Functional Servicing Report

Life at Woodland Part of Lot 27, Concession 10, Township of Otonabee-South Monaghan County of Peterborough, Ontario

Proposed Residential Development

D.M. Wills Project No. 19-10874



D.M. Wills Associates LimitedPartners in Engineering, Planning, and
Environmental Services
Peterborough

February 2022

Prepared for: NIRVANA Homes c/o Rubal Kundra





Summary of Revisions

Revision No.	Revision Title	Date of Release	Summary of Revisions
0	1st Submission	February 24, 2022	Submission to the City of Peterborough

This report has been formatted considering the requirements of the Accessibility for Ontarians with Disabilities Act (AODA).



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1.0 Introduction

D.M. Wills Associates Limited (Wills) has been retained by NIRVANA Homes to prepare a Functional Servicing Report (FSR) to support the development of a 27 Lot Condominium Plan of Subdivision. The subject property (Site) is located at the intersection of Burnham Line and Trans-Canada Highway 7.

The purpose of this report is to provide sufficient information to confirm the feasibility of the proposed development. The FSR will provide a framework for future detailed design of sanitary, water, stormwater and utility servicing of the Site; refinements to the conceptual design may be required during detailed design.

1.1 Site Description

The Site is legally defined as Part of Lots 27 and 28, Concession 10, in the Geographic Township of Otonabee, Township of Otonabee-South-Monaghan, and County of Peterborough, Ontario.

The existing Site is vacant of any previous development. The property is approximately 18.1 ha in area, consisting of primarily wooded area and uncultivated agricultural land. The Site fronts onto Burnham Line on the east property boundary, north of the intersection with Trans-Canada Highway 7. Surrounding land uses are primarily uncultivated agricultural lands and wooded areas to the north, east and west. Residential developments neighbour the Site on Burnham Line and Lancaster Road, east and south of the Site, respectively. There are a number of commercial developments fronting the north and south sides of Highway 7, south of the Site. The location of the Site is illustrated in **Figure 1**.

1.2 Source Materials

This report relies on information provided from the sources listed below in **Table 1**.

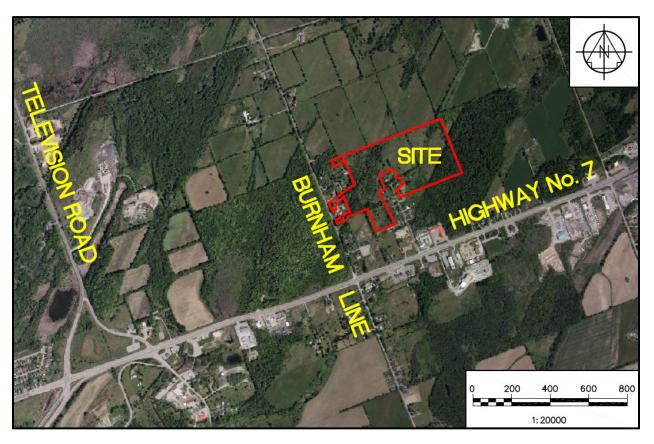
Documentation Provider's Provider **Date Received** Reference Number Included Wetland Hydrology D.M. Wills May 2021 19-10874 Shallow Groundwater Investigation (WHSGI) D.M. Wills April 12, 2021 19-10874 Flood Impact Study Stormwater Management Report D.M. Wills January 2022 19-10874 (SWM) JDF Surveyors January 13, 2020 7369 Legal/Topo Survey

Table 1 – Source Material Information



Provider	Date Received	Provider's Reference Number	Documentation Included
Bell Canada	June 25, 2021	2487	Service Locations
Nexicom	May 19, 2021	20212017709	Service Locations
Enbridge Gas	August 23, 2021	33399536	Service Locations
Hydro One Networking Inc. May 12, 2		20212017709	Service Locations

Figure 1 – Site Location





2.0 Sanitary Servicing

2.1 Existing Service

There are currently no existing municipal services in the Burnham Line, Lancaster Road or Highway 7 Right-of-ways (ROW) to service the Site.

2.2 Proposed Service

Proposed sanitary servicing will be achieved by use of private septic systems for each of the 27 lots. The proposed septic systems include holding/treatment tanks, pumps, tile fields and mantles.

Gunnell Engineering Ltd. (Gunnell) has completed a Sewage System Assessment and evaluated eight of the most physically constrained lots to determine if it is feasible to install these systems in the confined areas. The assessment has assumed typical building sizing and occupancy loads for 0.5 acre lots, as well as an assumption that future owners may wish to install private pools as a measure to ensure the individual lots are sufficiently sized and configured to accommodate the septic systems. The assessment has confirmed, by reviewing the most challenging lots, that sanitary servicing by means of private septic systems is feasible. Wills has illustrated the lot layouts based on the information provided by Gunnell for the remaining lots not specifically identified in the Sewage System Assessment.

Refer to the Sewage System Assessment and Typical Lot Layouts appended to **Appendix A** and the Preliminary Design Drawings in **Appendix B** for the location of the proposed septic systems.

3.0 Water Servicing

3.1 Existing Service

Currently there is no existing municipal water distribution system in Burnham Line, Lancaster Road or Highway 7 ROWs to service the Site.

3.2 Proposed Service

The water servicing requirements for the proposed development will be achieved by use of drilled wells on the individual lots. The wells will be capable of providing domestic water to the residential buildings. The WHSGI (Wills 2021) did not identify any limitations to water supply for the development. Gunnell has indicated a minimum 15.0 m setback to drilled wells from any part of the septic system will be required and is provided.

Gunnell has provided preliminary well locations for the eight lots evaluated. Wills has illustrated proposed well locations on the remaining lots not specifically identified in the Sewage System Assessment. Refer to the Typical Lot Layouts appended to **Appendix A** and the preliminary design drawings in **Appendix B** for the location of the proposed drilled wells.



4.0 Site Grading

4.1 Existing Topography

Elevations across the Site vary by as much as 22.0 m. The Site is defined by two ridges and two wetland areas that run between the northeast and southwest corners of the property. The figure below illustrates the location of the wetlands and required setbacks.

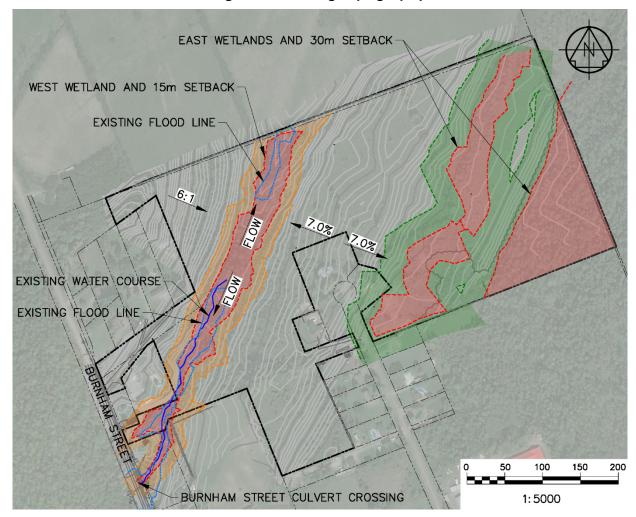


Figure 2 – Existing Topography



4.2 Proposed Grading

The proposed development will generally follow the existing topography and drainage patterns of the existing topography. Access to the existing lots fronting Woodview Drive will be maintained by the proposed roadway.

The proposed development will not impact the existing wetland features in areas where the proposed road is parallel to the wetland. In addition to the required 15.0 m setback from the west wetland and the 30.0 m setback from the east wetland, an additional 2.0 m buffer will be maintained along the setback boundaries to the limits of proposed grading to provide sufficient space for fencing. Lot grading for lots backing onto the west wetland will be minimized to eliminate the potential encroachment into the setback area. Fencing is proposed along the rear of Lots 10 to 15 to preclude personnel and equipment from disturbing the areas within the setback.

The proposed development will encroach in the wetland and buffer in two locations:

- 1. The grading will encroach into the 15.0 m setback from the west wetland in the vicinity of Lot 1.
- 2. The road and associated ditches and grading between Lots 4 and 5 boundaries cross the west wetland along the north boundary of the Site.

Otonabee Region Conservation Authority has be consulted and is amendable to a 3:1 compensation ratio for any disturbance to the existing wetland areas. Refer to the Preliminary Design Drawing in **Appendix B** for illustration of the impacted wetland and setback area and proposed compensation alternatives.

5.0 Storm Servicing

5.1 Existing Service

There is no existing storm sewer infrastructure on Burnham Line, Lancaster Road or Highway 7. Stormwater management is currently achieved by the use of roadside ditching and driveway culverts.

5.2 Proposed Service

Proposed storm servicing will be achieved by use of roadside ditching within the Site. Culverts will be designed at future driveway locations to convey water. Flat bottom ditching will be utilized as pat of the Stormwater Management Strategy (SWM) discussed in the SWM Report (Wills 2022).

The proposed roadway embankment will impede the existing drainage to the neighbouring property, north of the east wetland. Twin 525 mm HDPE culverts crossing under the proposed roadway will convey existing flows from the north to the wetland to the south. Refer to the Wills Flood Impact Assessment, 2021 for details on the culvert crossing design.



The location of the twin 525 mm culverts, roadside ditching and driveway culverts are illustrated in the Preliminary Design Drawings in **Appendix B**.

6.0 Utility Servicing

Bell has indicated telecommunication services are available on Burnham Line and Trans-Canada Highway 7. Nexicom has verified they have available services along Trans Canada Highway 7.

Existing hydro along Burnham Line, Lancaster Road, and Trans Canada Highway 7 provided by Hydro One is available to service the Site.

Enbridge Gas has verified existing gas infrastructure is in the Burnham Line and Trans-Canada Highway 7 ROWs. The adequacy of the existing gas main will need to be determined at the detailed design stage by the mechanical consultant in consultation with Enbridge.

Coordination with all of the local utility providers will be required during the detailed design phase in conjunction with engineering electrical and mechanical consultants.

Correspondence from utility providers received to date is located in **Appendix C**.



7.0 Conclusions

- 1. Sanitary servicing requirements will be provided by private septic systems as outlined in the Sewage System Assessment, prepared by Gunnel.
- 2. Domestic water servicing requirements will be provided by private wells drilled on each lot.
- 3. Development grading can be achieved with minimal / compensated impact on existing natural features.
- 4. Storm servicing will be provided by roadside ditches designed in conjunction with the SWM report to convey 100 year storm events.

We trust the above is satisfactory to your purposes. Please feel free to contact our office if you have any questions pertaining to the above.

Respectfully submitted,

D.A. KEAY 90446865 02/04/22

Deborah Keay, P.Eng Manager, Municipal Engineering

Karl Prentice Municipal Designer

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KP/jh



8.0 Statement of Limitations

This report has been prepared by D.M. Wills Associates Limited on behalf of NIRVANA Homes to address the requirements of the Township of Otonabee-South Monaghan.

The conclusions and recommendations in this report are based on available background documentation and discussions with applicable agencies at the time of preparation.

The report is intended to determine the feasibility of the proposed development with respect to sanitary, water, stormwater and utility servicing of the subject lands. The design information provided in this report is preliminary in nature and should not be used for construction purposes.

Any use that a third party makes of this report other than a functional servicing report for the proposed development is the responsibility of such third parties. D.M. Wills Associates Limited accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or action taken based on using this report for purposes other than a Functional Servicing Report for the property located on Part of Lot 27 and 28, Concession 10, Township of Otonabee-South Monaghan, and County of Peterborough, Ontario.

Appendix A

Sewage System Assessment



November 1, 2021

Mr. Rubal Kundra
Life at the Woodland Inc.
Unit 201, 5 Brisdale Drive
Brampton, ON
L7A 0S9

Re: Proposed 27 Lot Subdivision: Sewage System Assessment Life at the Woodland, Part Lot 27, Concession 10, Otonabee – South Monghan, Peterborough, ON

Dear Mr. Kundra,

In preparation for Draft Plan of Subdivision approval, Gunnell Engineering Ltd. has prepared sewage system layout drawings for eight (8) typical lots, for the Life at the Woodland proposed residential condominium development, located on Part of Lot 27, Concession 10, Township of Otonabee – South Monaghan, County of Peterborough.

The site is located at the intersection of Burnham Line and Highway 7 and will consist of one road (cul-de-sac) entering off of Burham Line. The overall property for the subdivision (27 lots) consists of an area of 15.92 ha (39.3 acres).

From a sewage system standpoint, we have completed an assessment of the proposed lot sizing to accommodate required sewage systems for the proposed 27 lot residential subdivision layout as detailed on Drawing B-1, Rev. 1, dated November 1, 2021.

In preparation of this assessment, we have reviewed the following documents;

- Geo-Logic (now GHD) "Hydrogeological Assessment Report Proposed Residential Development", dated October 2013.
- Geo-Logic (now GHD) "Well Testing & Monitoring Report", dated July 22, 2015.
- County of Peterborough Application for Approval of a Plan of Subdivision (Application 15T-16002) for a 27 lot subdivision c/w septic test pit summaries for

- 27 Lots, which notes "This subdivision is approved by this office" and dated July 5, 2016.
- GHD (formerly Geo-Logic) "Response to Hydrogeology Comments Hydrogeological Assessment Report", dated May 29, 2016.
- Stantec Consulting Ltd., "Response to Hydrogeological Peer Review Response by GHD Limited Hydrogeological Assessment", dated July 5, 2016.
- GHD Hydrogeological Assessment: Well Testing and Monitoring Report, dated May 1, 2020.
- Site Plan for proposed 27 Lots and topographic survey.
- Ministry of the Environment, Conservation and Parks (MECP) Guideline D-5-4: Individual On-Site Sewage Systems Water Quality Impact Risk Assessment.

Further to the above documentation, we would like to make reference to the attached Gunnell Engineering Ltd. sewage system typical lot layout drawings B-2 to B-9. We note that these eight (8) typical lot layouts include for a representation of the type of proposed lots (i.e. standard and challenging configurations), for the purpose of on-site sewage system design. These lots include Lots 1, 3, 8, 9 10, 17, 26 and 27.

