02 Design\01 - Drawings\01 - Current Drawings\Detailed Design\20080-PP1.dwg



SURVEY

TOPOGRAPHIC AND LEGAL SURVEY PROVIDED BY JD BARNES AND WAS PERFORMED IN SEPTEMBER OF 2018.

BENCHMARK

TOP OF GRATE FOR DCBMH74 LOCATED ON THE EAST SIDE OF MARYANN LANE 20m NORTH OF MARYANN/ALBINE INTERSECTION.

ELEV: 209.89m

NOTES:

1. SERVICE CONNECTION INFORMATION MAY BE INCOMPLETE, OR ONLY GENERALLY ACCURATE.
2. FOR PARALLEL INSTALLATION OF WATERMAIN AND A SANITARY/STORM SEWER (INCLUDING A CATCHBASIN LEAD), PROVIDE MINIMUM 2.5m CLEAR HORIZONTAL SEPARATION DISTANCE FROM PIPE EDGE TO PIPE EDGE. FOR CROSSING OF A WATERMAIN BELOW OR ABOVE A SANITARY/STORM SEWER (INCLUDING A CATCHBASIN LEAD) PROVIDE A 0.5m CLEAR VERTICAL SEPARATION DISTANCE BETWEEN CROWN WATERMAIN AND INVERT OF SEWER.
3. ALL WATER SERVICE CONNECTIONS ARE 19mm Ø P.E. PIPE WITH SERVICE BOXES SET ON PROPERTY LINE, UNLESS OTHERWISE NOTED.
4. FOR MANHOLES, CATCHBASIN MANHOLES AND CATCHBAINS, GRATE ELEVATIONS ARE THE FINISHED PAVEMENT ELEVATION AT THE CENTRE OF THE STRUCTURE. SIDE INLET CATCHBASIN GRATE ELEVATIONS ARE THE TOP OF CURB ELEVATION.
5. MANHOLE TAPER CONES AND FRAMES SHALL BE ROTATED TO ENSURE THE COVER IN NOT POSITIONED IN THE WHEEL PATH.
6. TEMPORARY SUPPORT OF EXISTING UTILITY POLES MUST BE APPROVED BY THE OWNER. ALL ASSOCIATED COSTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
7. THE POSITION OF THE POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER 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.
8. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL CONFIRM THE POSITION AND EXACT LOCATION OF ALL SUCH UTILITIES, AND SHALL ASSUME ALL LIABILITY FOR ANY DAMAGE TO THEM MADE DURING THE COURSE OF THE CONTRACT WORK.

No.	REVISION	BY	DATE
7.			
6.			
5.			
4.			
3.	ISSUED TO CONTRACTOR	JD	2021-05-10
2.	REVISED WATERMAIN ALIGNMENT	JD	2021-04-30
1.	ISSUED FOR 90% REVIEW	JD	2021-03-24

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ALBINE STREET RECONSTRUCTION

TOWNSHIP OF ASPHODEL-NORWOOD

PLAN & PROFILE ALBINE STREET STA:0+450 TO COUNTY ROAD 40

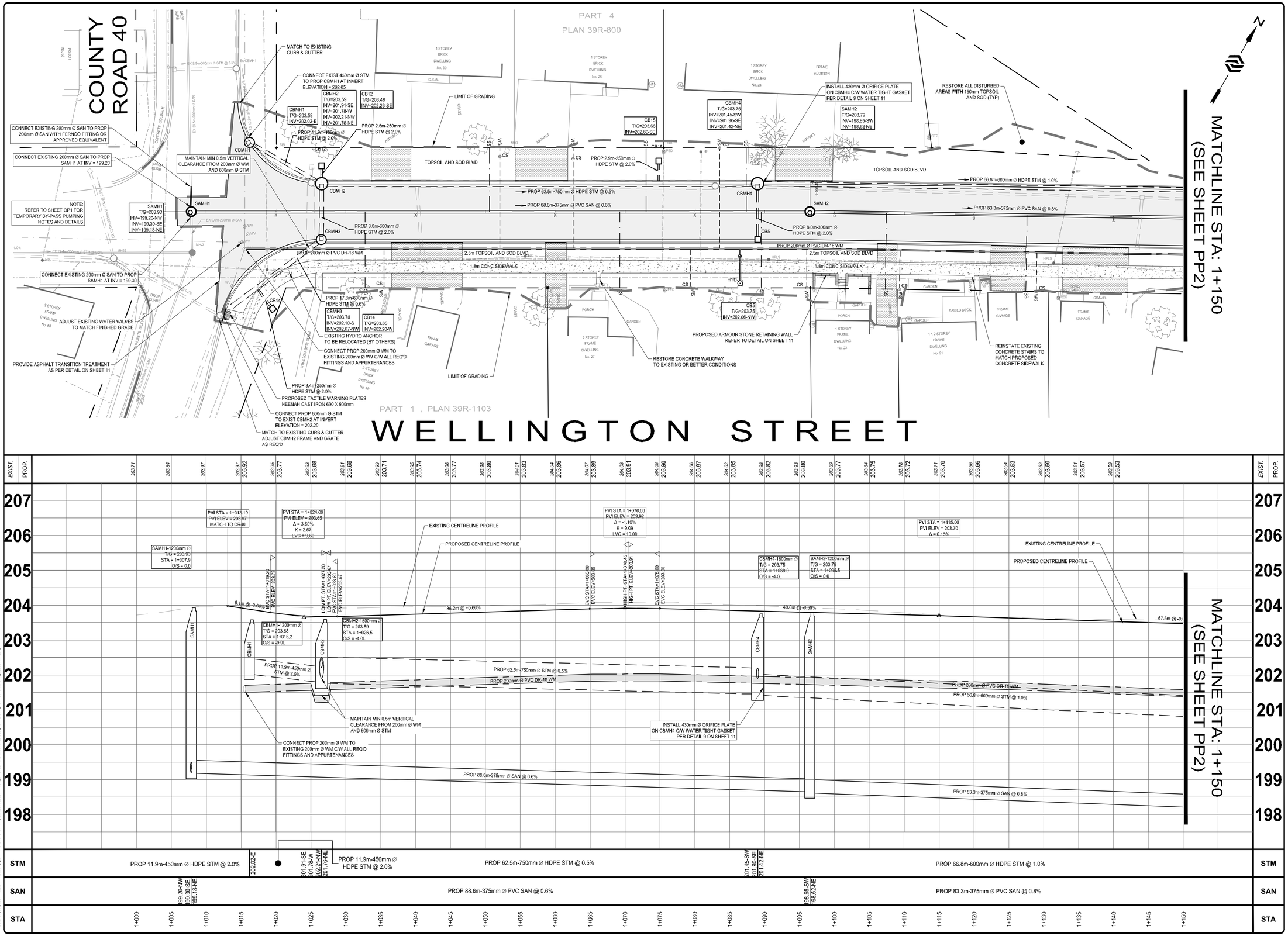
NORWOOD, ONTARIO

DRAWN BY: J.DUNN
DESIGNED BY: J.DUNN
APPROVED BY: P.HURLEY
DATE: 2020-04-28

STAMP: LICENSED PROFESSIONAL ENGINEER P.D. HURLEY 100062172 2021-11-16 PROVINCE OF ONTARIO

SCALE: H 1:250 (0–10), V 1:50 (0–2)

PROJECT NUMBER: 20080
FILE NAME: 20080-PP1
SHEET: 7 of 11



SURVEY

TOPOGRAPHIC SURVEY WAS PERFORMED BY SANDY WAKELING SURVEYING TECHNICAL SERVICES ON MARCH 31, 2020. ELEVATIONS SHOWN HEREON ARE GEODETIC IN ORIGIN AND ARE REFERENCED TO BENCHMARK 00819068555 (ELEV = 199.503). COORDINATES HAVE BEEN DERIVED FROM OBSERVATIONS ON THE POWER NET GPS RTK NETWORK, UTM ZONE 18, NAD 83.

