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M E M O R A N D U M

DATE: REVISED APRIL 8, 2022, JUNE 27, 2019 **PROJECT: 100149**

TO: MATT CRAIG (MVCA), KEVIN HALL (CITY OF OTTAWA)

FROM: LISA BOWLEY AND MICHAEL PETEPIECE

RE: 2727 CARP ROAD (HUNTLEY CHASE SUBDIVISION)
OUTLINE FOR DETAILED STORMWATER MANAGEMENT
REVISED CONFIGURATION OF STREET 3 (AT CARP ROAD) ONLY

CC: CAVANAGH DEVELOPMENTS

In December 2021, the City of Ottawa issued Draft Plan of Subdivision Approval for the Huntley Chase subdivision. From a conceptual stormwater management perspective, this approval was based on Novatech's June 27, 2019 memorandum, 'Outline for Detailed Stormwater Management'.

The Developer is in the process of acquiring additional lands adjacent to the Carp Road, which allows for revised configuration of Street 3 where it connects to Carp Road. The purpose is to shift Street 3 outside the Mississippi Valley Conservation Authority (MVCA) regulatory limit. This memorandum has been prepared in support of a revised Draft Plan of Subdivision submission, to reflect this change. No other modifications have been made to the approved Draft Plan.

Notwithstanding that we have prepared and submitted a detailed Stormwater Management Report (March 2022) to address stormwater management related draft conditions, the City has asked that we include relevant engineering information with the revised Draft Plan submission. This memorandum has been prepared to provide this information, covering only the modifications to the Draft Plan, that is, the Street 3 connection to Carp Road.

Similar to our June 2019 memorandum, providing support to Draft Plan approval from a conceptual stormwater management perspective, summarized below are stormwater management (SWM) design criteria and an outline of how the proposed design and detailed Stormwater Management Report would address the criteria.

1.0 BACKGROUND INFORMATION AND REPORTS

1.1 Carp River Watershed/Subwatershed Study (Robinson, 2004)

Huntley Creek is a tributary of the Carp River. The Carp River Watershed/Subwatershed Study (CRSWS) was completed in 2004 and identifies targets and criteria for the protection of surface and ground water resources in the watershed:

- Huntley Creek is a natural stream with good water quality and coldwater fish habitat, fair water quality based on benthic invertebrate community.

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- Most of the site is considered a high or moderate groundwater recharge area. The CRSWS identifies the following groundwater recharge targets:
    - 73 mm/yr infiltration for low recharge areas
    - 104 mm/yr infiltration for moderate recharge areas
    - 262 mm/yr infiltration for high recharge areas
- The CRSWS identifies the following aquatic resource targets:
    - Maintain and restore Tolerant Coldwater/Diverse Warmwater Fish Communities
    - Maximum stream temperature = 25°C (coldwater); 28°C (warmwater)
    - Minimum Dissolved Oxygen = 6 mg/L

1.2 Natural Hazard Mapping / Development Setbacks (MVCA)

MVCA has developed regulation mapping for Huntley Creek, which delineates the 100-year floodplain, meander belt, and erosion hazard limits for the site. The Street 3 connection to Carp Road is now located outside all development constraints, including the flood plain. A balanced cut/fill analysis will no longer be required.

2.0 SWM CRITERIA AND GUIDELINES FOR DEVELOPMENT

2.1 Development Setbacks

Ensure no site disturbances within the greater of:

- 30m from the normal high water level;
- Meander belt;
- 100-year floodplain.

2.2 Quantity Control

Provide on-site quantity control to limit post-development peak flows to pre-development levels for all storms up to and including the 100-year design event.

2.3 Erosion & Flood Protection

Ensure the developed area of the proposed lots are outside the natural hazard limits identified in the MVCA regulatory mapping.

2.4 Quality Control

Provide an *Enhanced* level of water quality treatment corresponding to 80% long-term removal of total suspended solids.

2.5 Water Balance and Temperature

Incorporate measures to maximize infiltration and minimize water temperature increases to address the targets of the CRSWS.

2.6 Erosion and Sediment Control

Minimize erosion and the volume of sediment during and after construction.

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3.0 PROPOSED DRAINAGE AND STORMWATER MANAGEMENT DESIGN

The stormwater management design will reflect the revised configuration of Street 3 where it connects to Carp Road and address the SWM criteria and guidelines described in Section 2.0.