We completed a review of historical test pit assessments, borehole logs and piezometer information for the site. Native soils are classified as silty sand till with our assessment of soil percolation rates in the range of; T=30 to 50 min/cm. Each of these eight (8) lots has been designed with a conventional raised absorption trench sewage system in accordance with County of Peterborough Health Unit requirements.

Each of these lot layouts is based on a three-bedroom home, up to 200 m² in living area, with two bathrooms and a powder room, to meet County of Peterborough Health Unit requirements. The lot layouts are based on Ontario Building Code requirements for the raised absorption trench field septic system, and also include a drilled well, driveway, amenity space (incl. future proposed pools) and building setbacks for the Hamlet Residential zoning.

With the development of these eight (8) lot layouts, including consultant input on environmental and planning parameters, which include some of the most challenging lots, we conclude that each of the proposed 27 lots can be developed.

The proposed plan of condominium subdivision development is for the creation of 27 single residential building lots. Based on the information detailed in the Hydrogeological Assessment completed by GHD Limited, dated May 1, 2020, and subsequently peer reviewed by Stantec, it is GHD's opinion that there is minimal potential for groundwater and surface water impact based upon the proposed development from a quality and quantity perspective provided that the septic systems and wells are constructed properly. A nitrate impact assessment indicates that the installation of Class IV raised sewage disposal system will not result in unacceptable degradation of the shallow groundwater.

The County of Peterborough approved the subdivision in July 2016, based on 27 lots. Our individual lot layouts (providing for the most challenging lots) confirms that the proposed 27 lot residential plan of condominium subdivision can be accommodated on this property, and would meet the lot sizing requirements of the Peterborough Health Department for conventional sewage system designs.

Please advise if we may be of further assistance in finalizing planning and engineering approvals with the County of Peterborough.

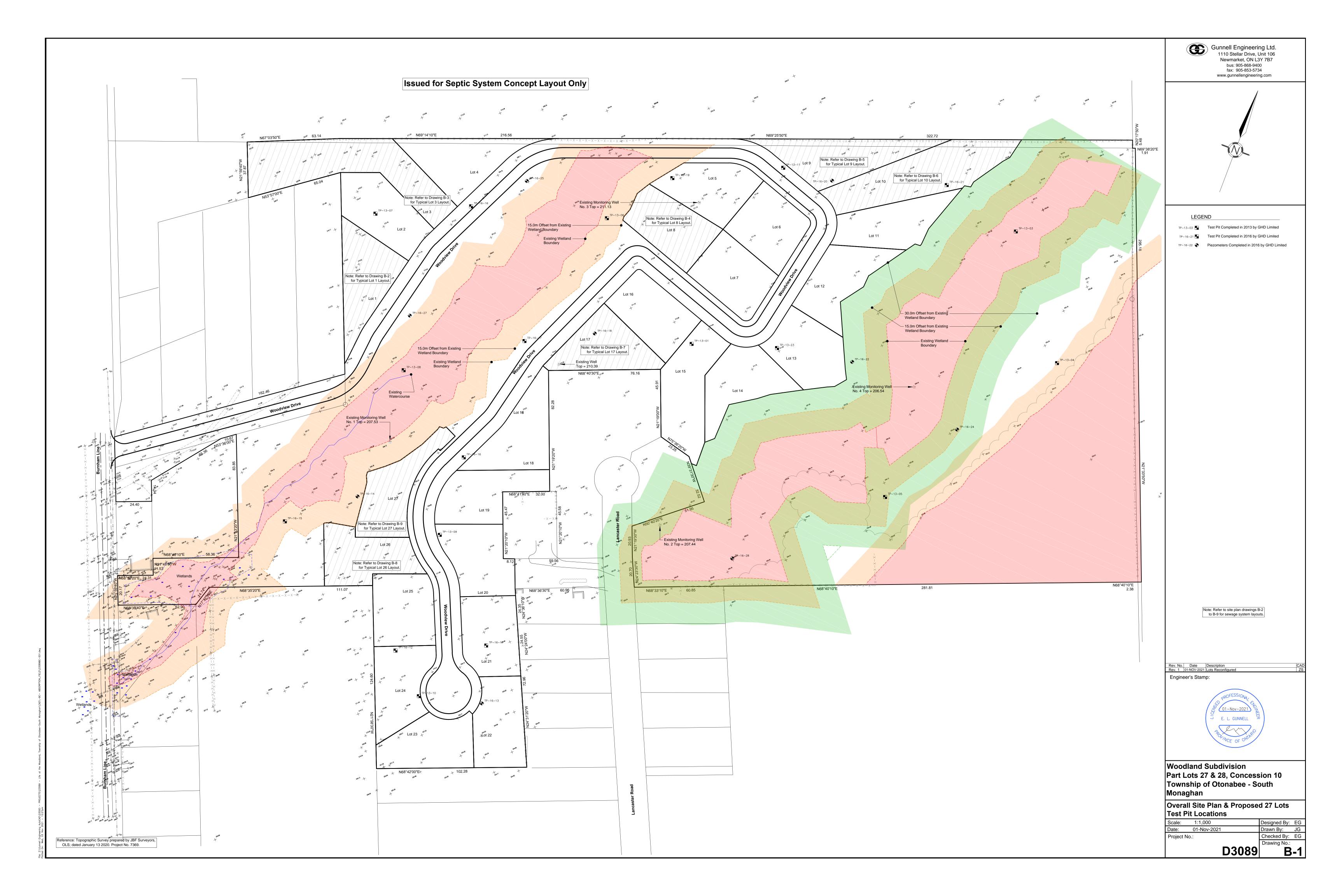
Yours truly,

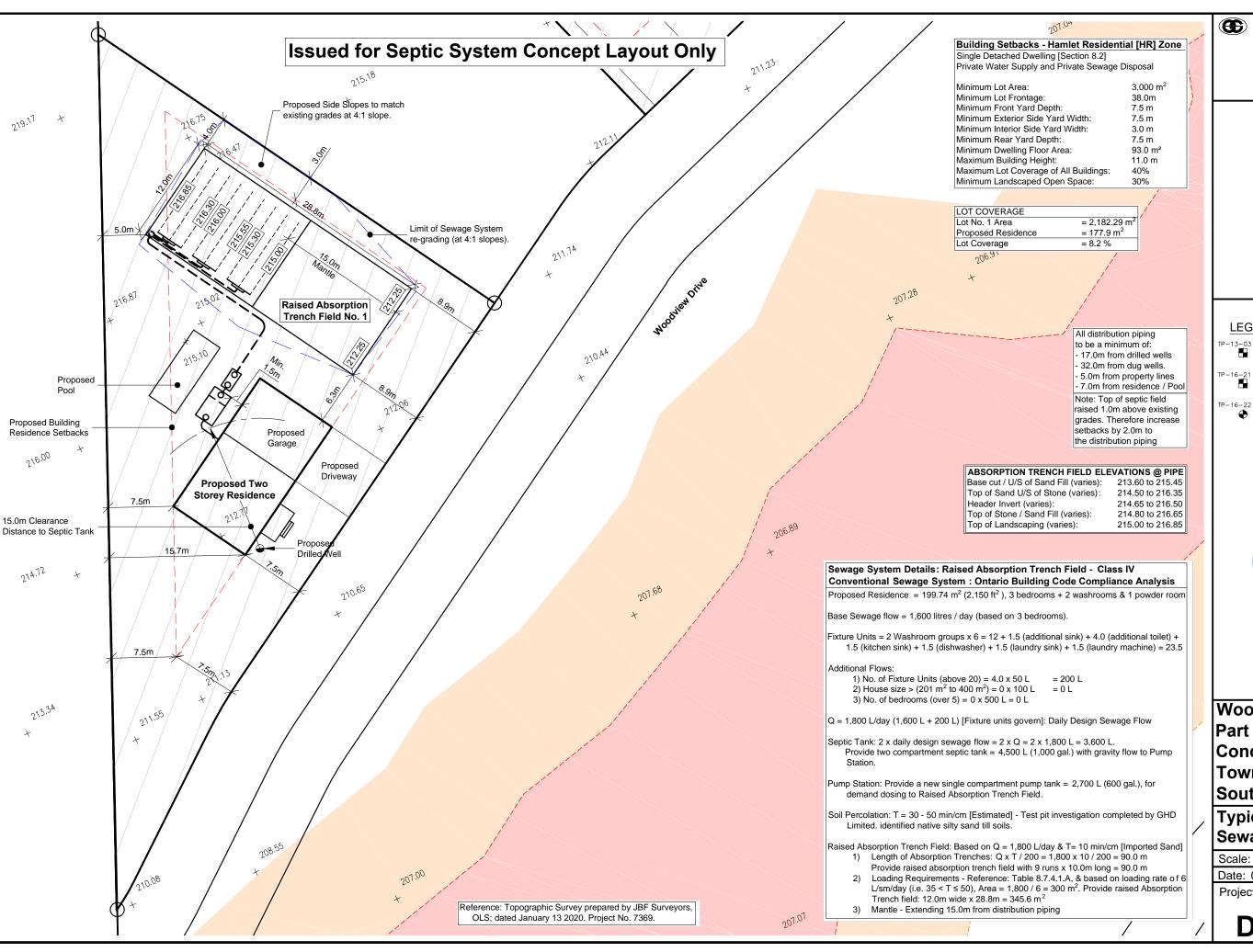
GUNNELL ENGINEERING LTD.

Tom Keane

Eric Gunnell, P. Eng.

lix





Gunnell Engineering Ltd. 1110 Stellar Drive, Unit 106

> Newmarket, ON L3Y 7B7 bus: 905-868-9400 fax: 905-853-5734 www.gunnellengineering.com



LEGEND

Test Pit Completed in 2013 by GHD Limited



Test Pit Completed in 2016 by GHD Limited

Piezometers Completed in 2016 by GHD Limited



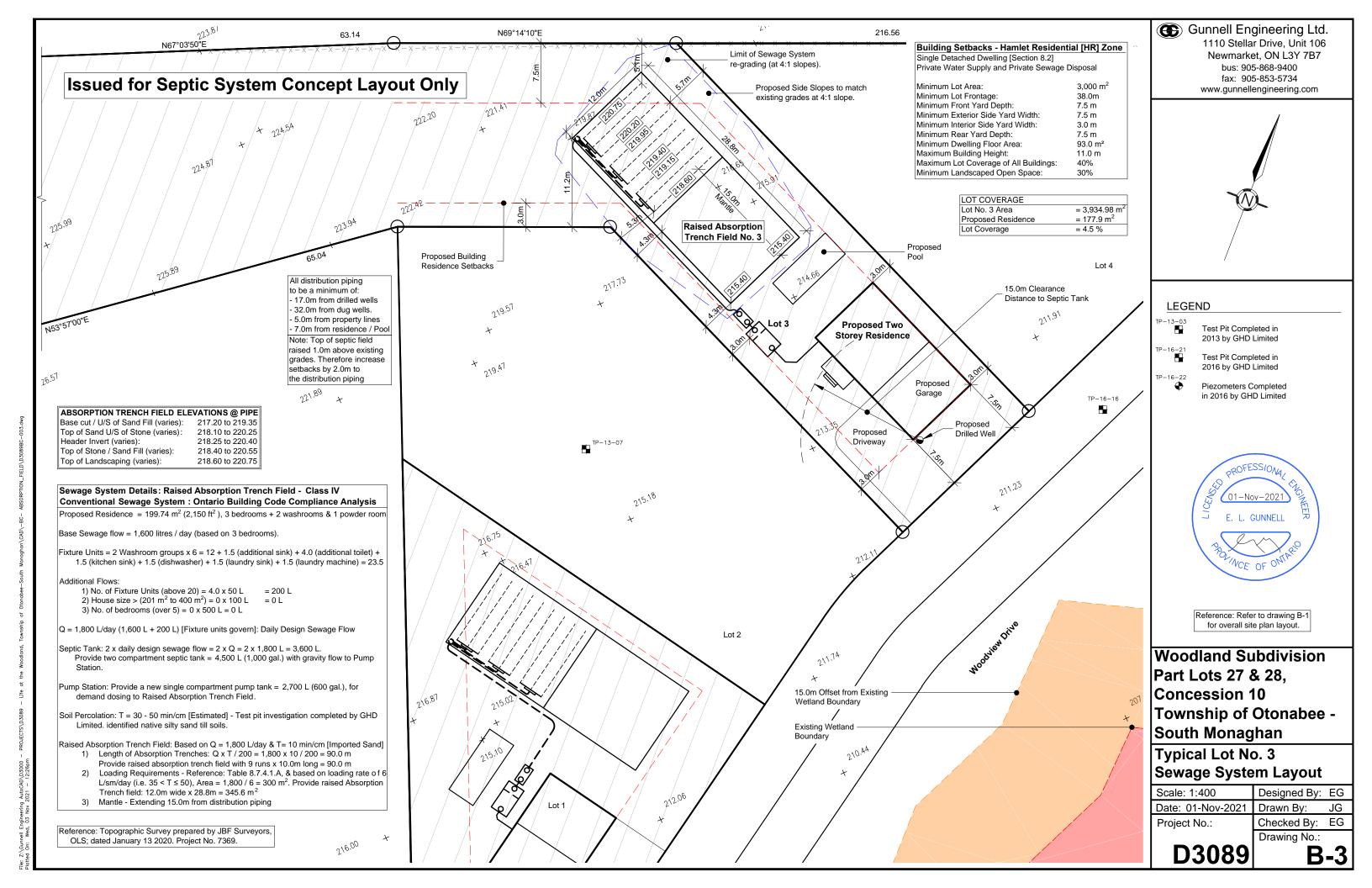
Reference: Refer to drawing B-1 for overall site plan layout.