BENCHMARK

TOP OF SURVEY SPIKE SET IN NORTH FACE OF HYDRO POLE AT THE SOUTH EASTERLY CORNER OF WELLINGTON STREET AND COUNTY ROAD 40 INTERSECTION.

ELEV: 204.200m

NOTES:

1. SERVICE CONNECTION INFORMATION MAY BE INCOMPLETE, OR ONLY GENERALLY ACCURATE.
2. FOR PARALLEL INSTALLATION OF WATERMAIN AND A SANITARY/STORM SEWER (INCUDING A CATCHBASIN LEAD); PROVIDE MINIMUM 2.5m CLEAR HORIZONTAL SEPARATION DISTANCE FROM PIPE EDGE TO PIPE EDGE, FOR CROSSING OF A WATERMAIN BELOW OR ABOVE A SANITARY/STORM SEWER (INCLUDING A CATCHBASIN LEAD) PROVIDE A 0.5m CLEAR VERTICAL SEPARATION DISTANCE BETWEEN CROWN WATERMAIN AND INVERT OF SEWER.
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5. MANHOLE TAPER CONES AND FRAMES SHALL BE ROTATED TO ENSURE THE COVER IN NOT POSITIONED IN THE WHEEL PATH.
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No.	REVISION	BY	DATE
7.			
6.			
5.	RE-ISSUED TO MTO	BS	2020-12-17
4.	ADDED DROP CURB, ORIFICE PLATE	JD	2020-08-24
3.	ISSUED FOR 100% REVIEW	JD	2020-07-17
2.	ISSUED FOR 90% REVIEW	JD	2020-06-18
1.	ISSUED FOR 50% REVIEW	JD	2020-05-01

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WELLINGTON STREET RECONSTRUCTION

TOWNSHIP OF ASPHODEL-NORWOOD

PLAN & PROFILE WELLINGTON STREET STA:1+000 TO 1+150

NORWOOD, ONTARIO

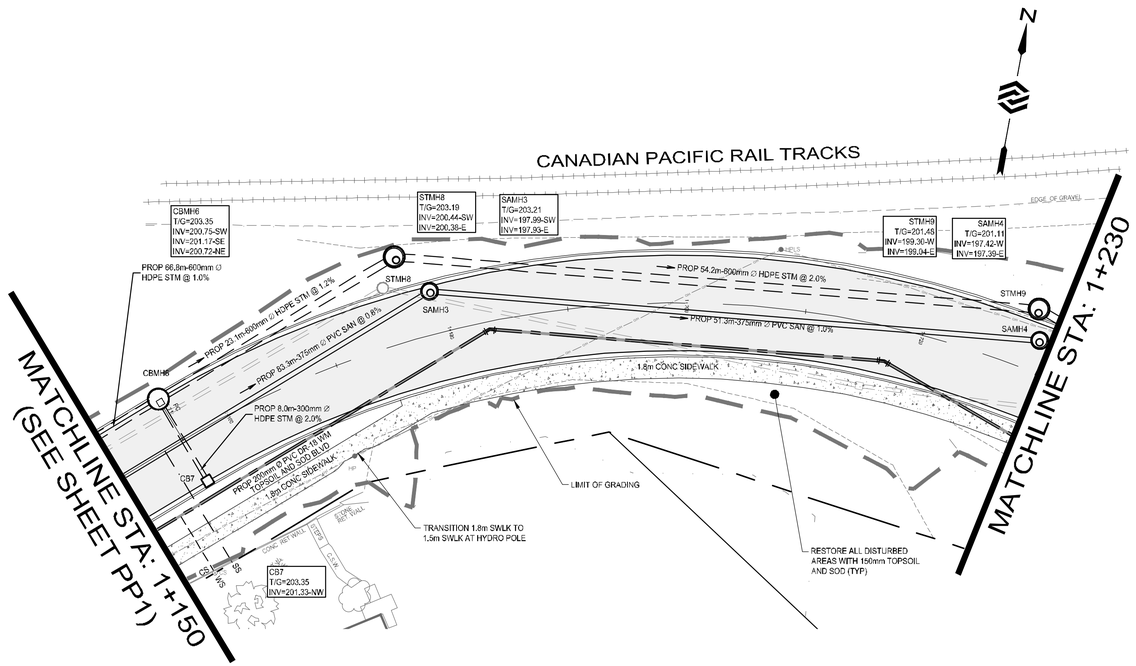
DRAWN BY: J.DUNN
DESIGNED BY: J.DUNN
APPROVED BY: P.HURLEY
DATE: 2020-04-28

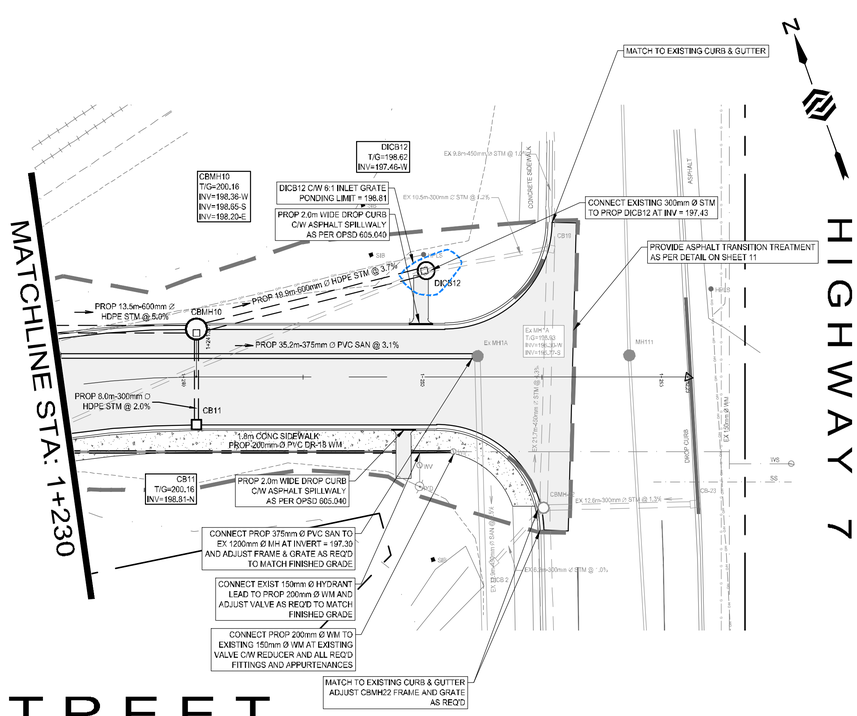
STAMP: LICENSED PROFESSIONAL ENGINEER P.D. HURLEY 100062172 2021-09-02 PROVINCE OF ONTARIO

SCALE: 0 H 1:250 10; 0 V 1:50 2

PROJECT NUMBER:	FILE NAME:	SHEET:
20021	20021-PP1	4 of 11

20021-PP1
Date: Sep. 28, 2021 - 1:18 pm Plotted by: JDunn File name: S:\01 - Projects\20000\20021 - Wellington Street Reconstruction\02 Design\01 - Drawing\01 - Current Drawing\20021-PP1.dwg





WELLINGTON STREET

SURVEY

TOPOGRAPHIC SURVEY WAS PERFORMED BY SANDY WAKELING SURVEYING TECHNICAL SERVICES ON MARCH 31, 2020. ELEVATIONS SHOWN HEREON ARE GEODETIC IN ORIGIN AND ARE REFERENCED TO BENCHMARK 00819068555 (ELEV = 199.503). COORDINATES HAVE BEEN DERIVED FROM OBSERVATIONS ON THE POWER NET GPS RTK NETWORK, UTM ZONE 18, NAD 83.