Lot Development and Constraints Plan

- The proposed design will ensure no site disturbances within the development setbacks shown on the Revised Street 3 at Carp Road - Lot Development and Constraints Plan (refer to Drawing 100149-LDCC).

Ditches and Culverts

- Conveyance of storm runoff will be provided using roadside ditches and culverts. The drainage system will be sized to ensure that storm runoff is confined within the rights-of-way and to meet safe access criteria as per MVCA regulation policies.
    - Driveway culverts will be sized to convey the 5-year event peak flows and will have a minimum size of 500mm, unless otherwise required for stormwater quantity control.
    - Road crossing culverts will be sized to convey the 10-year event peak flows and will have a minimum size of 600mm.
    - Roadside ditches will have a minimum slope of 0.5%.
- The revised Street 3 at Carp Road - Grading Plan (refer to Drawing 100149-GRC) has been prepared to show the proposed road grading and drainage patterns.
- A section through Street 3 is shown on the Street 3 Cross-section at Carp Road plan (110149-XSEC)

Stormwater Quality Control

- The proposed development will incorporate a treatment train of Best Management Practices (BMPs) to provide an *Enhanced* level of water quality treatment, including:
    - Flat-bottomed grassed swales
    - Enhanced grassed swales
    - Vegetated filter strips
    - Reduced lot grading
    - Directing roof and driveway runoff to grassed areas
- Storm runoff from the roadways will be treated before discharging to the headwater feature.

Stormwater Quantity Control

- Flow attenuation will be provided using storage in the roadside ditches.
- A hydrologic analysis will be completed as part of the detailed design to establish allowable release rates and demonstrate that the on-site ditches will provide sufficient storage to meet the quantity control targets.

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Water Balance and Temperature

- The stormwater management design will incorporate Low Impact Development (LID) design features in select areas to promote infiltration and groundwater recharge. Proposed LID features would include designing some section of the roadside ditches as bioretention swales with subdrains.
- The design and location of LID features will be based on soils information from the geotechnical investigation.
- The proposed BMPs and LID features will reduce temperature impacts on the receiving watercourses and will help maintain the coldwater fish habitat in Huntley Creek.
- A water balance will be completed to evaluate the impact of development on the hydrologic cycle and demonstrate that the proposed stormwater management design will meet the annual infiltration targets identified in the CRSWS.
- *Note: The results of water balance calculations completed for the March 2022 Stormwater Management Report indicate that post development infiltration exceeds the CRSWS study targets, therefore subdrain type infiltration measures are no longer being proposed. Reference to these have been removed from this memorandum.*

4.0 CONCLUSIONS

This memorandum provides an overview of the drainage and stormwater management criteria that will govern the design of the Huntley Chase subdivision.

The detailed stormwater management report will address the stormwater management related draft conditions and demonstrate how the proposed design addresses the stormwater management criteria and incorporates the proposed design features outlined in this memorandum.

Attachments

- Revised Street 3 at Carp Road Lot Development and Constraints Plan (100149-LDCC)
- Revised Street 3 at Carp Road - Grading Plan (100149-GRC)
- Street 3 Cross-section at Carp Road plan (110149-XSEC)