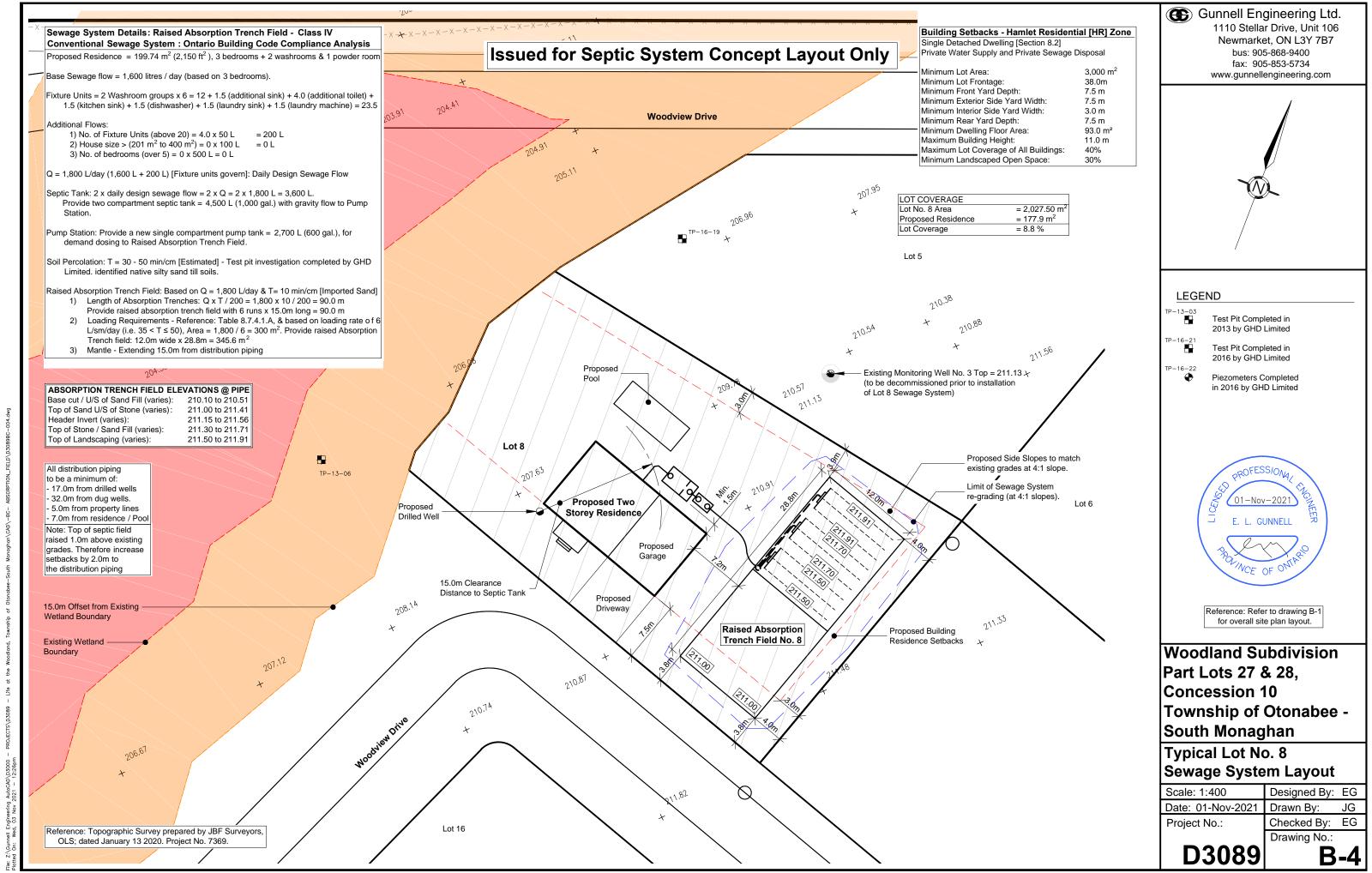
Woodland Subdivision Part Lots 27 & 28. Concession 10 Township of Otonabee -South Monaghan

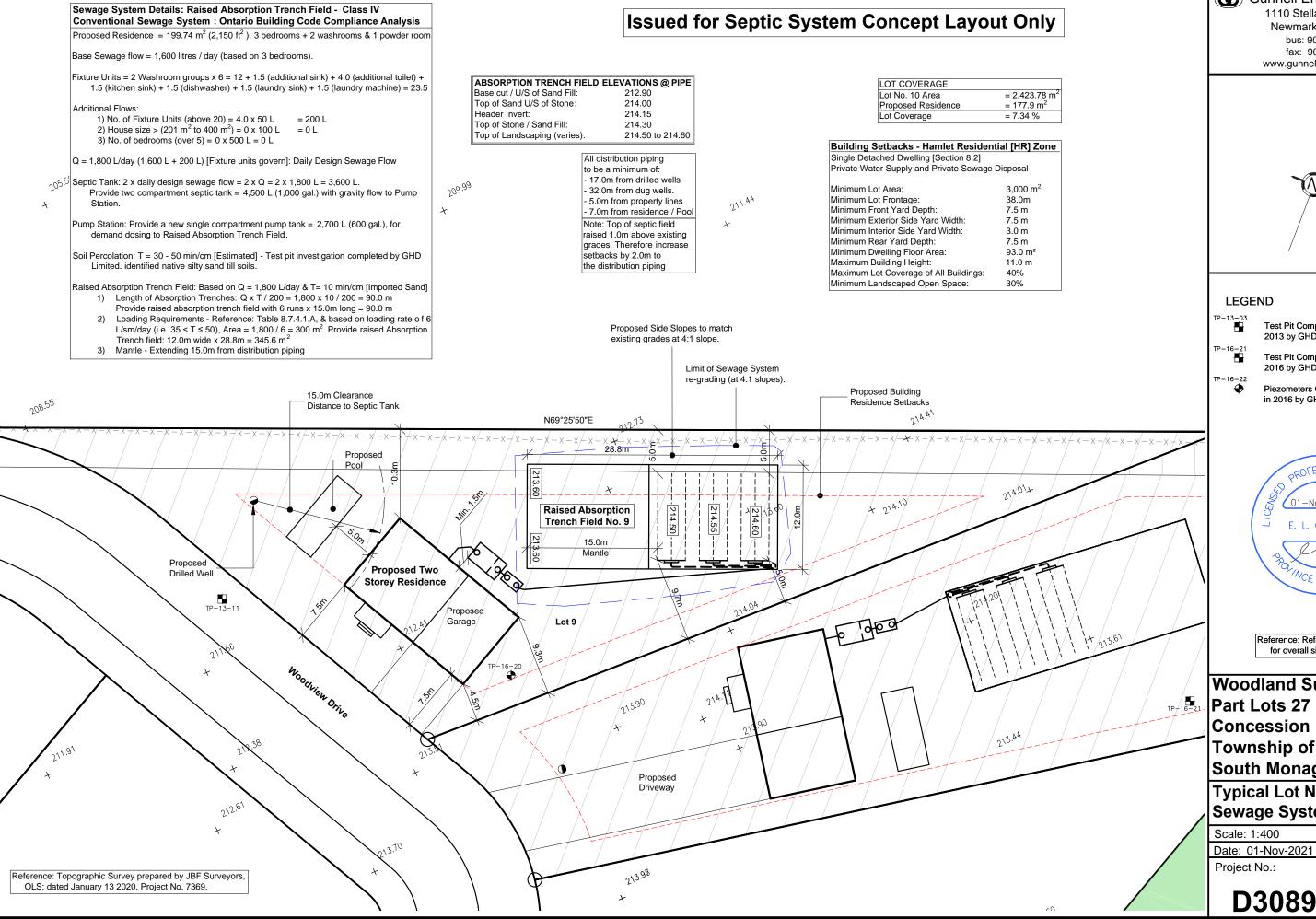
Typical Lot No. 1 **Sewage System Layout**

Scale: 1:400 Designed By: EG Date: 01-Nov-2021 Drawn By: Checked By: Project No.: Drawing No.:

D3089







Gunnell Engineering Ltd. 1110 Stellar Drive, Unit 106

Newmarket, ON L3Y 7B7 bus: 905-868-9400 fax: 905-853-5734 www.gunnellengineering.com



Test Pit Completed in 2013 by GHD Limited

Test Pit Completed in 2016 by GHD Limited

Piezometers Completed in 2016 by GHD Limited



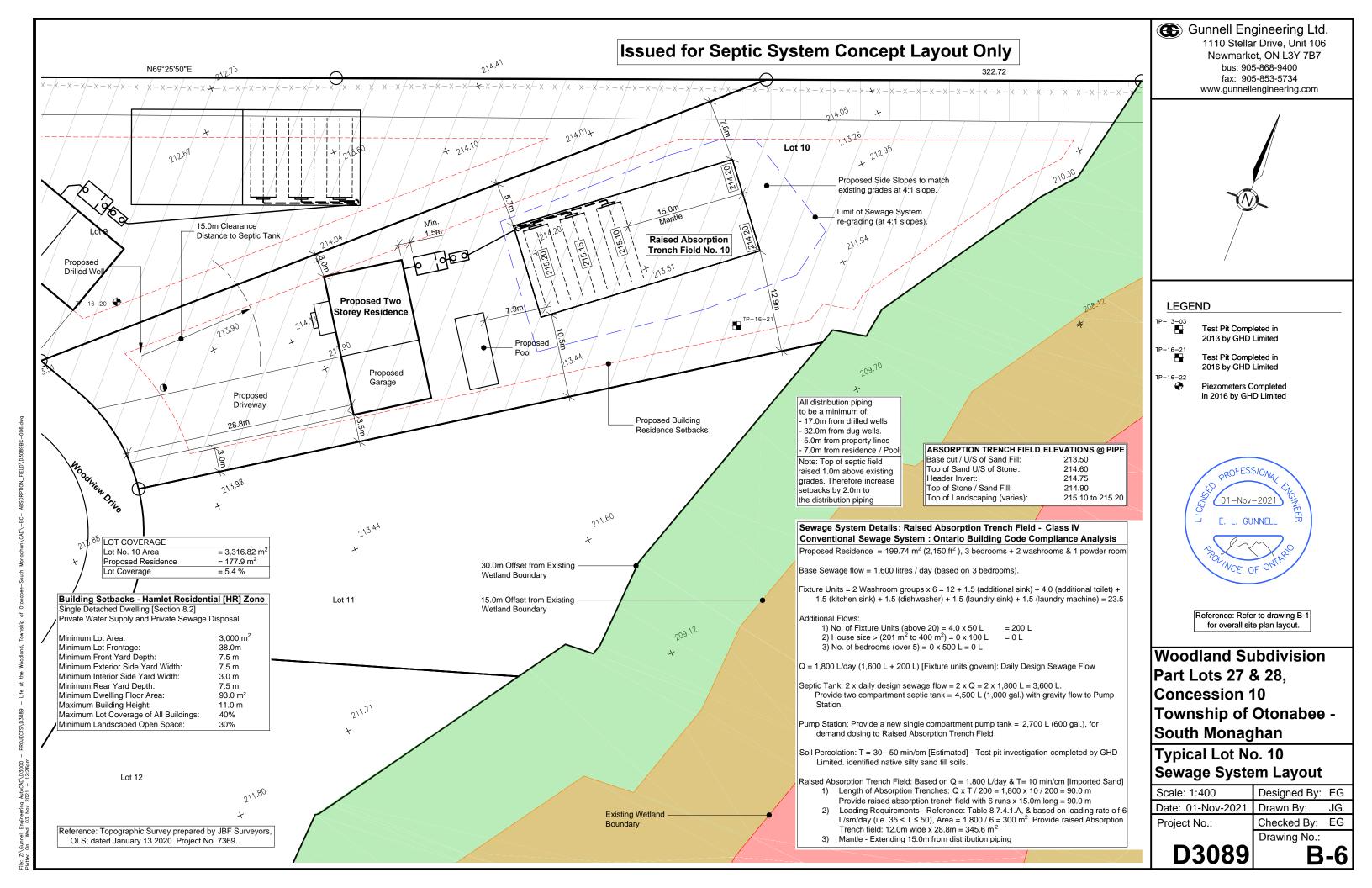
Reference: Refer to drawing B-1 for overall site plan layout.

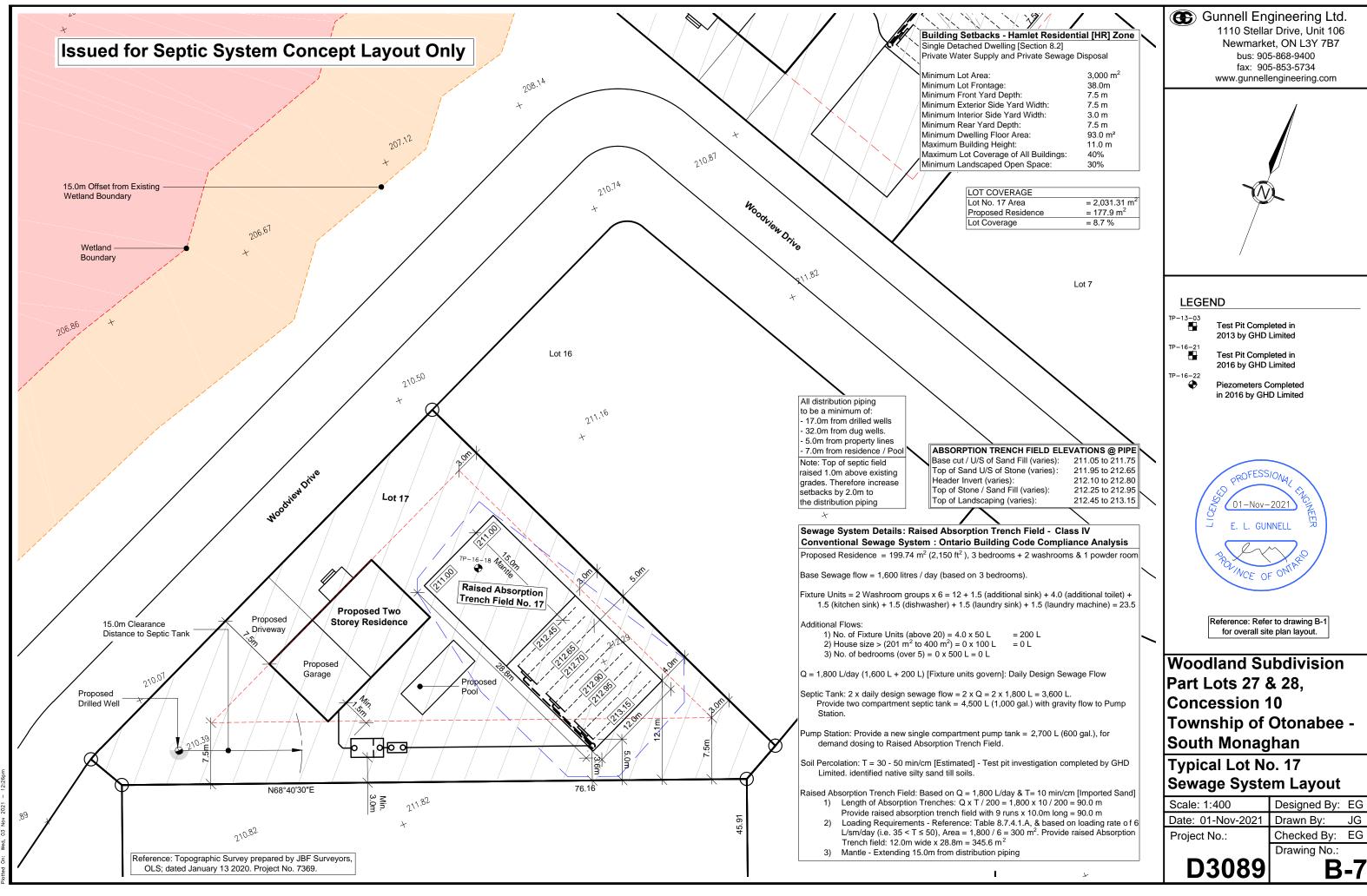
Woodland Subdivision Part Lots 27 & 28, Concession 10 **Township of Otonabee -**South Monaghan