BENCHMARK

TOP OF SURVEY SPIKE SET IN NORTH FACE OF HYDRO POLE AT THE SOUTHEASTERLY CORNER OF WELLINGTON STREET AND COUNTY ROAD 40 INTERSECTION.

ELEV: 204.200m

NOTES:

1. SERVICE CONNECTION INFORMATION MAY BE INCOMPLETE, OR ONLY GENERALLY ACCURATE. SOME SANITARY SERVICES MAY ALSO HAVE SEPARATE CELLAR DRAIN PIPES.
2. FOR PARALLEL INSTALLATION OF WATERMAIN AND A SANITARY/STORM SEWER (INCLUDING A CATCHBASIN LEAD), PROVIDE MINIMUM 2.5m CLEAR HORIZONTAL SEPARATION DISTANCE FROM PIPE EDGE TO PIPE EDGE. FOR CROSSING OF A WATERMAIN BELOW OR ABOVE A SANITARY/STORM SEWER (INCLUDING A CATCHBASIN LEAD) PROVIDE A 0.5m CLEAR VERTICAL SEPARATION DISTANCE BETWEEN CROWN WATERMAIN AND INVERT OF SEWER.
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5. MANHOLE TAPER CONES AND FRAMES SHALL BE ROTATED TO ENSURE THE COVER IS NOT POSITIONED IN THE WHEEL PATH.
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No.	REVISION	BY	DATE
7.			
6.			
5.	RE-ISSUED TO MTO	BS	2020-12-17
4.	ADDED DROP CURB, ORIFICE PLATE	JD	2020-08-24
3.	ISSUED FOR 100% REVIEW	JD	2020-07-17
2.	ISSUED FOR 90% REVIEW	JD	2020-06-18
1.	ISSUED FOR 50% REVIEW	JD	2020-05-01

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WELLINGTON STREET RECONSTRUCTION

TOWNSHIP OF ASPHODEL-NORWOOD

PLAN & PROFILE WELLINGTON STREET STA:1+150 TO 1+280

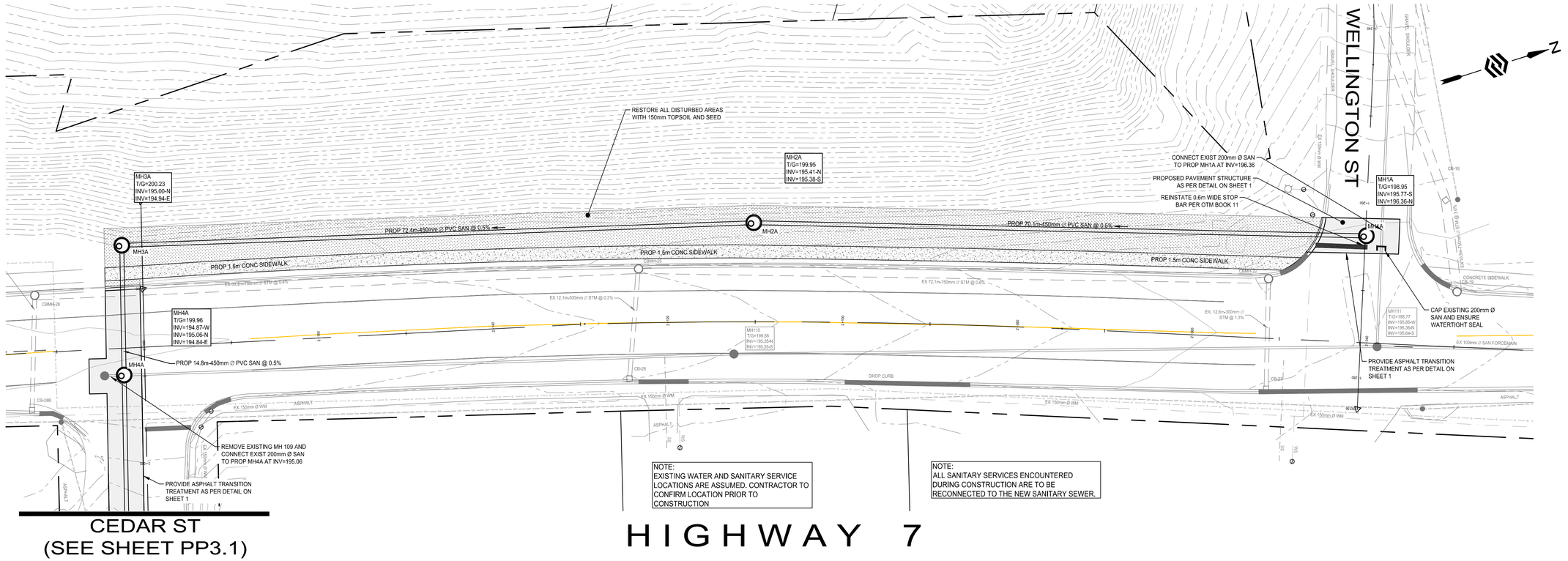
NORWOOD, ONTARIO

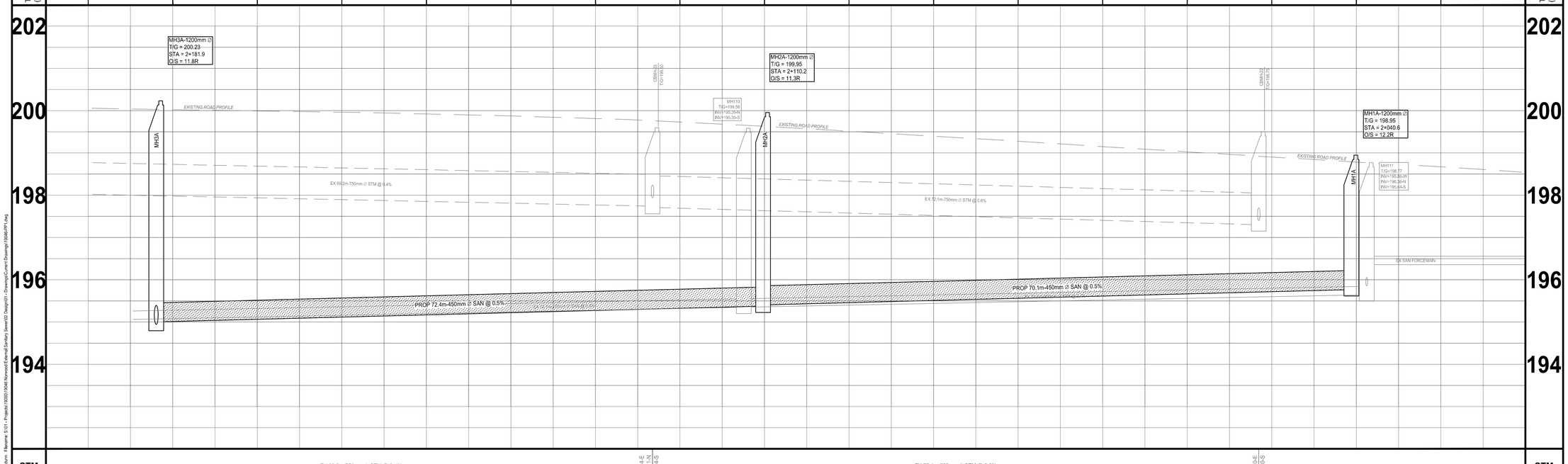
DRAWN BY:	J.DUNN
DESIGNED BY:	J.DUNN
APPROVED BY:	P.HURLEY
DATE:	2020-04-28
SCALE:	1:250H 1:50V

STAMP: LICENSED PROFESSIONAL ENGINEER — P.D. HURLEY — 100062172 — 2021-09-02 — PROVINCE OF ONTARIO

PROJECT NUMBER:	FILE NAME:	SHEET:
20021	20021-PP1	5 of 11

20021-PP1
Date: Sep 28, 2021 - 1:27 pm Plotted by: jdunn File name: S:\01 - Projects\20000\20021 - Wellington Street Reconstruction\02 Design\01 - Drawings\01 - Current Drawings\20021-PP1.dwg





SURVEY

TOPOGRAPHIC SURVEY WAS DONE BY A.R. (SANDY) WAKELING ON JUNE 12th, 2019. APPROXIMATE EASEMENT LIMITS SHOWN HEREON HAVE BEEN DERIVED FROM A PLAN OF SURVEY BEING PLAN 45R-571. SURVEY MONUMENTS HAVE NOT BEEN VERIFIED.