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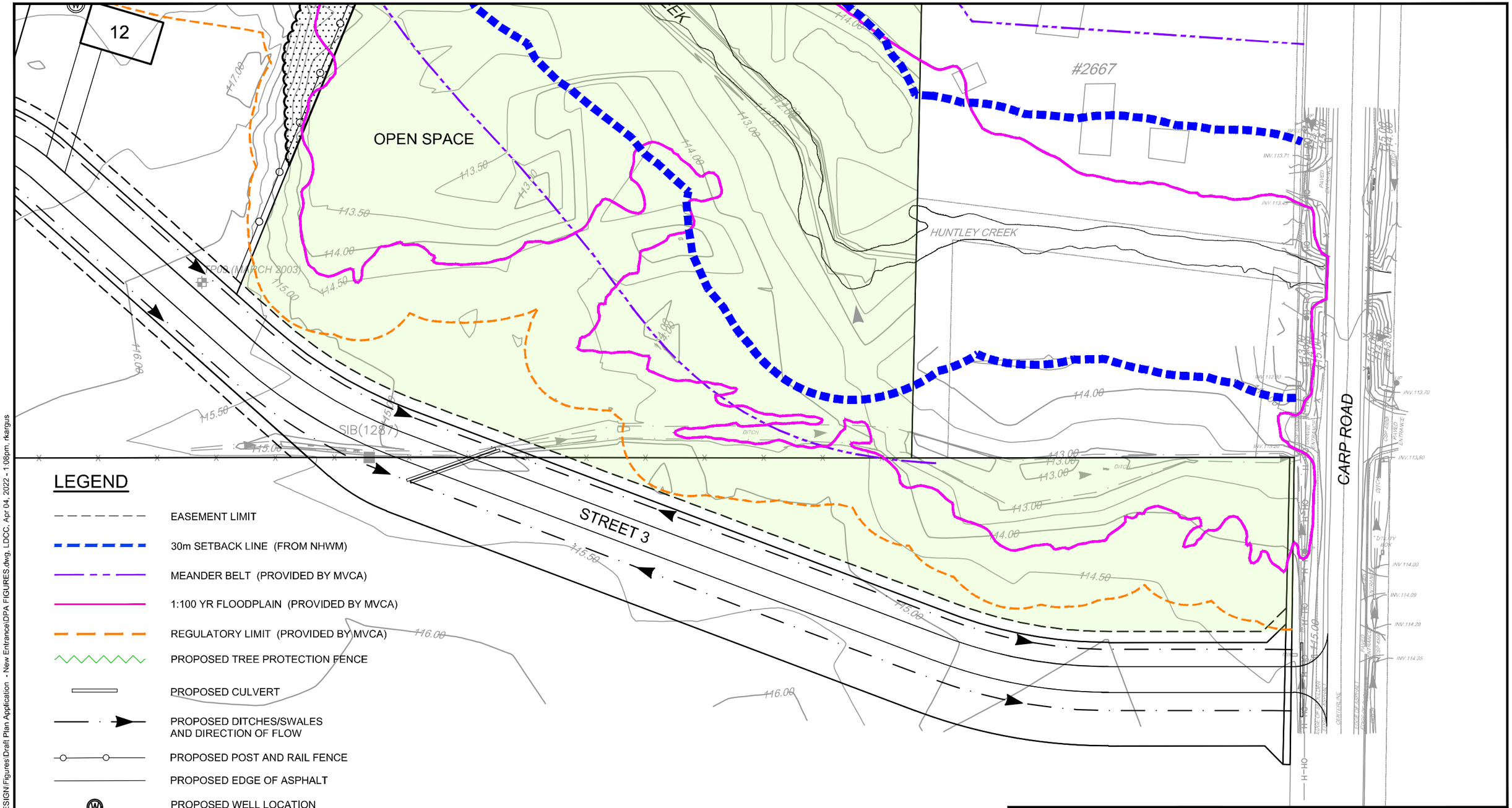

LEGEND

- EASEMENT LIMIT
- 30m SETBACK LINE (FROM NHWM)
- MEANDER BELT (PROVIDED BY MVCA)
- 1:100 YR FLOODPLAIN (PROVIDED BY MVCA)
- REGULATORY LIMIT (PROVIDED BY MVCA)
- PROPOSED TREE PROTECTION FENCE
- PROPOSED CULVERT
- PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW
- PROPOSED POST AND RAIL FENCE
- PROPOSED EDGE OF ASPHALT
- PROPOSED WELL LOCATION
- PROPOSED CONSERVED VEGETATION (ENVIRONMENTAL IMPACT STATEMENT AND TREE CONSERVATION REPORT BY MUNCASTER ENVIRONMENTAL PLANNING INC. DATED NOVEMBER, 2021)
- OPEN SPACE

SOURCE REFERENCE:
LEGAL INFORMATION:
DRAFT PLAN OF SUBDIVISION OF PART OF LOTS 7 AND 8 CONCESSION 3 GEOGRAPHIC TOWNSHIP OF HUNTLEY, CITY OF OTTAWA, PREPARED BY ANNIS, O'SULLIVAN, VOLLEBAKK LTD. JANRUARY 2, 2020
TOPOGRAPHIC INFORMATION:
CALLON DIETZ / JUNE 22, 2021 / MTM ZONE 9 (NAD83 ORIGINAL)

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HUNTLEY CHASE SUBDIVISION REVISED STREET 3 AT CARP ROAD LOT DEVELOPMENT AND CONSTRAINTS PLAN