Typical Lot No. 9 **Sewage System Layout**

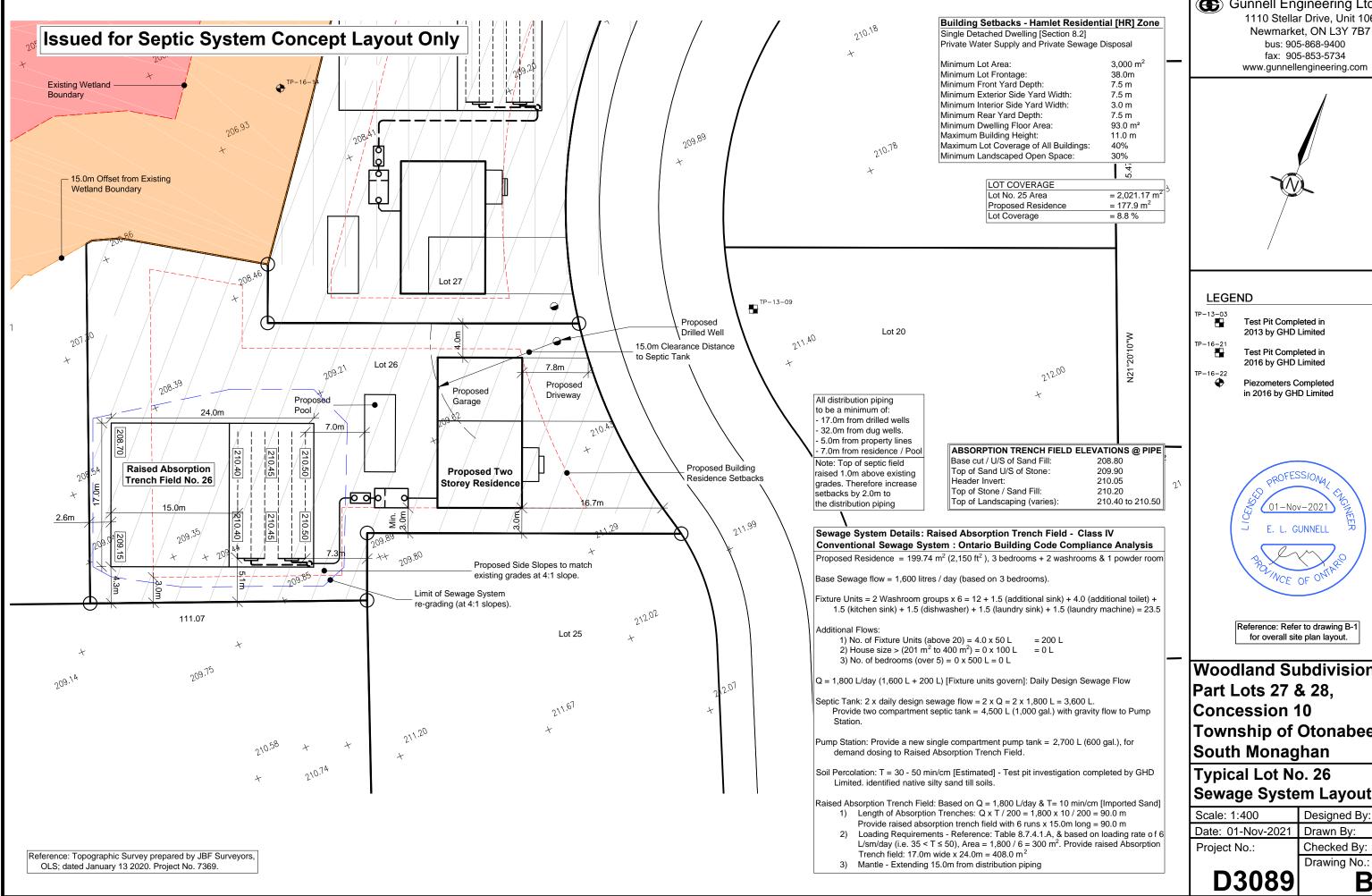
Designed By: EG Date: 01-Nov-2021 Drawn By: Checked By:

Drawing No.:





0000 - PROJECTS\D3089 - Life at the Woodland, Township of Otonabee-South Monaghan\CAD\-BC- ABSORPTION_FIELD\D3



Gunnell Engineering Ltd. 1110 Stellar Drive, Unit 106

> bus: 905-868-9400 fax: 905-853-5734





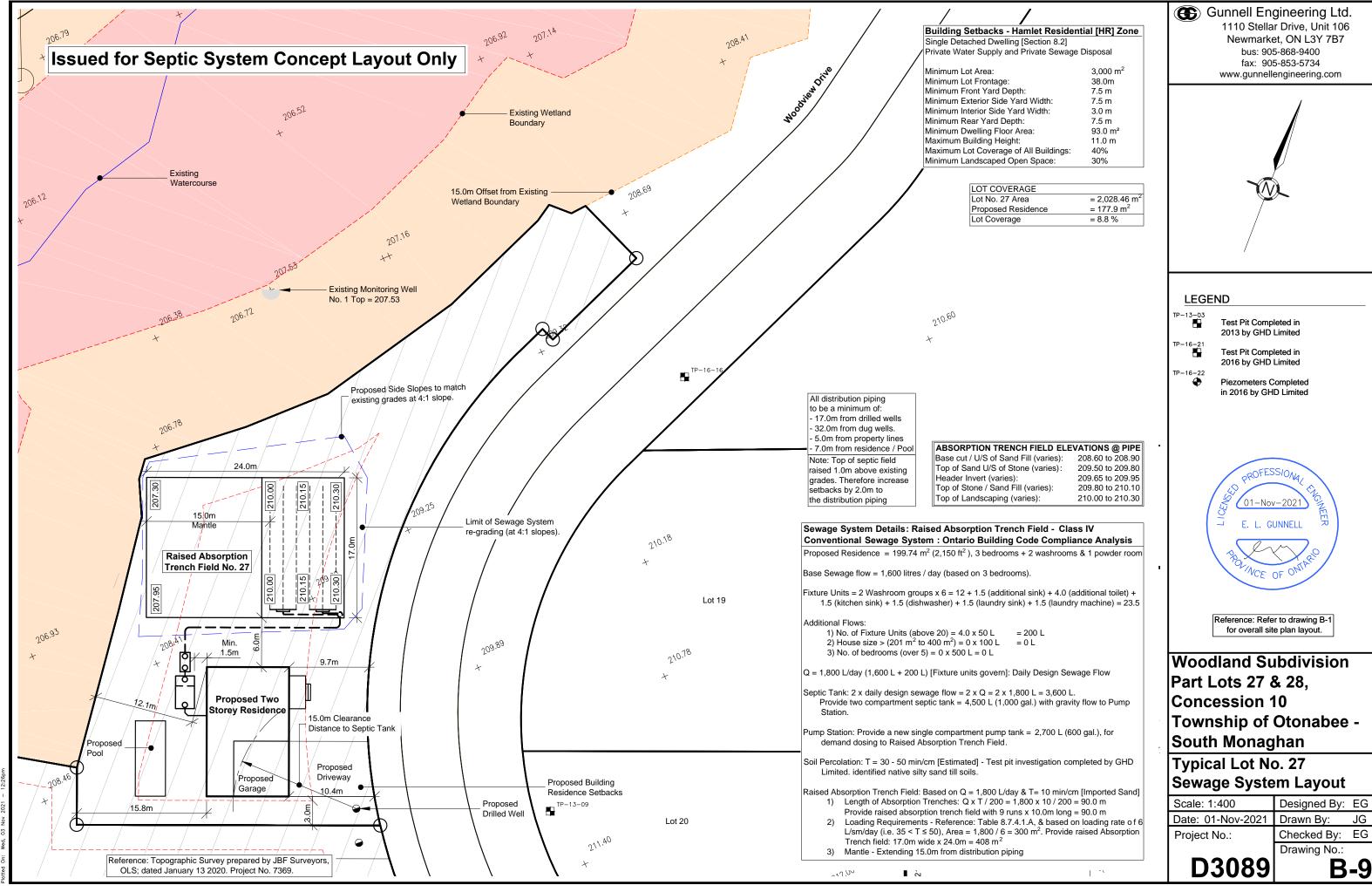
for overall site plan layout.

Woodland Subdivision Township of Otonabee -

Sewage System Layout

Designed By: EG Date: 01-Nov-2021 Drawn By: Checked By: Drawing No.:

B-8



ROJECTS\D3089 — Life at the Woodland, Township of Otonabee—South Monaghan\CAD\—BC— ABSORPTION_FIELD\D