BENCHMARK

ELEVATIONS SHOWN HEREON ARE GEODETIC IN ORIGIN AND ARE REFERENCED TO BENCHMARK 00819668555. COORDINATES HAVE BEEN DERIVED FROM OBSERVATIONS ON THE POWER NET GPS REAL TIME NETWORK, UTM ZONE 18, NAD 83, EPOCH (2010).

ELEV: 199.503m

NOTES:

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No.	REVISION	BY	DATE
8.	ISSUED FOR CONSTRUCTION	JD	2021-04-23
7.	REVISED ALIGNMENT AT EASEMENT	JD	2021-03-26
6.	REVISED SAN AT CR45 & VICTORIA ST	JD	2020-10-01
5.	REVISED SPS INLET PIPE	JD	2020-06-05
4.	REVISED PER TOWNSHIP COMMENTS	JD	2020-04-28
3.	ADDED SCALE BAR	JD	2020-04-01
2.	REVISED HWY 7 ALIGNMENT UPDATED SEWER SIZING	JD	2020-03-27
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-10-24

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NORWOOD PARK PHASE 3 - EXTERNAL SANITARY UPGRADES

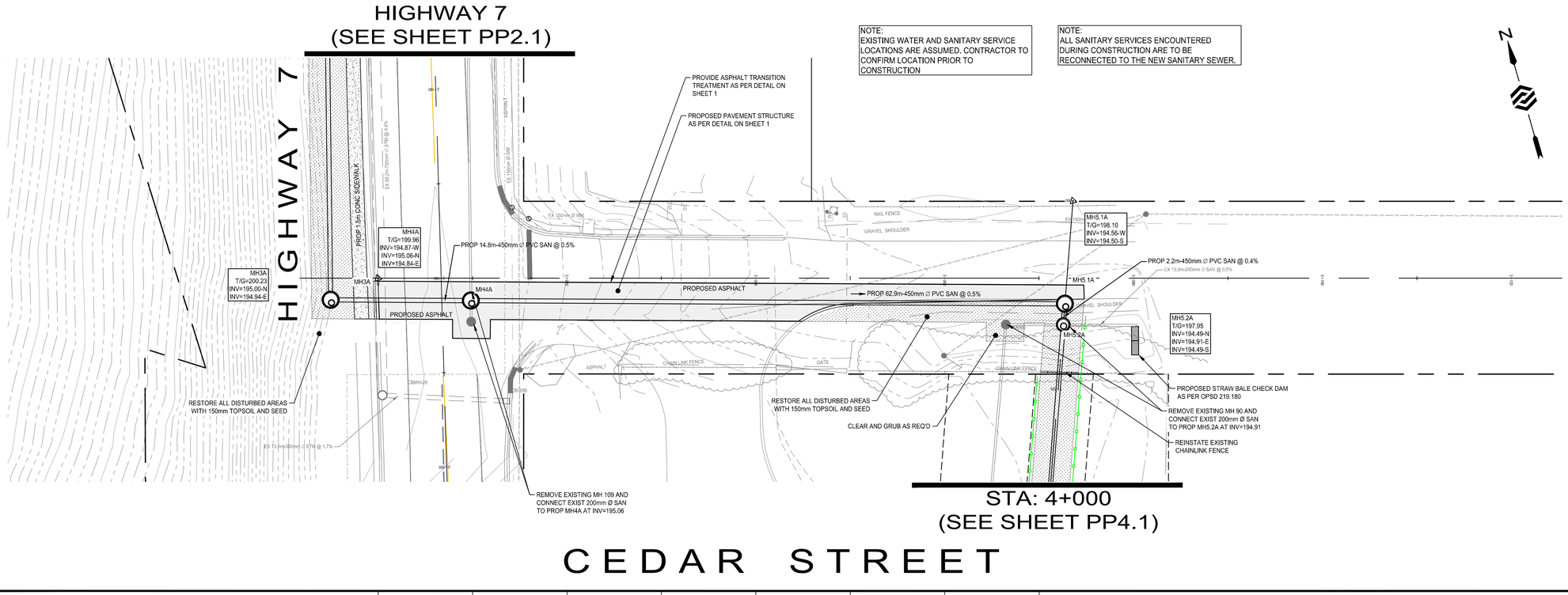
TOWNSHIP OF ASPHODEL-NORWOOD

PLAN & PROFILE HIGHWAY 7 STA: 2+000 TO CEDAR STREET

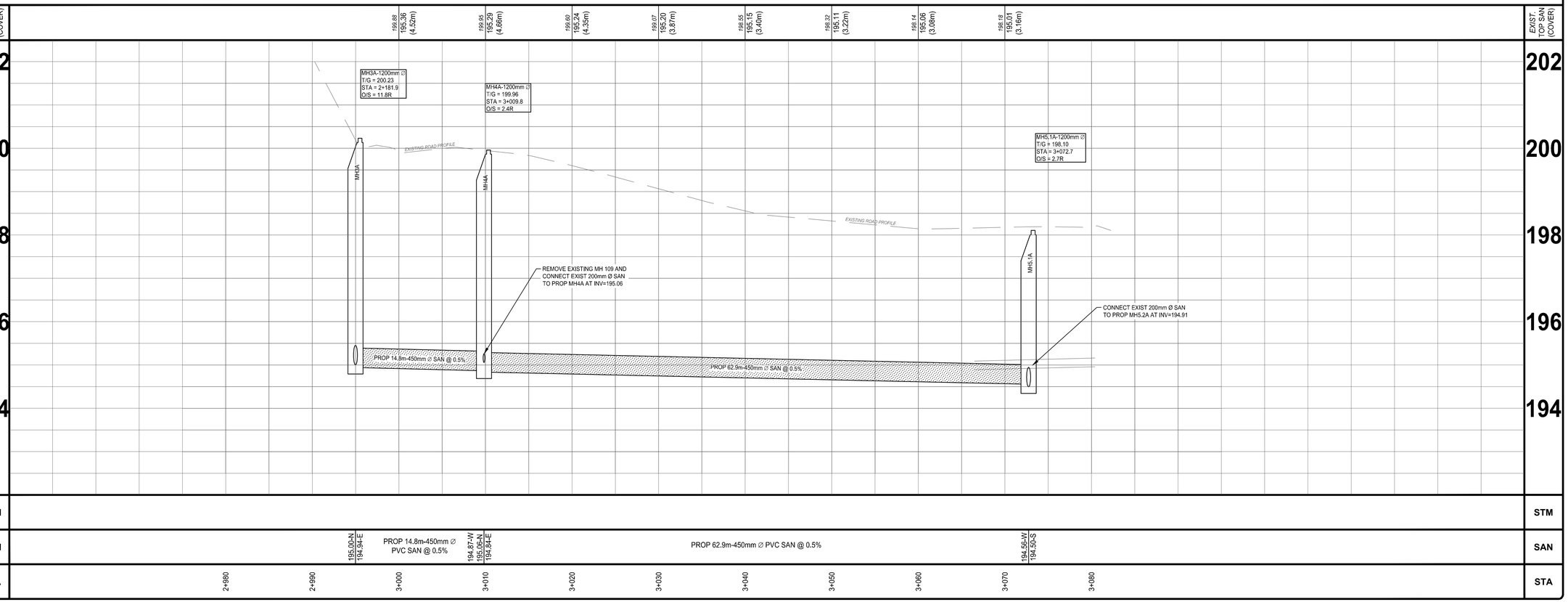
NORWOOD, ONTARIO

DRAWN BY: J.DUNN	STAMP:
DESIGNED BY: J.DUNN	
APPROVED BY: P.HURLEY	
DATE: 2019-09-05	
SCALE: 0 H 1:250 10 / 0 V 1:50 2	
PROJECT NUMBER: 19046	FILE NAME: 19046-PP1
SHEET: 6 of 12	