SCALE 1 : 1000 (0, 10, 20, 30, 40)
DATE APR 2022
FIGURE 100149 - LDCC

SHT11X17.DWG - 279mmX432mm

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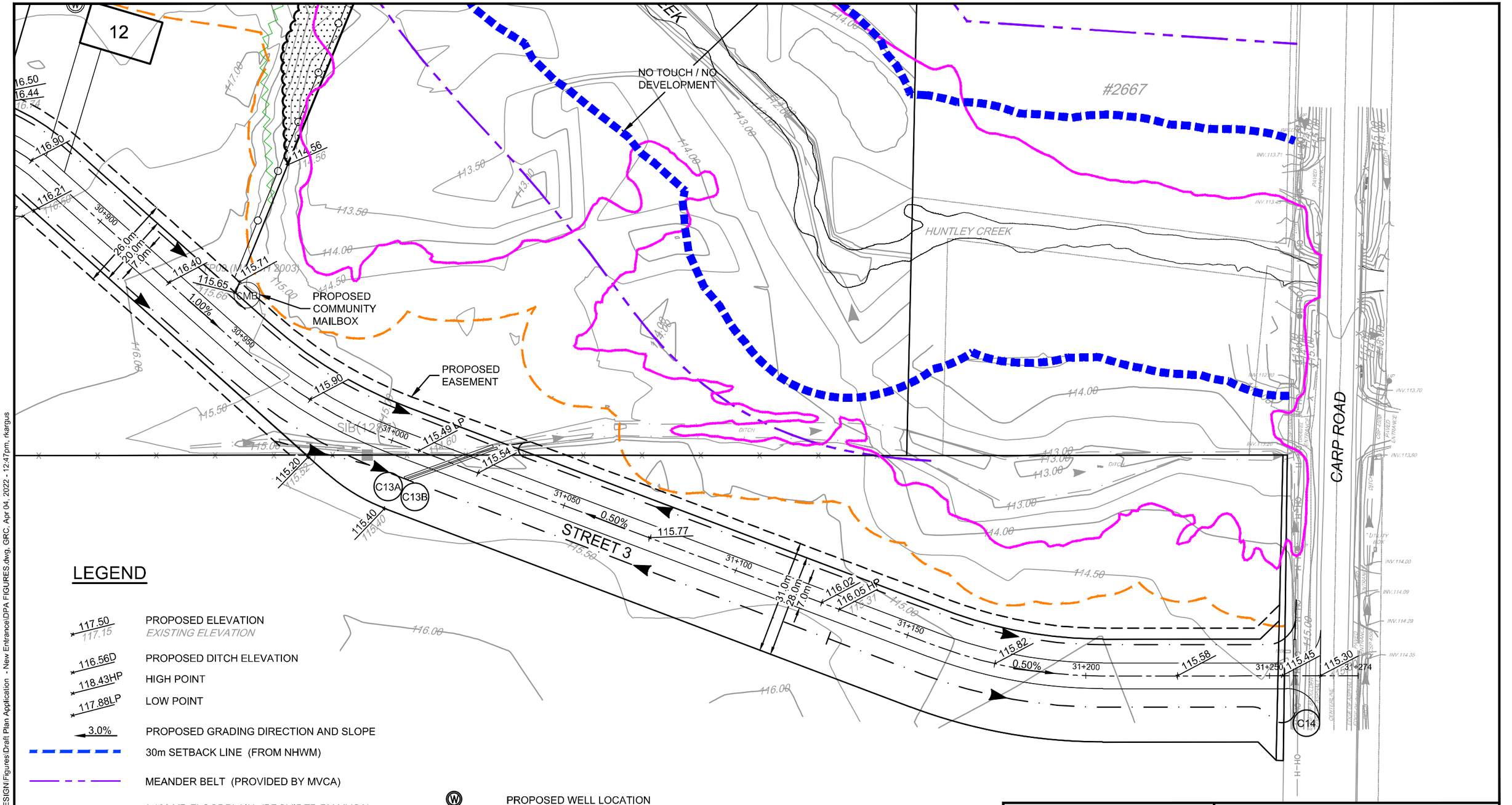