Appendix B

Preliminary Design Drawings



LIFE AT THE WOODLAND SUBDIVISION

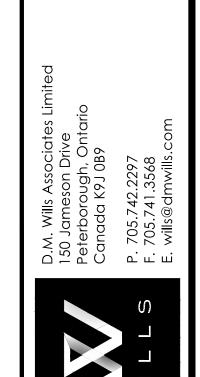
OTONABEE-SOUTH MONAGHAN, ONTARIO

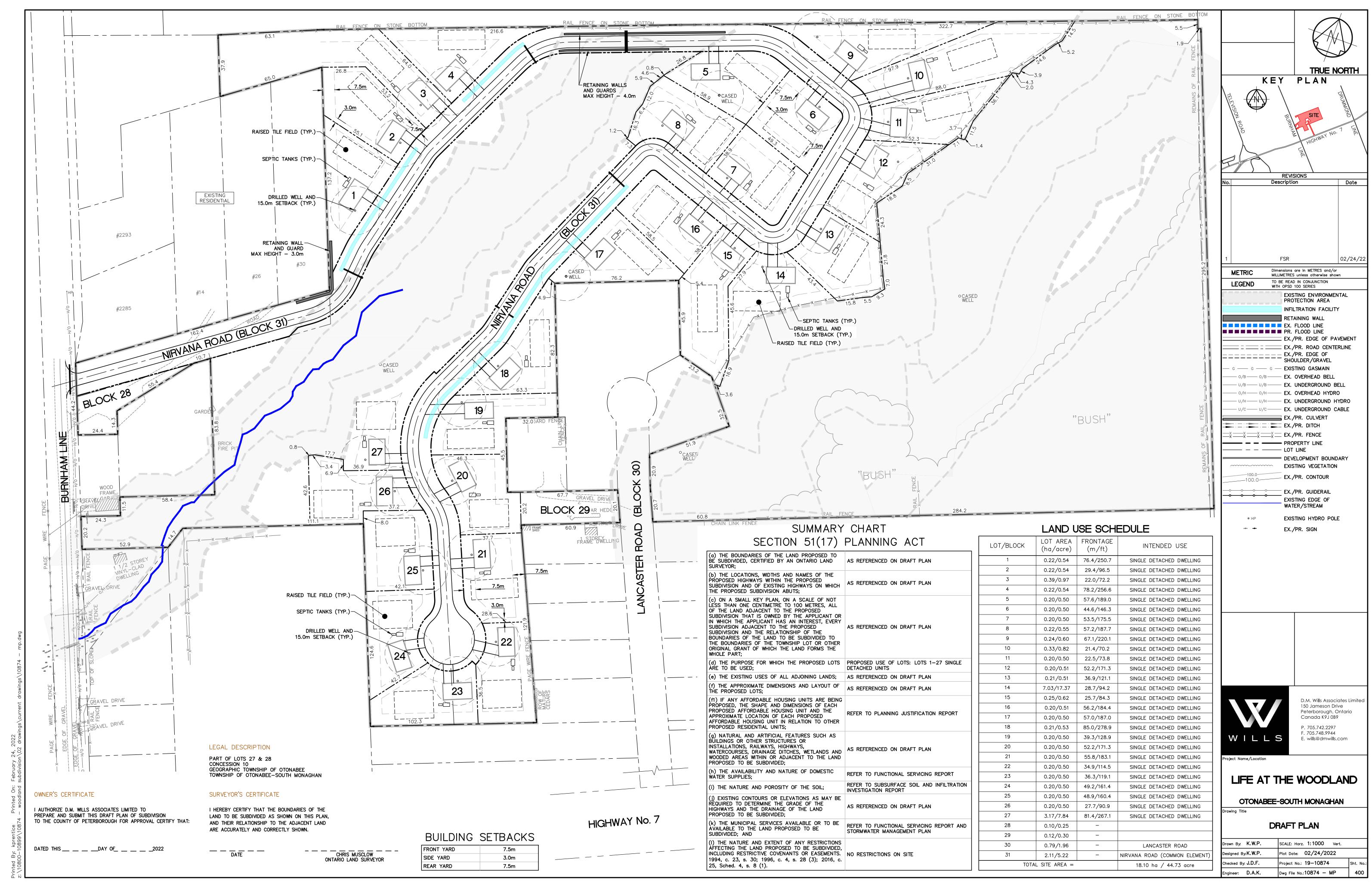
WILLS PROJECT No. 19-10874

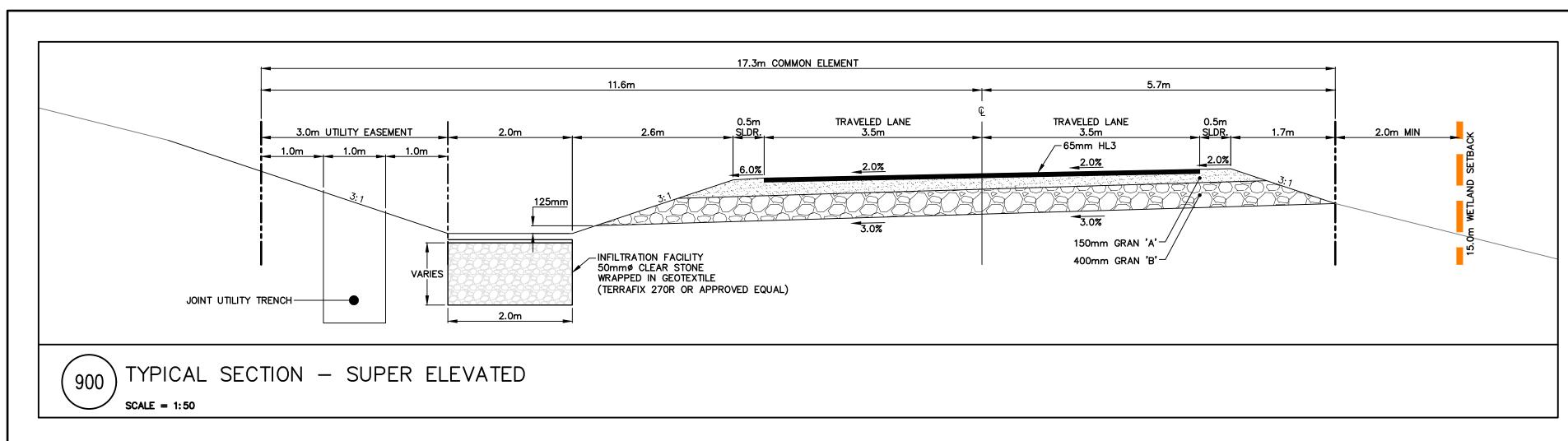


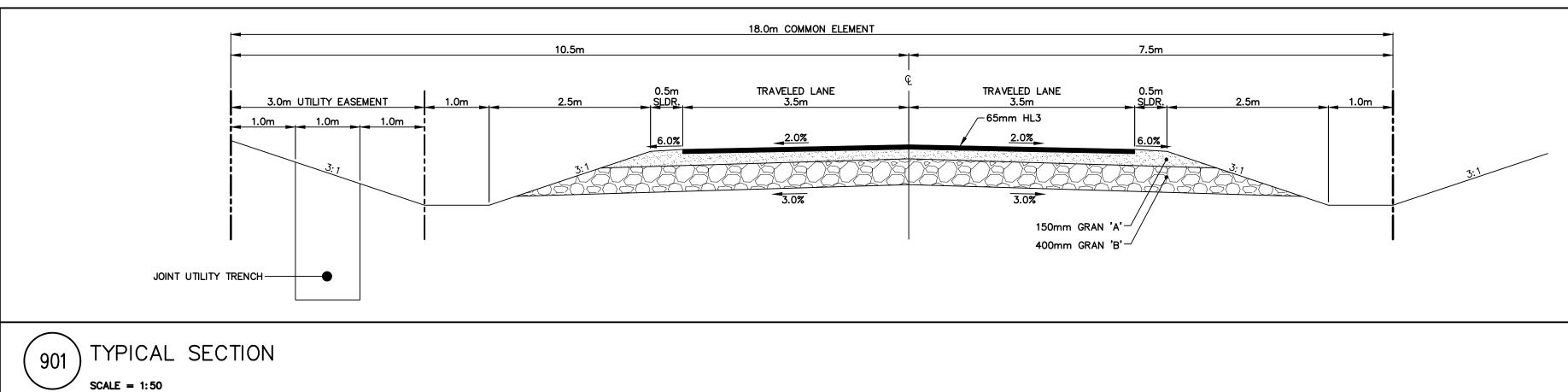
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101	DETAILS	0	02/24/2022
400	PLAN PROFILE STA: 0+000 - 0+060	0	02/24/2022
401	PLAN PROFILE STA: 0+060 - 0+140	0	02/24/2022
402	PLAN PROFILE STA: 0+140 - 0+300	0	02/24/2022
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405	PLAN PROFILE STA: 0+560 - 0+680	0	02/24/202
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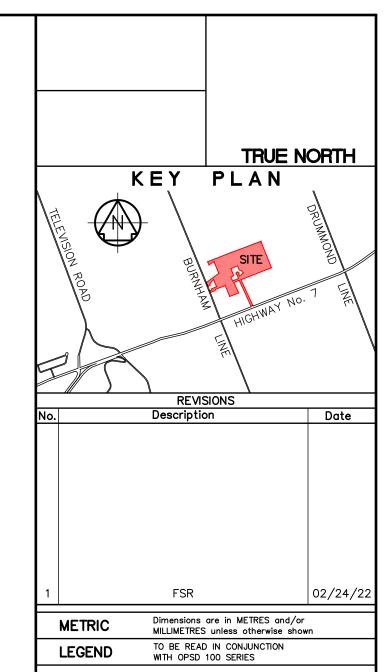












150 Jameson Drive Peterborough, Ontario Canada K9J 0B9 P. 705.742.2297 F. 705.748.9944 E. wills@dmwills.com

Project Name/Location

LIFE AT THE WOODLAND

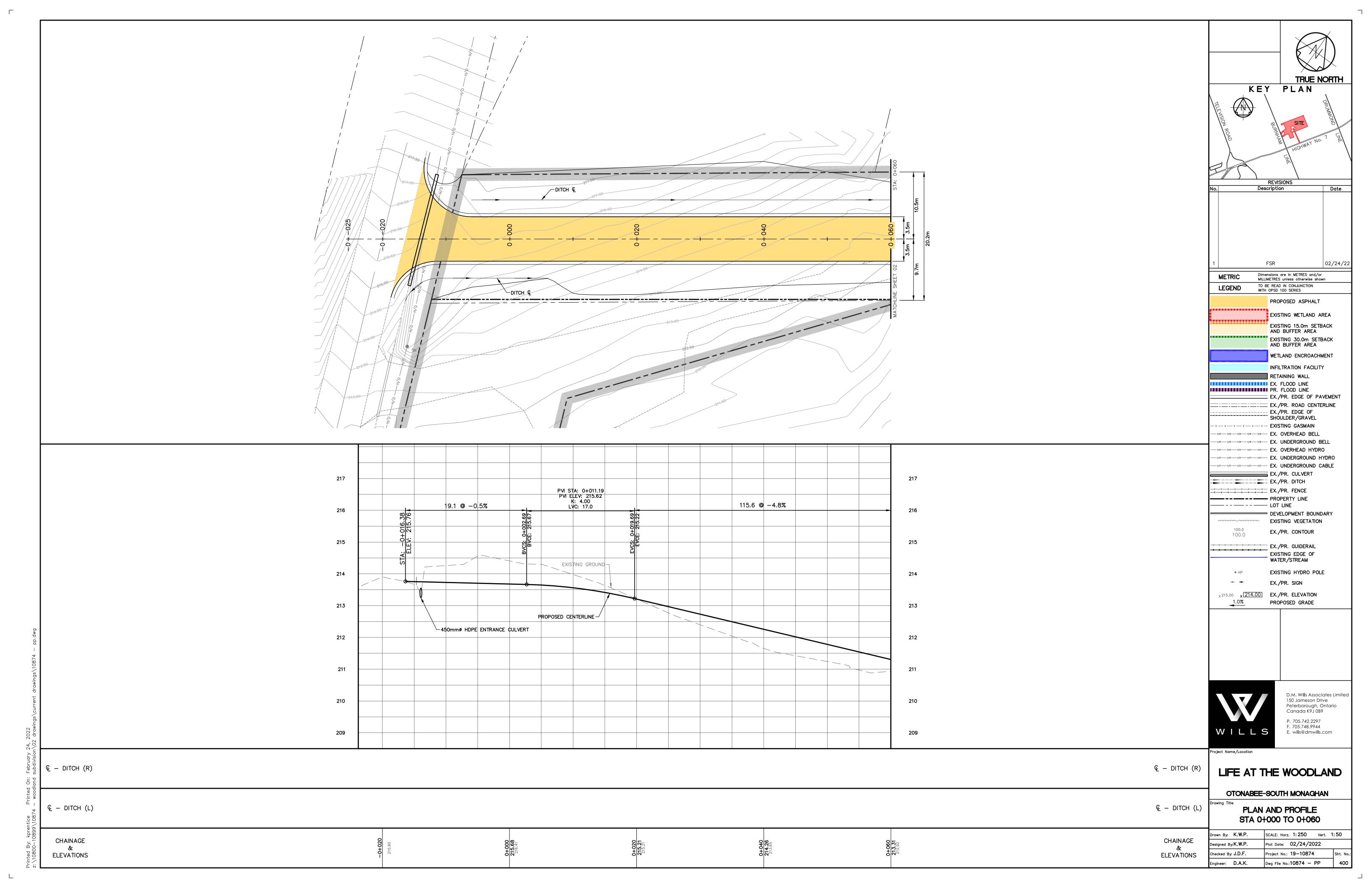
OTONABEE-SOUTH MONAGHAN

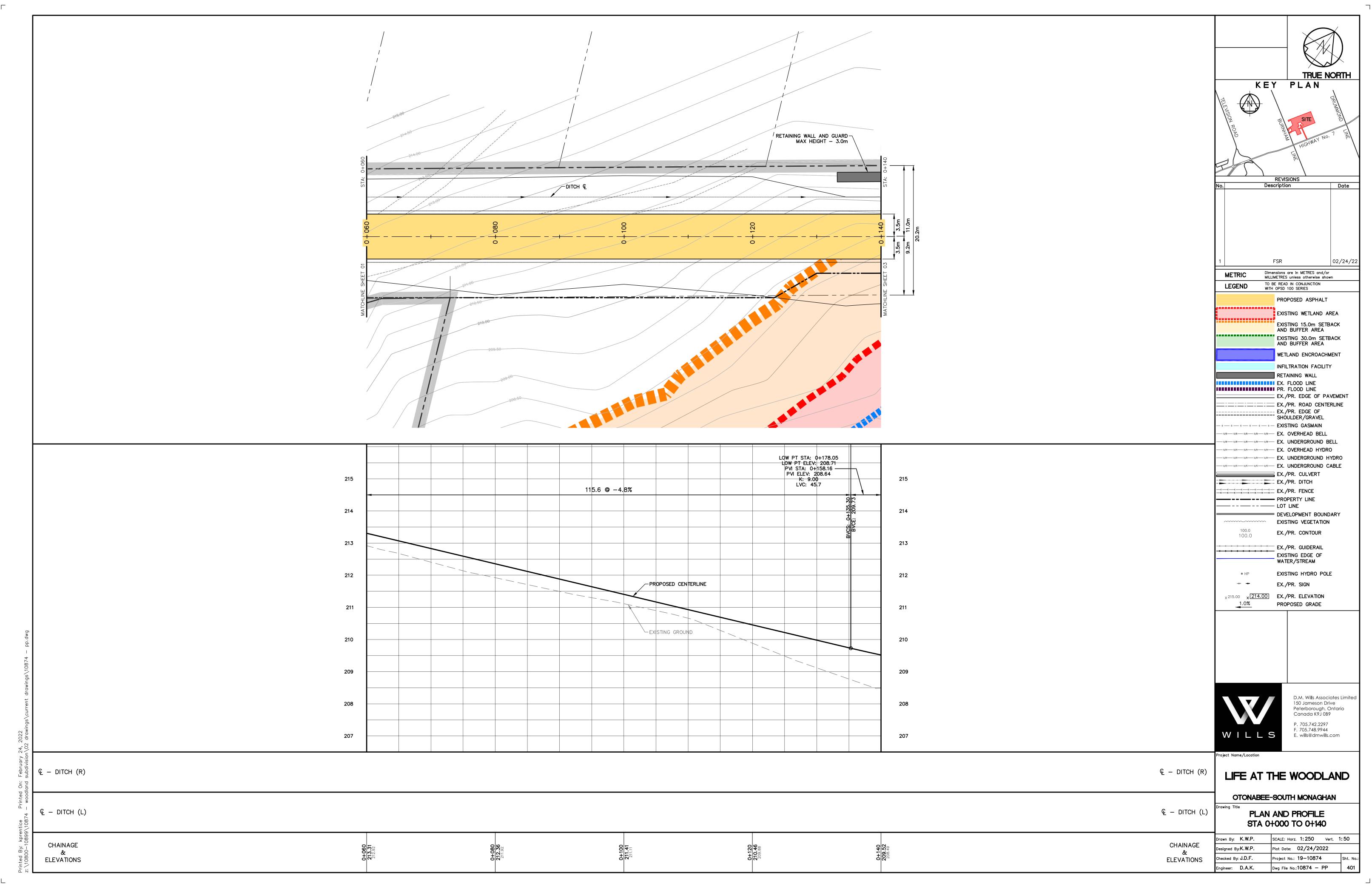
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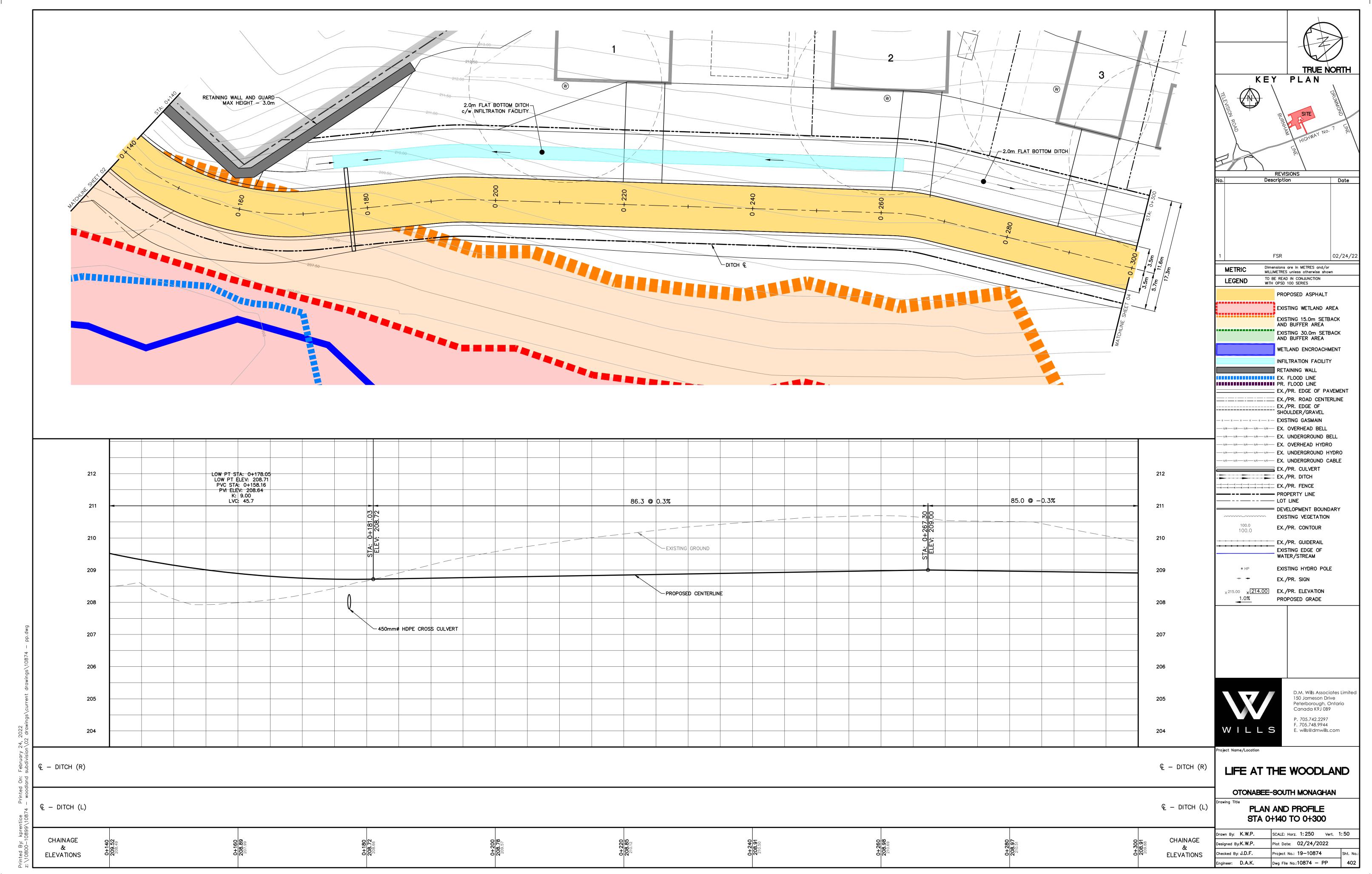
ngineer: D.A.K.