19046-PP1
Date: Apr. 23, 2021 - 2:23 pm Plotted by: jdunn F:\Assume S:\01 - Projects\19000\19046 Norwood External Sanitary Sewer\02 Design\01 - Drawings\Current Drawings\19046-PP1.dwg



CEDAR STREET



SURVEY

TOPOGRAPHIC SURVEY WAS DONE BY A.R. (SANDY) WAKELING ON JUNE 12th, 2019. APPROXIMATE EASEMENT LIMITS SHOWN HEREON HAVE BEEN DERIVED FROM A PLAN OF SURVEY BEING PLAN 45R-571. SURVEY MONUMENTS HAVE NOT BEEN VERIFIED.

BENCHMARK

ELEVATIONS SHOWN HEREON ARE GEODETIC IN ORIGIN AND ARE REFERENCED TO BENCHMARK 00819668555. COORDINATES HAVE BEEN DERIVED FROM OBSERVATIONS ON THE POWER NET GPS REAL TIME NETWORK, UTM ZONE 18, NAD 83, EPOCH (2010).

ELEV: 199.503m

NOTES:

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No.	REVISION	BY	DATE
8.	ISSUED FOR CONSTRUCTION	JD	2021-04-23
7.	REVISED ALIGNMENT AT EASEMENT	JD	2021-03-26
6.	REVISED SAN AT CR45 & VICTORIA ST	JD	2020-10-01
5.	REVISED SPS INLET PIPE	JD	2020-06-05
4.	REVISED PER TOWNSHIP COMMENTS	JD	2020-04-28
3.	ADDED SCALE BAR	JD	2020-04-01
2.	REVISED HWY 7 ALIGNMENT UPDATED SEWER SIZING	JD	2020-03-27
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-10-24

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NORWOOD PARK PHASE 3 - EXTERNAL SANITARY UPGRADES

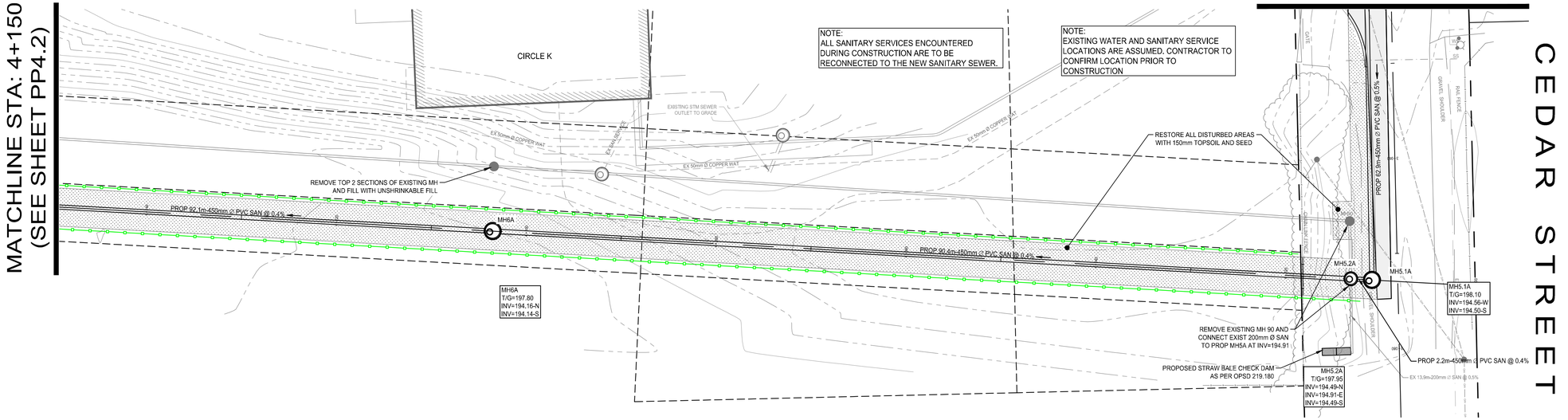
TOWNSHIP OF ASPHODEL-NORWOOD

PLAN & PROFILE CEDAR STREET

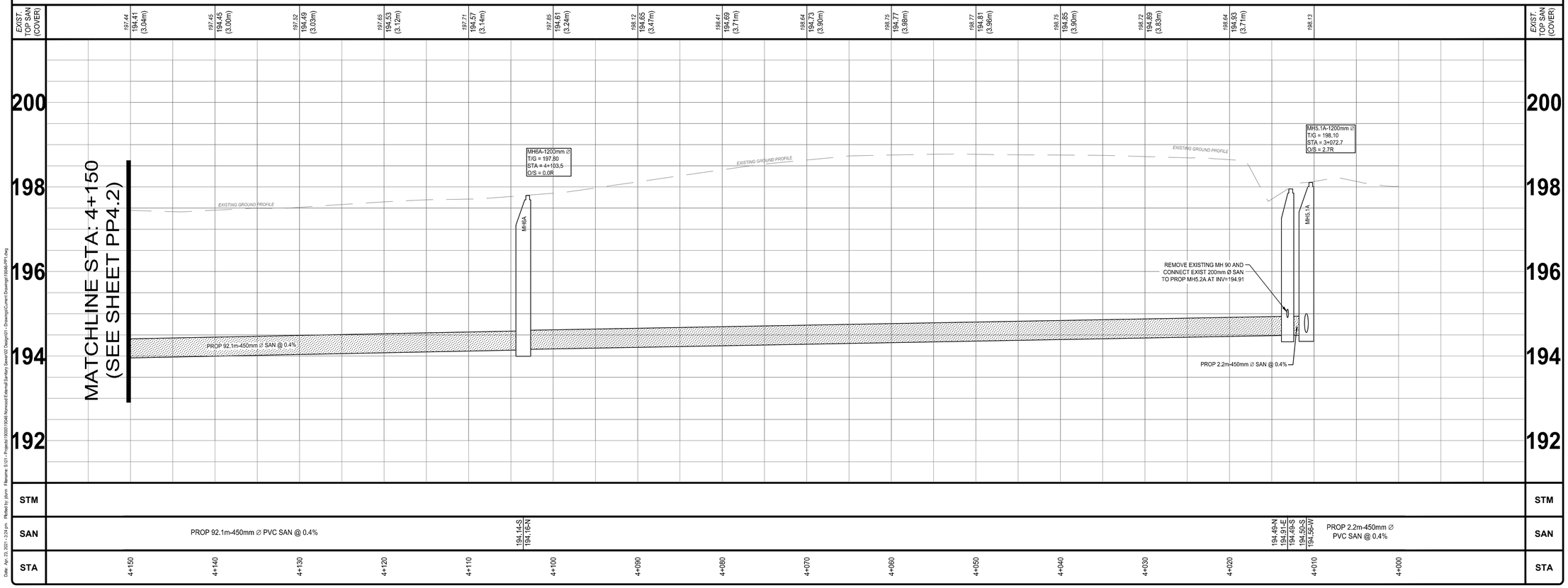
NORWOOD, ONTARIO

DRAWN BY: J.DUNN	STAMP:
DESIGNED BY: J.DUNN	
APPROVED BY: P.HURLEY	
DATE: 2019-09-05	
SCALE: 0 H 1:250 10 / 0 V 1:50 2	
PROJECT NUMBER: 19046	FILE NAME: 19046-PP1
SHEET: 7 of 12	