LEGEND

- 117.50 / 117.15 — PROPOSED ELEVATION / *EXISTING ELEVATION*
- 116.56D — PROPOSED DITCH ELEVATION
- 118.43HP — HIGH POINT
- 117.88LP — LOW POINT
- 3.0% — PROPOSED GRADING DIRECTION AND SLOPE
- 30m SETBACK LINE (FROM NHWM)
- MEANDER BELT (PROVIDED BY MVCA)
- 1:100 YR FLOODPLAIN (PROVIDED BY MVCA)
- REGULATORY LIMIT (PROVIDED BY MVCA)
- PROPOSED TREE PROTECTION FENCE
- PROPOSED CONSERVED VEGETATION (ENVIRONMENTAL IMPACT STATEMENT AND TREE CONSERVATION REPORT BY MUNCASTER ENVIRONMENTAL PLANNING INC. DATED NOVEMBER, 2021)
- PROPOSED WELL LOCATION
- PROPOSED POST AND RAIL FENCE
- PROPOSED EDGE OF ASPHALT
- EASEMENT LIMIT
- C1 — PROPOSED CULVERT
- PROPOSED DITCHES/SWALES AND DIRECTION OF FLOW

SOURCE REFERENCE:
LEGAL INFORMATION:
DRAFT PLAN OF SUBDIVISION OF PART OF LOTS 7 AND 8 CONCESSION 3 GEOGRAPHIC TOWNSHIP OF HUNTLEY, CITY OF OTTAWA, PREPARED BY ANNIS, O'SULLIVAN, VOLLEBAKK LTD. JANRUARY 2, 2020
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HUNTLEY CHASE SUBDIVISION
REVISED STREET 3 AT CARP ROAD
GRADING PLAN

SCALE 1 : 1000 (0 10 20 30 40)
DATE APR 2022
FIGURE 100149 - GRC

SHT11X17.DWG - 279mmX432mm

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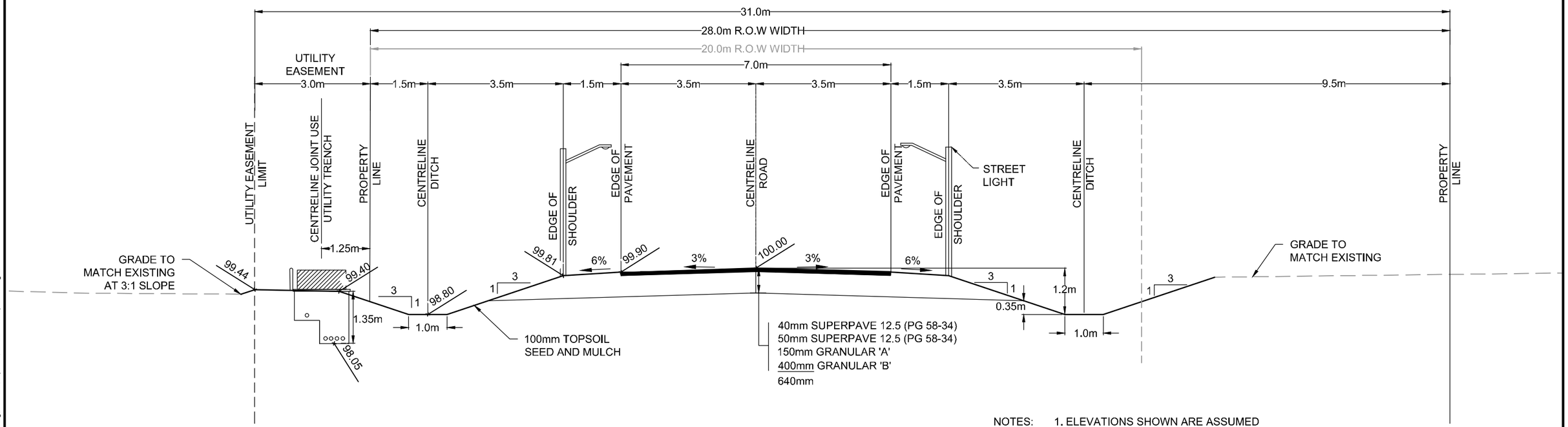

NOTES:
1. ELEVATIONS SHOWN ARE ASSUMED
2. CROSS-SECTION TO BE VIEWED LOOKING UP CHAINAGE

TYPICAL CROSS SECTION - 28.0m R.O.W.
(STA. 31+025 TO STA. 31+250)

SCALE = 1:100

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HUNTLEY CHASE SUBDIVISION
STREET 3 CROSS SECTION AT CARP ROAD

SCALE 1 : 100 (0 1 2 3 4)
DATE APR 2022
FIGURE 100149 - XSEC

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