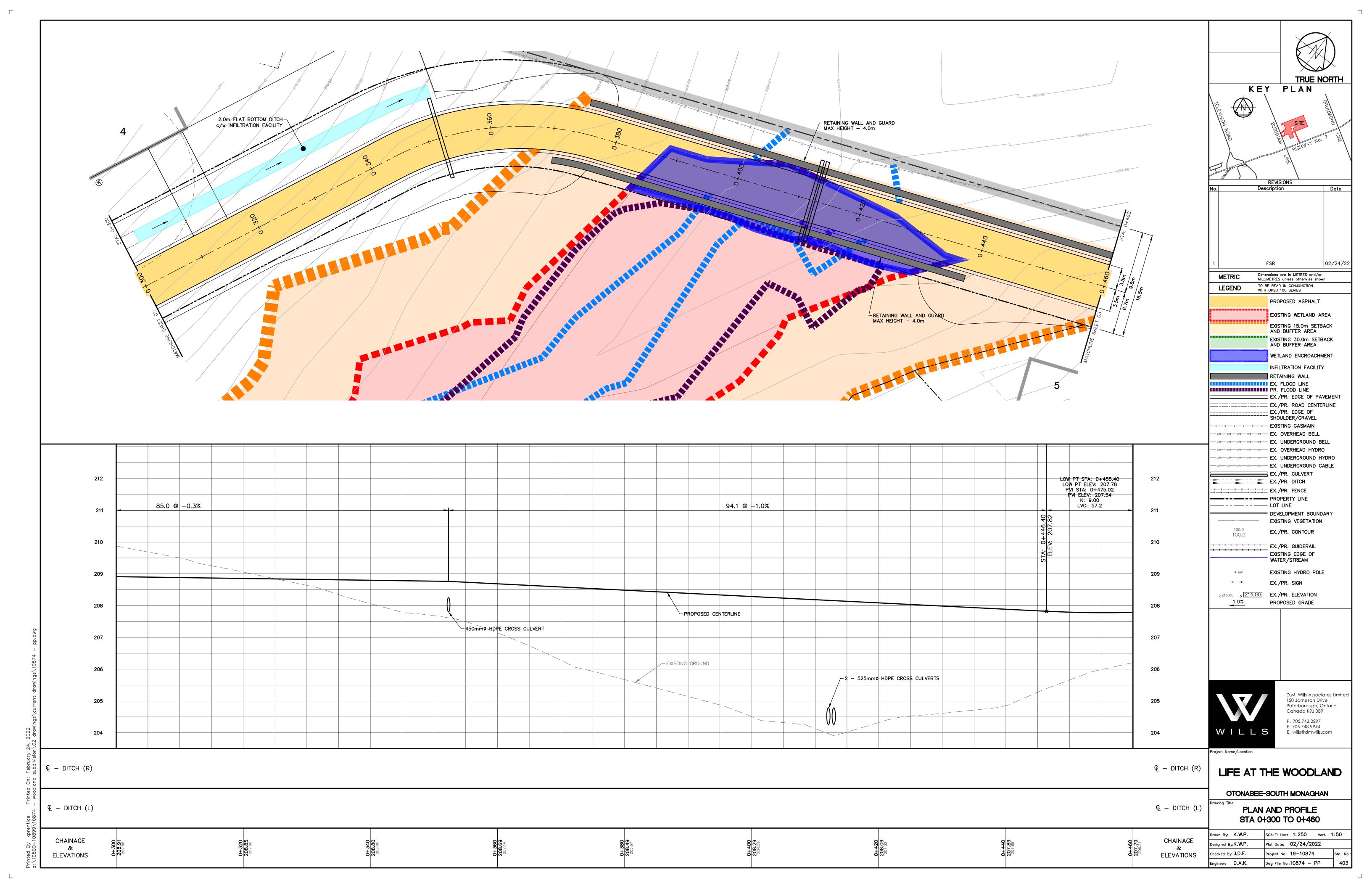
Drawn By: **K.W.P.** SCALE: Horz. Plot Date: 02/24/2022 Project No.: 19-10874 Dwg File No.:10874 — GNDT

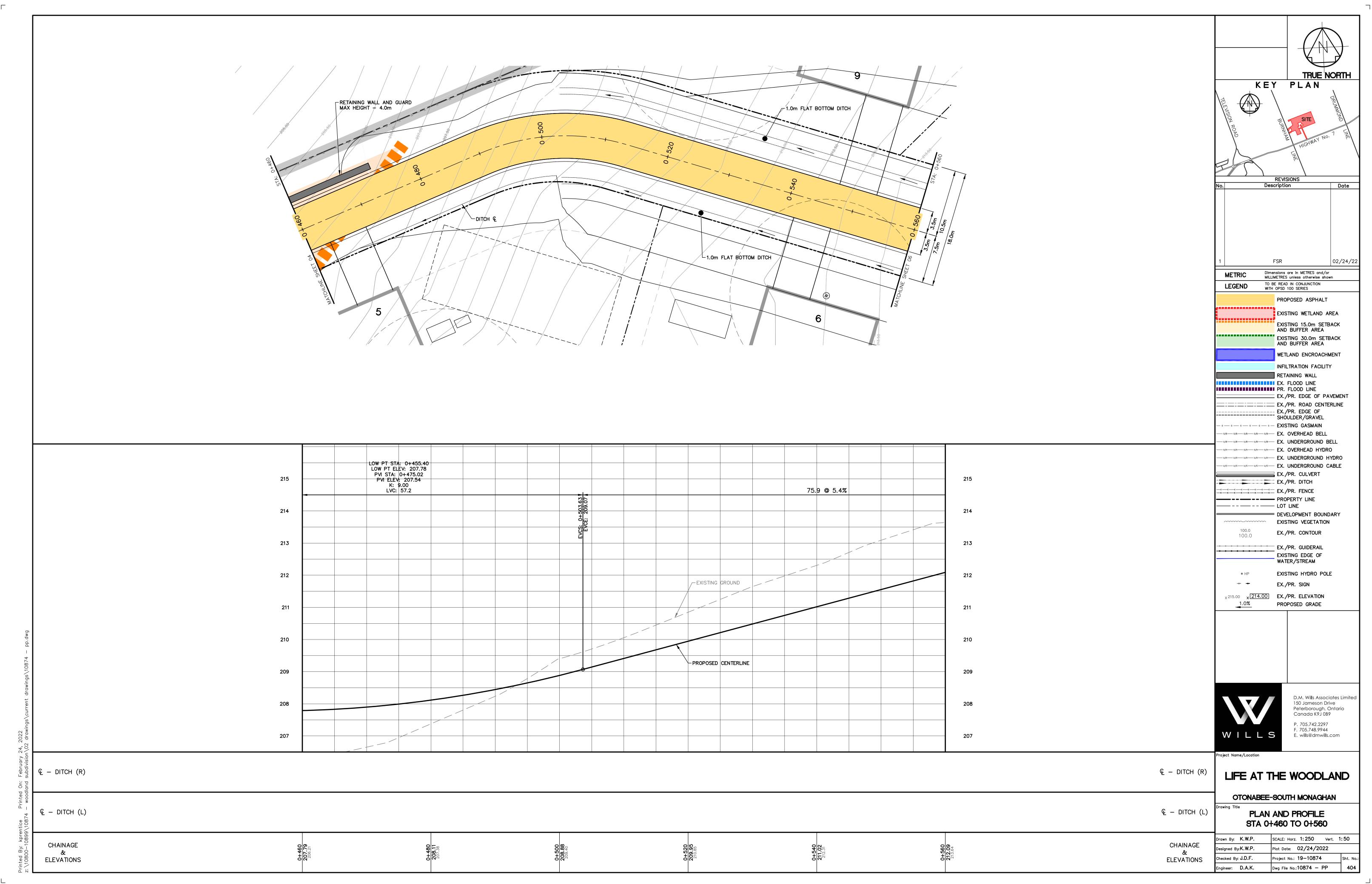
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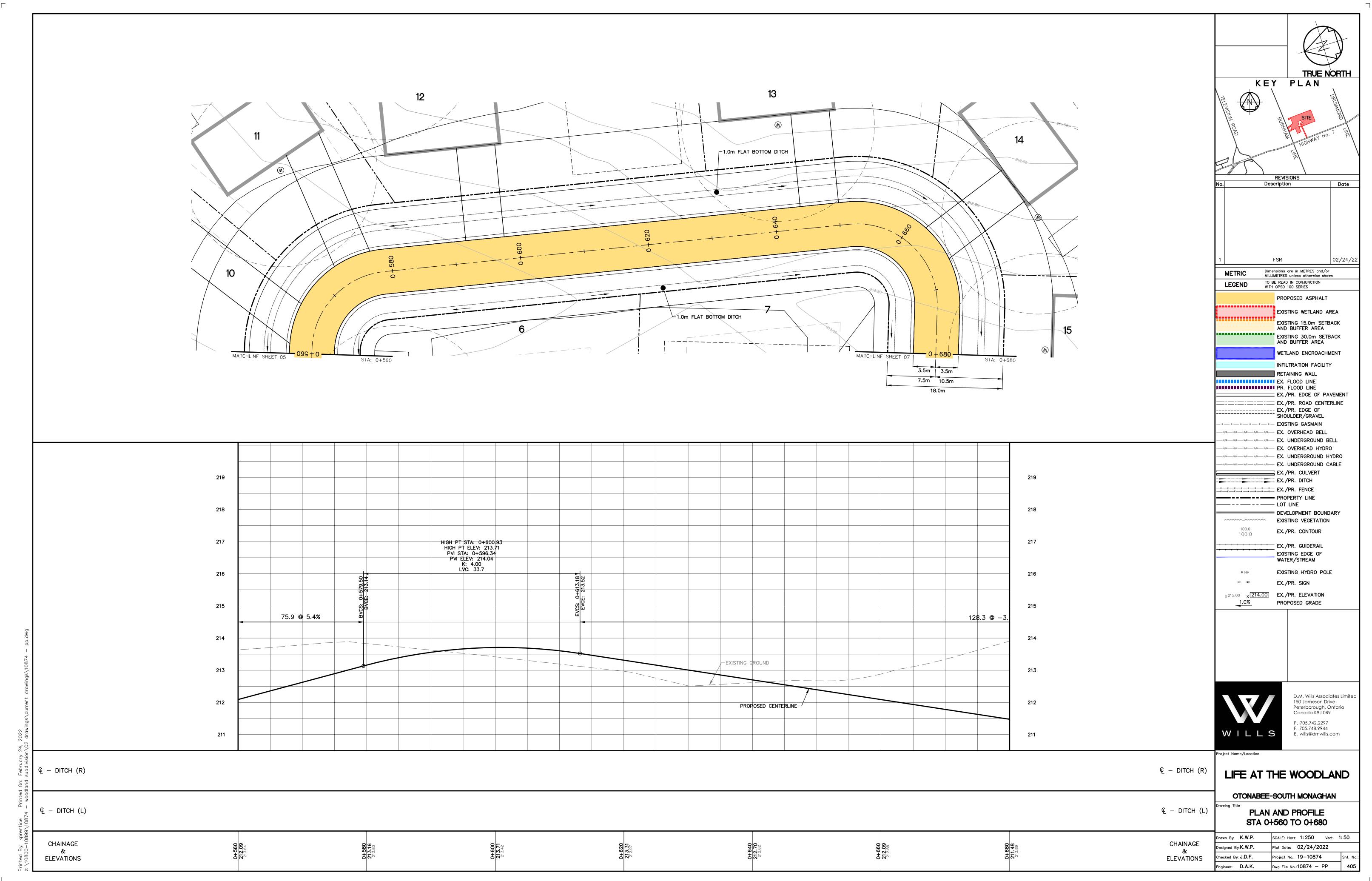