19046-PP1
Date: Apr. 23, 2021 - 2:24 pm Plotted By: jdunn F:\Resume S:\01 - Projects\19000\19046 Norwood External Sanitary Sewer\02 Design\01 - Drawings\Current Drawings\19046-PP1.dwg



SERVICING EASEMENT STA: 4+000 TO 4+150



SURVEY

TOPOGRAPHIC SURVEY WAS DONE BY A.R. (SANDY) WAKELING ON JUNE 12th, 2019. APPROXIMATE EASEMENT LIMITS SHOWN HEREON HAVE BEEN DERIVED FROM A PLAN OF SURVEY BEING PLAN 45R-571. SURVEY MONUMENTS HAVE NOT BEEN VERIFIED.

BENCHMARK

ELEVATIONS SHOWN HEREON ARE GEODETIC IN ORIGIN AND ARE REFERENCED TO BENCHMARK 00819668555. COORDINATES HAVE BEEN DERIVED FROM OBSERVATIONS ON THE POWER NET GPS REAL TIME NETWORK, UTM ZONE 18, NAD 83, EPOCH (2010).

ELEV: 199.503m

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No.	REVISION	BY	DATE
8.	ISSUED FOR CONSTRUCTION	JD	2021-04-23
7.	REVISED ALIGNMENT AT EASEMENT	JD	2021-03-26
6.	REVISED SAN AT CR45 & VICTORIA ST	JD	2020-10-01
5.	REVISED SPS INLET PIPE	JD	2020-06-05
4.	REVISED PER TOWNSHIP COMMENTS	JD	2020-04-28
3.	ADDED SCALE BAR	JD	2020-04-01
2.	REVISED HWY 7 ALIGNMENT UPDATED SEWER SIZING	JD	2020-03-27
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-10-24

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NORWOOD PARK PHASE 3 - EXTERNAL SANITARY UPGRADES

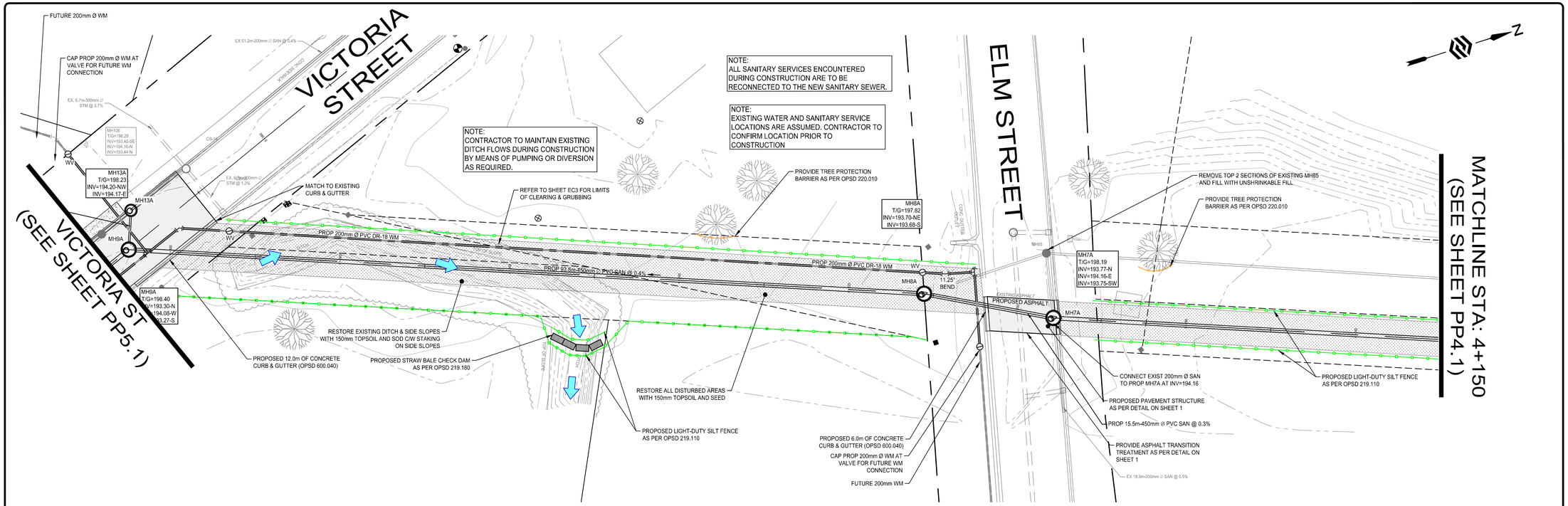
TOWNSHIP OF ASPHODEL-NORWOOD

PLAN & PROFILE SERVICING EASEMENT STA: 4+000 TO 4+150

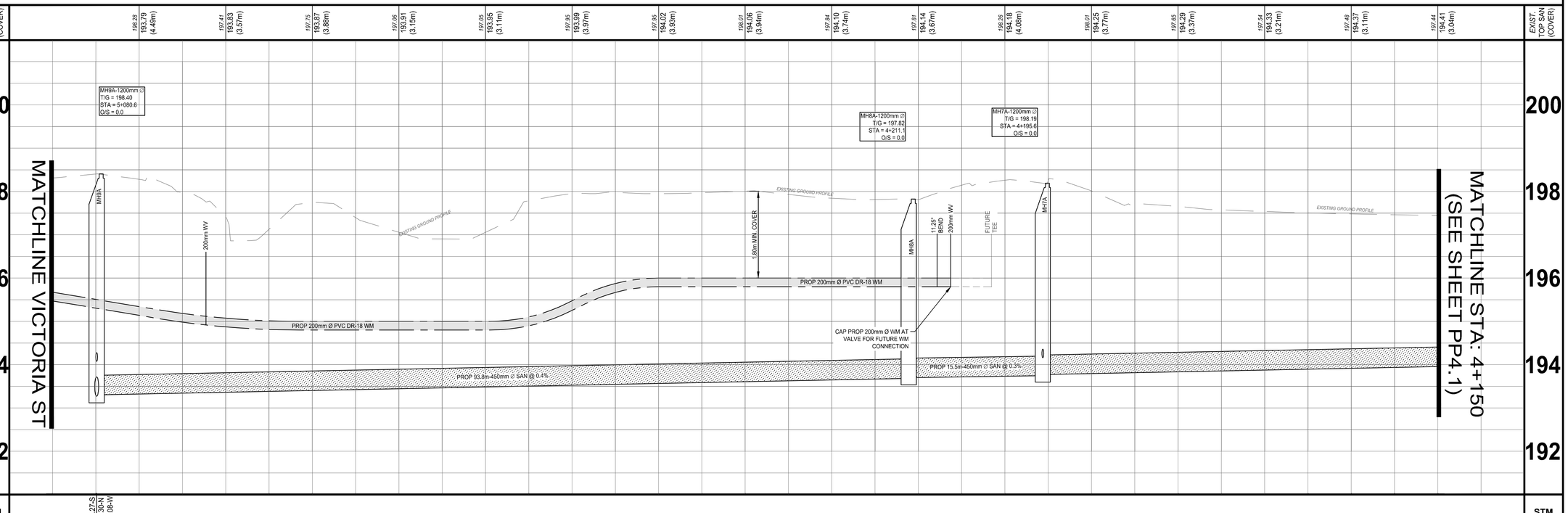
NORWOOD, ONTARIO

DRAWN BY: J.DUNN	STAMP:
DESIGNED BY: J.DUNN	
APPROVED BY: P.HURLEY	
DATE: 2019-09-05	
SCALE: 0 H 1:250 10 / 0 V 1:50 2	
PROJECT NUMBER: 19046	FILE NAME: 19046-PP1
SHEET: 8 of 12	