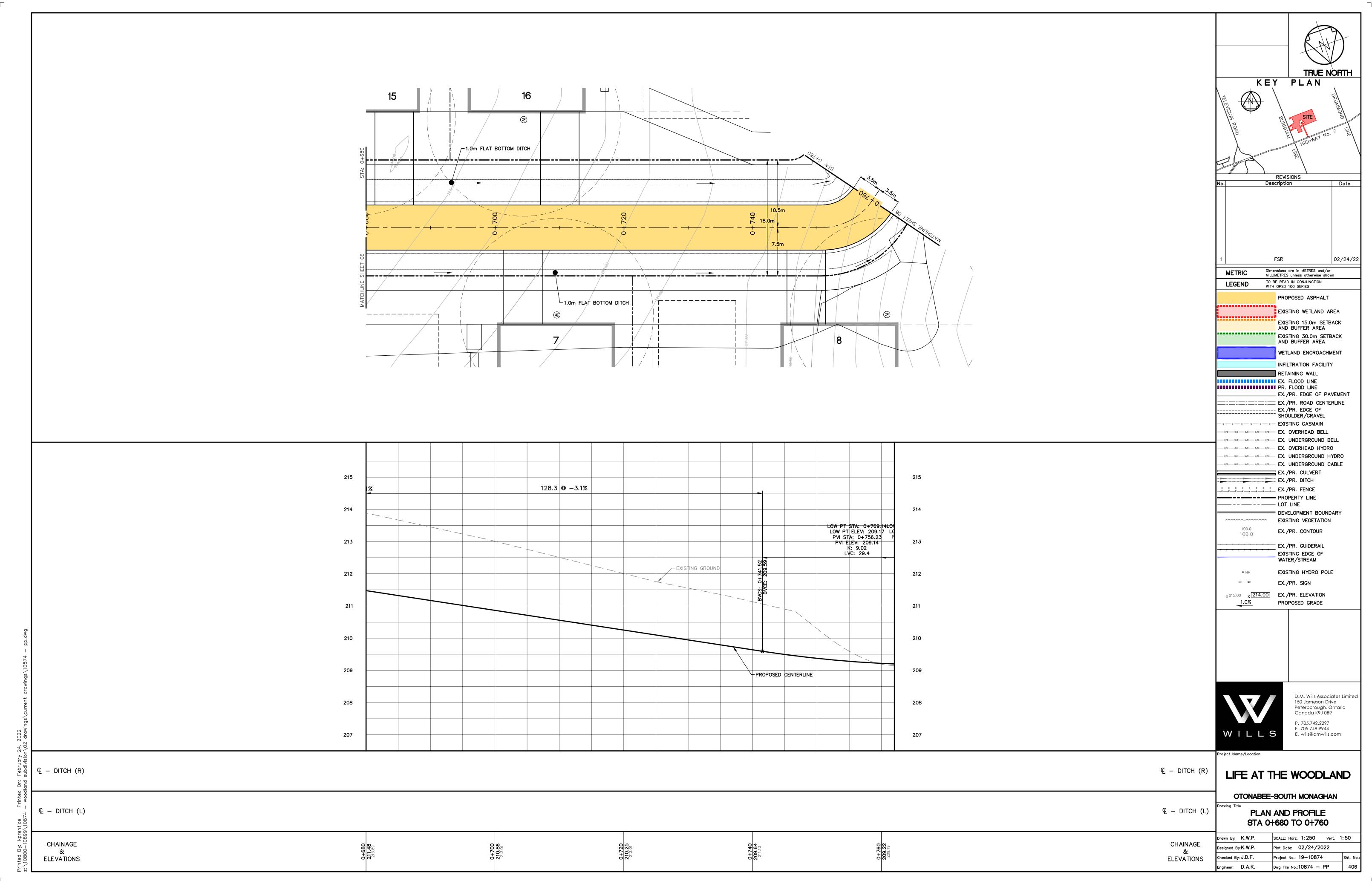


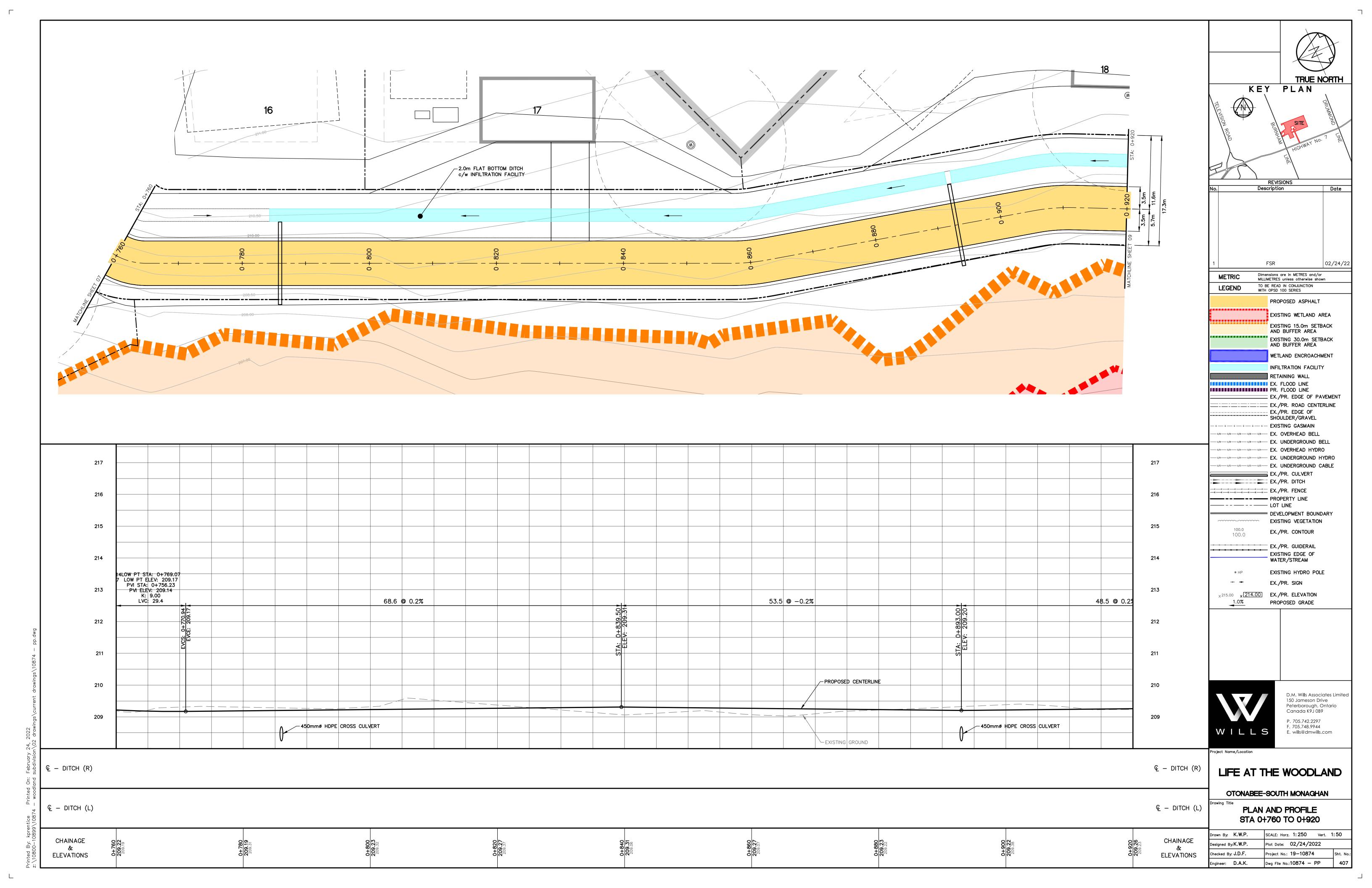


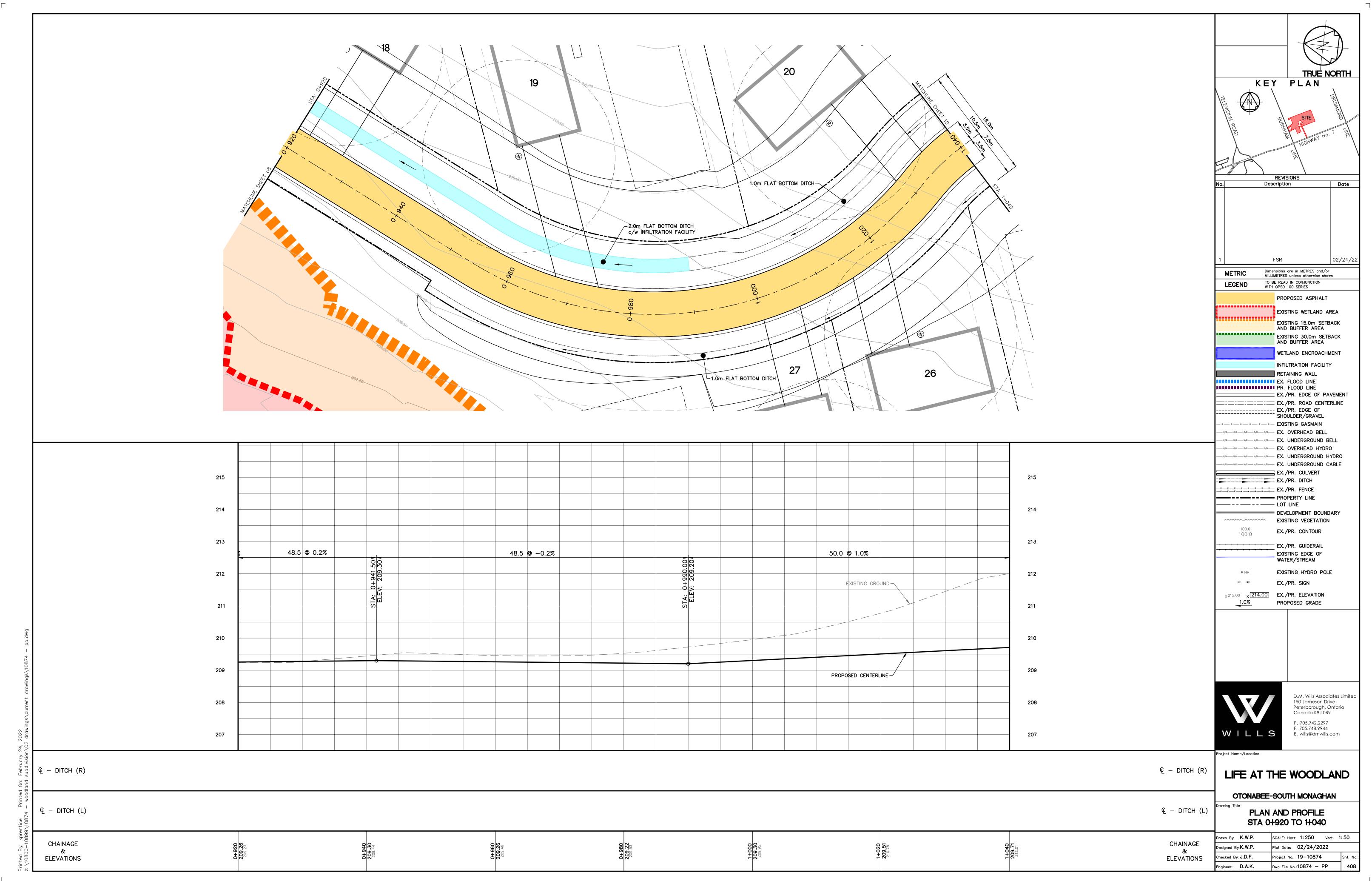


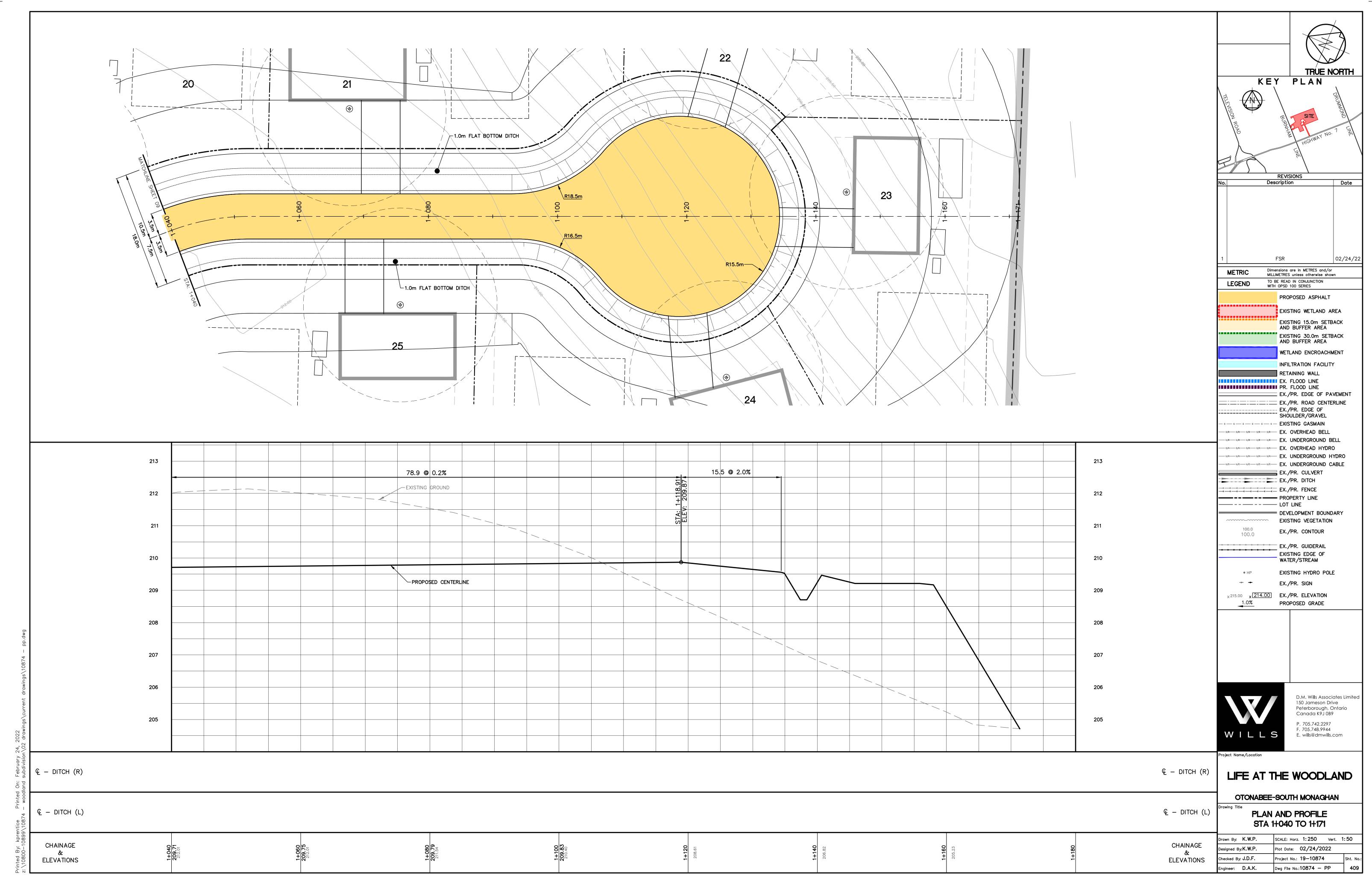












Appendix C

Utility Correspondence



London, Ontario N5W 5N5 HONI Planning (H1DPLAN), **Planning Request For:** Ticket #: 20212017709 Issued By: G-tel Lookup Dept. Date: 05/12/2021 Time: 19:20:09 Zoe Baird Requester: zbaird@dmwills.com Requester's Email: D.M. Wills Associates Limited **Requesting Company:** Fax #: **Ticket Request Type: Design And Planning BURNHAM LINE** Location: **Locate Details:** CORLOT=U Need to know what utilities are in the area for planning purposes only. Remarks: CORLOT=U Need to know what utilities are in the area for planning purposes only.DEPTH UNKNOWNPETERBOROUGH **Comments To Excavator:**

If you have any questions or concerns regarding your planning request, please call G-tel Engineering at 1-866-692-0208, dial 0 and request the lookup department.

CAUTION: The details provided are to be used solely for planning your design and not for excavation. You must call Ontario One Call at 1-800-400-2255 at least 1 week prior to excavation to obtain a physical locate.

See disclaimer document for further details.

G-tel Engineering Inc. 1150 Frances St 2nd Floor



Planning Request Disclaimer

This letter is to indicate that the drawing(s) and information provided is the property of Hydro One and its licensees (all rights reserved), and is to be used for planning and design purposes only solely to assist you in reviewing your project. The drawing(s) and information is not to be altered or used for any other purpose.

Please note that the attached drawings represent Hydro One distribution lines.

The attached drawing(s) and information **do not** include Hydro One transmission line information and they do **not** include privately owned/third party owned conductor.

The drawing(s) and information is <u>not</u> to be used for excavation purposes. The distribution lines and equipment locations indicated should not be relied upon for construction purposes as being exact. The exact location, configuration and/or materials used may not be accurately represented.

The drawing(s) and information are not to be relied upon by any third parties. Hydro One assumes no liability for the incorrect reliance or use of the drawing(s) or information.

You understand that you must contact Ontario One Call (1-800-400-2255) for more details for your excavation purposes, and must contact Ontario One Call to obtain locates a minimum of 5 business days prior to your excavation needs.

Hydro One Distribution Damage Prevention Team



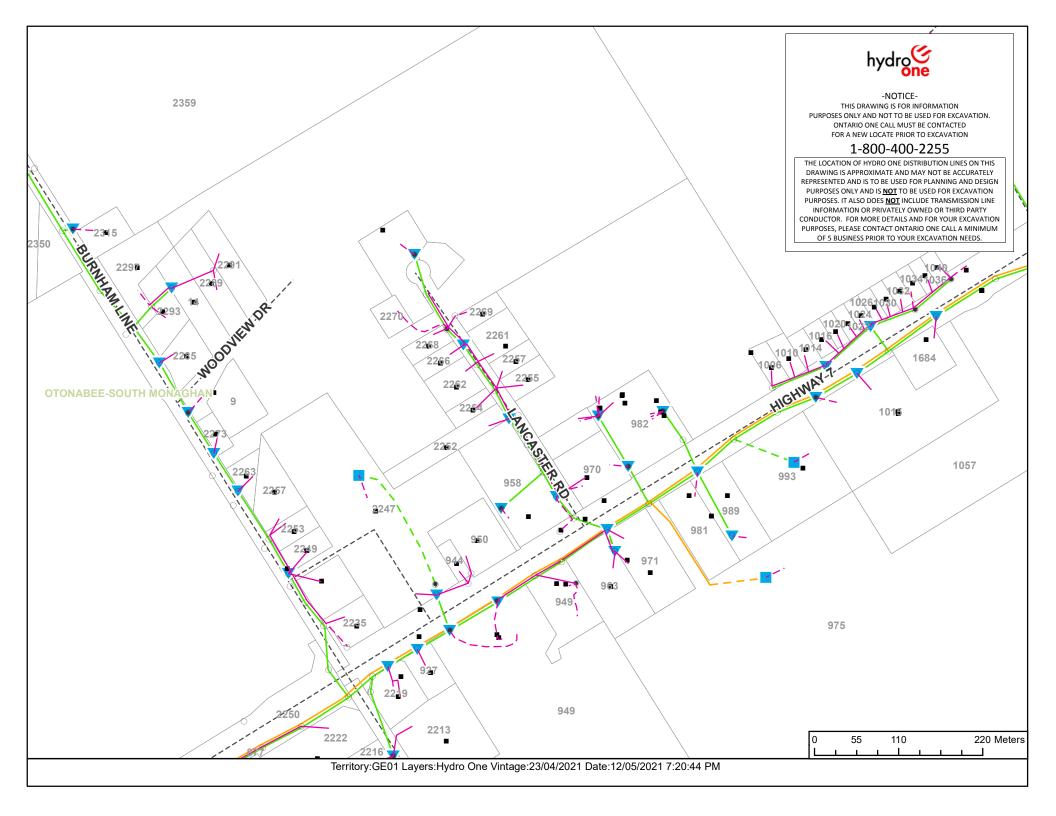


Hydro One Network

Layer name	Display	Description	
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DRI LIC CONDUCTOR		Primary Underground – 7.2/12.51 kV	
PRI_UG_CONDUCTOR		Primary Underground – 16.0/27.6 kV; 34.5 kV; 44 kV	
		Primary Underground – All other voltage	
		Primary Overhead – 2.4/4.16kV; 4.8/8.32 kV	
DDI OLI CONDUCTOR		Primary Overhead – 7.2/12.51 kV	
PRI_OH_CONDUCTOR		Primary Overhead – 16.0/27.6 kV; 44 kV	
		Primary Overhead – All other voltage	
SEC_UG_CONDUCTOR		Secondary Underground Conductor	
SEC_OH_CONDUCTOR		Secondary Overhead Conductor	
TRANSFORMER		Single Phase Underground	
TRANSFORMER	◀	Single Phase Overhead	
POLES O		Poles	
AWITCHINGFACILITY 🖂		Structures: Pad, Vault and Other	
BUSBAR		Shown same as Primary Underground	
RISERS	•	PVC or Fiberglass type risers	

Hydro One Landbase

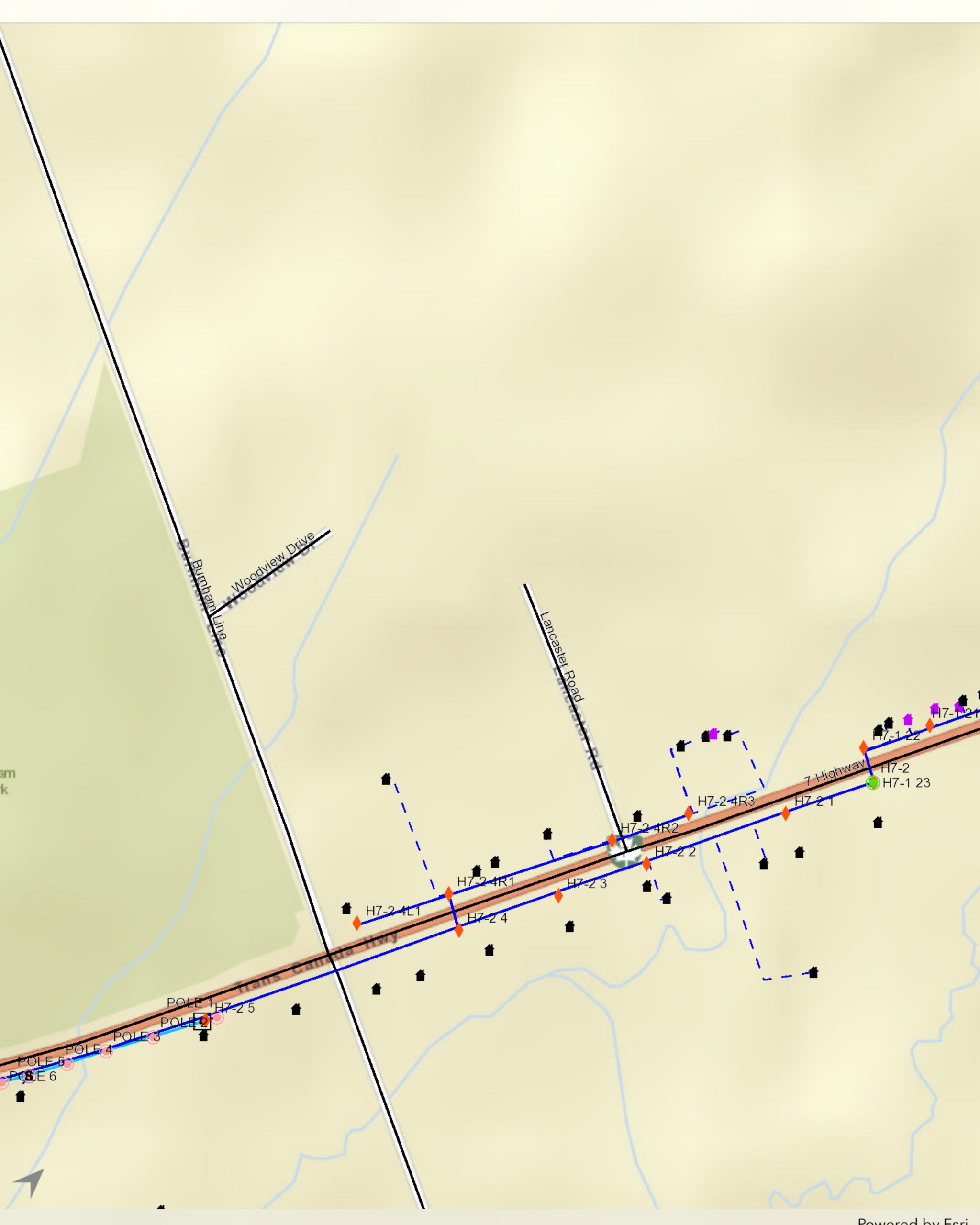
Layer name	Display	Description
STREETS		Centre line of road
PARCELS		Polygons representing parcel





■■ LTE @ 61% 1:23 PM Fri May 14

Done





PRIMARY LOCATE SHEET					
TICKET # 2021201	17709		NORMAL	PLANNING	
Company: D.M. WILLS ASSOCIATES LIMITED			PHONE: (705)-931-0811 ext.		
Requested By: ZOE BAIRD				Email: ZBAIRD@DM/VILLS.COM	
Received Date: 05/12/2021 12:15			Exca	Excavation Date: 05/19/2021 00:00	
Locate Address: BURNHAM LIN	E, HIGHWAY 7			City: OTONABEE-SOUTH MONAGHAN	
Cross Street: HIGHWAY 7					
Type Of Work: UTILITIES				Depth: 0	
Area Marked SYes	No			Site Meet : O Yes O No	
Method of Field Marking:	Paint	O Stakes			
Callers Remarks:					
CORLOT=U NEED TO KNOW WHAT U	TILITIES ARE IN	THE AR	EA FOR PLA	LANNING PURPOSES ONLY.	
WIDTH(m) = 0, DEPTH(m) = 0					
LOT/UNIT#: NB OF SEGMENTS: 3 LATITUDE: 44.30150600 LONGITUDE: -78.26237550 DEPTH UNKNOWN DEPTH: 0.00 FT PUBLIC					
PROPERTY: NO MARK & FAX: NO AREA IS NOT MARKED: YES MACHINE DIG: NO PRIVATE PROPERTY: NO SITE MEET REQ.: NO PREMARKED: NO HAND DIG: NO DIRECTIONAL DRILLING: NO BCPRE BELL CANADA - PLANNI H3AGE01 G-TEL FOR					
HYDRO ONE NXCOM01 NEXICOM TELECOMMUNIC					