19046-PP1
Date: Apr. 23, 2021 - 2:24 pm Plotted by: jdunn F:\Resume S:\01 - Projects\19000\19046 Norwood External Sanitary Sewer\02 Design\01 - Drawings\Current Drawings\19046-PP1.dwg



SERVICING EASEMENT STA: 4+150 TO VICTORIA STREET



SURVEY

TOPOGRAPHIC SURVEY WAS DONE BY A.R. (SANDY) WAKELING ON JUNE 12th, 2019. APPROXIMATE EASEMENT LIMITS SHOWN HEREON HAVE BEEN DERIVED FROM A PLAN OF SURVEY BEING PLAN 45R-571. SURVEY MONUMENTS HAVE NOT BEEN VERIFIED.

BENCHMARK

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ELEV: 199.503m

NOTES:

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No.	REVISION	BY	DATE
8.	ISSUED FOR CONSTRUCTION	JD	2021-04-23
7.	REVISED ALIGNMENT AT EASEMENT	JD	2021-03-26
6.	REVISED SAN AT CR45 & VICTORIA ST	JD	2020-10-01
5.	REVISED SPS INLET PIPE	JD	2020-06-05
4.	REVISED PER TOWNSHIP COMMENTS	JD	2020-04-28
3.	ADDED SCALE BAR	JD	2020-04-01
2.	REVISED HWY 7 ALIGNMENT UPDATED SEWER SIZING	JD	2020-03-27
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-10-24

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NORWOOD PARK PHASE 3 - EXTERNAL SANITARY UPGRADES

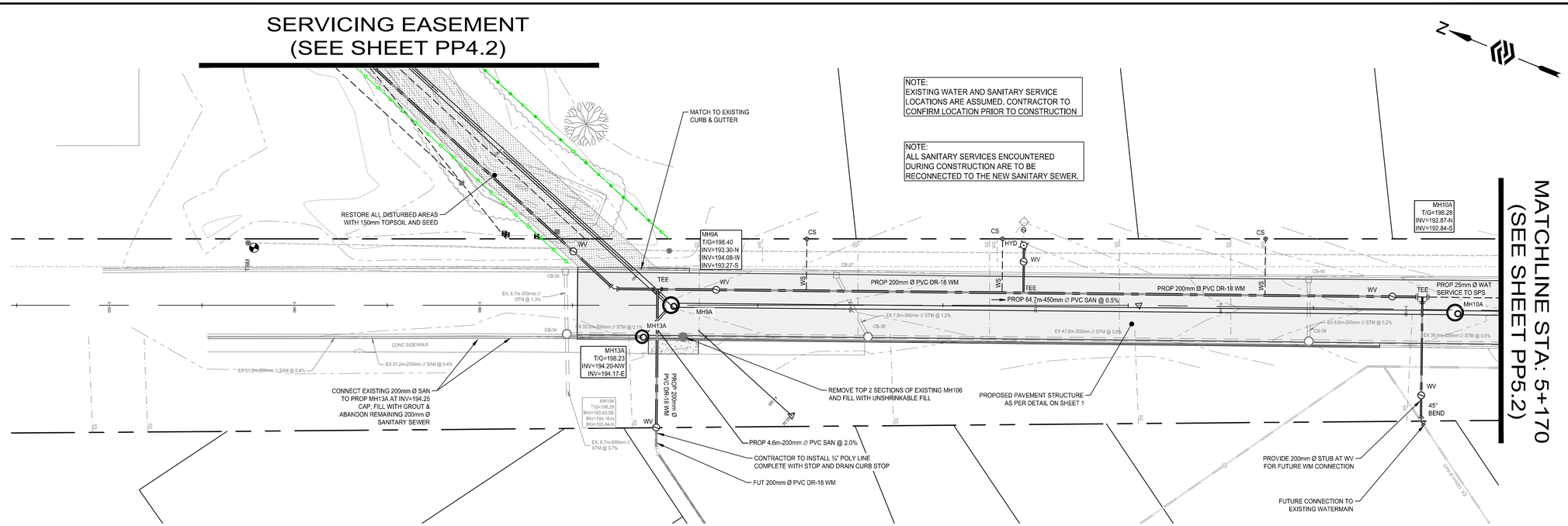
TOWNSHIP OF ASPHODEL-NORWOOD

PLAN & PROFILE SERVICING EASEMENT STA: 4+150 TO VICTORIA STREET

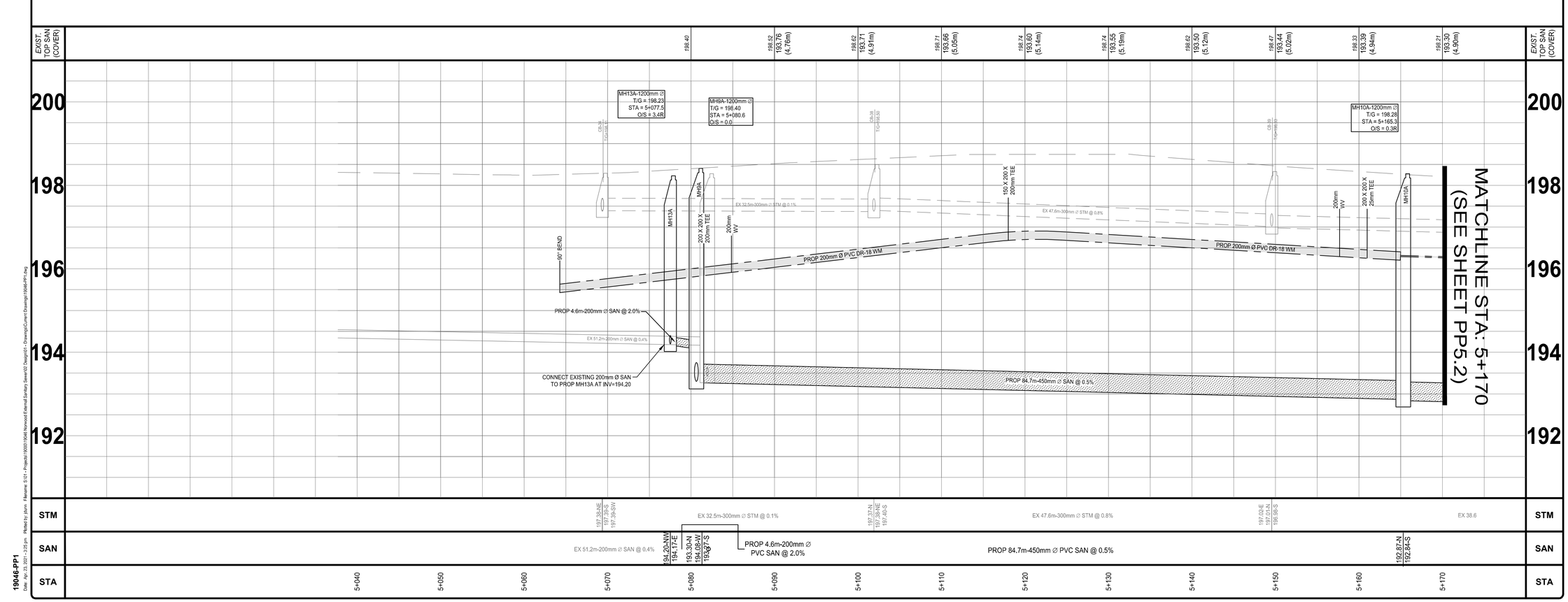
NORWOOD, ONTARIO

DRAWN BY: J.DUNN	STAMP:
DESIGNED BY: J.DUNN	
APPROVED BY: P.HURLEY	
DATE: 2019-09-05	
SCALE: H 1:250 (0 10) V 1:50 (0 2)	
PROJECT NUMBER: 19046	FILE NAME: 19046-PP1
SHEET: 9 of 12	

19046-PP1
Date: Apr. 23, 2021 - 2:24 pm Plotted by: jdunn P:\Resume S:\01 - Projects\19000\19046 Norwood External Sanitary Sewer\02 Design\01 - Drawings\Current Drawings\19046-PP1.dwg



VICTORIA STREET STA: 5+000 TO 5+170



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NORWOOD PARK PHASE 3 - EXTERNAL SANITARY UPGRADES

TOWNSHIP OF ASPHODEL-NORWOOD

PLAN & PROFILE VICTORIA STREET STA: 5+000 TO 5+170

NORWOOD, ONTARIO

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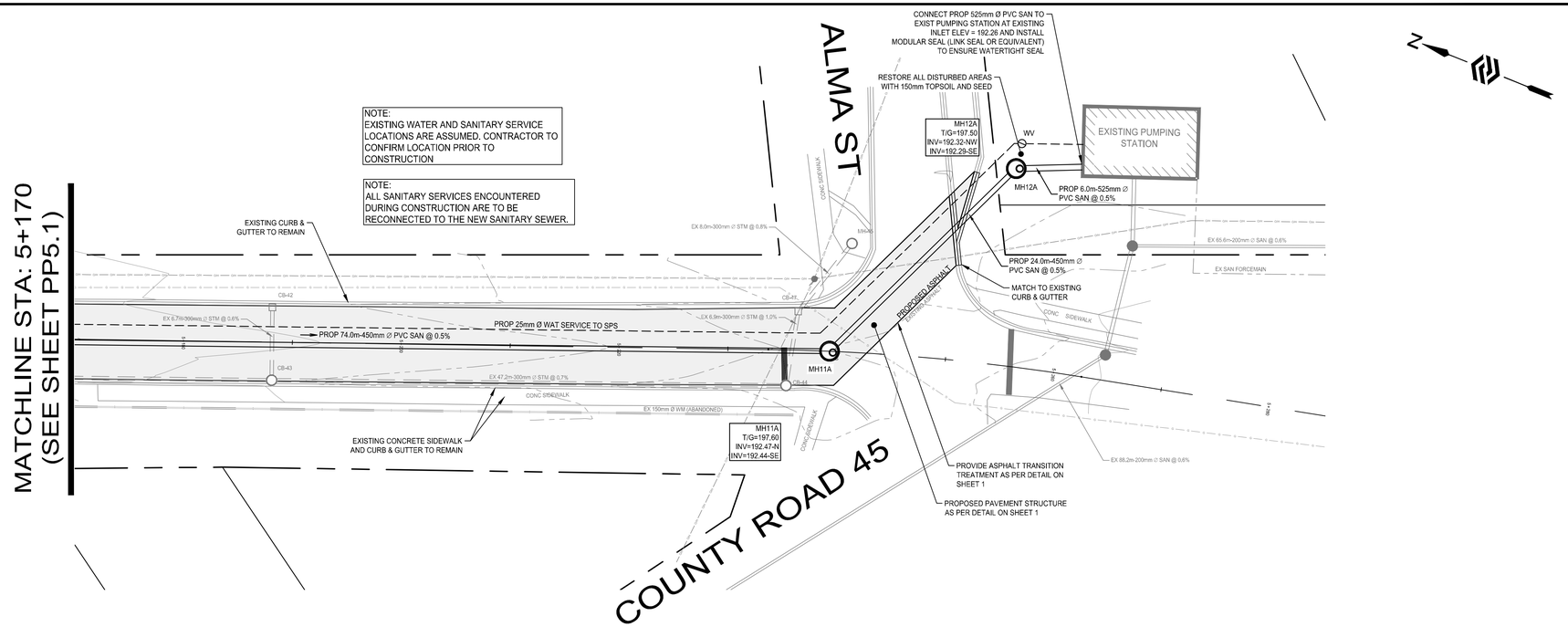
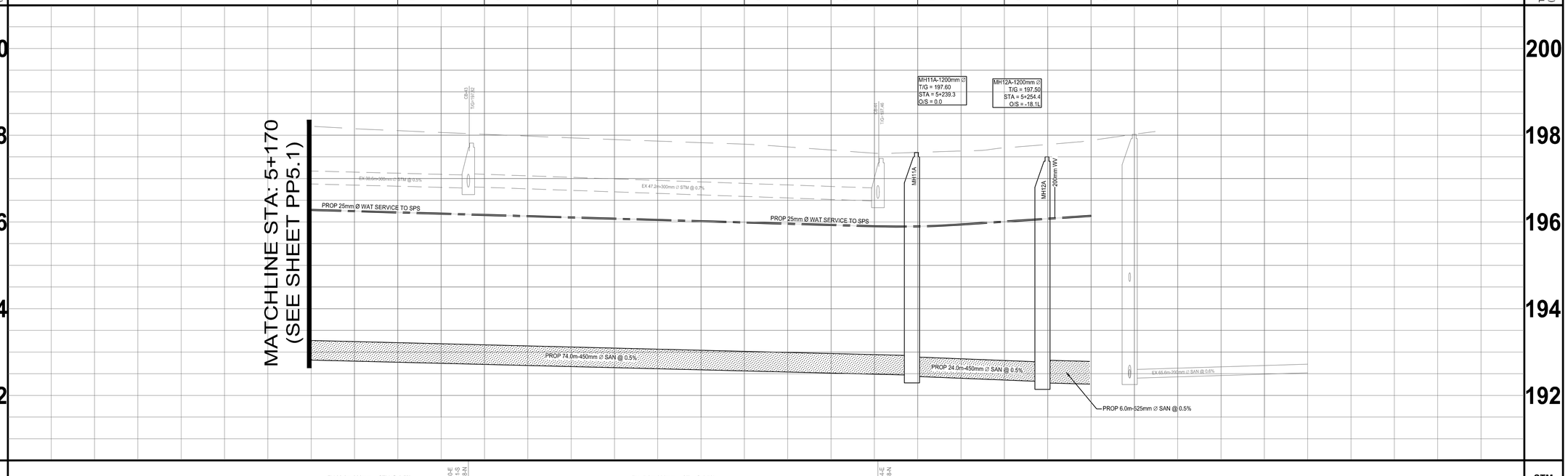
PROJECT NUMBER: 19046	FILE NAME: 19046-PP1
SHEET: 10 of 12	

19046-PP1
Date: Apr. 23, 2021 - 2:25 pm Plotted By: jdunn F:\Resume S:\01 - Projects\19000\19046 Norwood External Sanitary Sewer\02 Design\01 - Drawings\Current Drawings\19046-PP1.dwg



VICTORIA STREET STA: 5+170 TO PUMPING STATION



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NORWOOD PARK PHASE 3 - EXTERNAL SANITARY UPGRADES

TOWNSHIP OF ASPHODEL-NORWOOD

PLAN & PROFILE VICTORIA STREET STA: 5+170 TO PUMPING STATION

NORWOOD, ONTARIO

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