

March 30th, 2021
Our File: 17-903

Town of Oakville
1225 Trafalgar Road
Oakville, ON
L6J 5A6

Attention: Rita Juliao, P.Eng
Water Resource Engineer, Development Engineering

Dear Ms. Juliao,

Re: Redoak/Capoak (24T-18005/1310)
Interim Drainage for External Areas

The purpose of this letter is to provide a detailed SWM solution for the external drainage from holdout properties 3053 Eighth Line and 3043 Eighth Line under interim conditions. The interim condition considered in this memo is the condition in which 1005 Dundas and the Redoak/ Capoak subdivision are developed, prior to the development of 3043 Eighth Line and 3053 Eighth Line.

Following the Town's approval of the contents of this letter, Sections 7.8 and 7.11 of the *Redoak/Capoak EIRFSS Addendum (August 2020)* will be updated to include the summarized SWM and grading recommendations.

A conceptual drainage plan (**Figure 7.2B**) and cross sections (**Drawing 8D**) have been provided in support of this memo.

Existing Conditions

Under existing conditions, the western portion of 3053 Eighth Line drains to a roadside ditch on the east side of Eighth Line. The remainder of the site drains to the southeast, through 3043 Eighth Line, to a ditch located on the Capoak lands. A portion of 3043 Eighth Line also drains to the roadside ditch on Eighth Line while the majority of the site drains to existing swale south of the property, located on 1005 Dundas. The swale on 1005 Dundas connects to the swale on the Capoak lands where the flows are directed south, eventually discharging to the existing culvert on the north side of Dundas Street. This culvert is part of the East Morrison Creek catchment.

Redoak/ Capoak EIR/FSS Addendum – External Drainage

The *Redoak/Capoak EIR/FSS Addendum* included discussion of the proposed stormwater management for each of the external properties. These external properties were identified in Section 7.8.3 of the EIR/FSS text and shown Figure 7.1 as follows:

- 1005 Dundas St. is identified as External Area 9
- 3043 Eighth Line is identified as External Area 10
- 3053 Eighth Line was considered to be part of the Redoak/Capoak FSS Study Area

As part of the *Redoak/ Capoak EIR/FSS Addendum* and the *Final Joshua's Creek Tributaries EIR/FSS*, SWM Pond 52 was conservatively sized to accommodate runoff from both 3043 Eighth Line and 3053 Eighth Line under post-development conditions. The drainage exchange and resulting peak flows/ erosion impacts to Joshua's Creek were evaluated as part of the Redoak/ Capoak Addendum. The Addendum noted that 1005 Dundas would continue to discharge to East Morrison Creek.

Proposed Interim Conditions Drainage

Through the detailed design of 1005 Dundas St., and the *Redoak/ Capoak EIR/FSS* it was determined that both properties would require large amounts of fill, thus blocking the existing drainage patterns for 3043 Eighth Line and 3053 Eighth Line.

Several interim SWM solutions were investigated to direct runoff from the holdout properties to East Morrison Creek, including:

1. Installing a headwall at the Capoak property limit to capture and convey flow into the Redoak/ Capoak subdivision (Pond 52)
2. Installing a swale between the Capoak lands and 1005 Dundas to convey flows to the culvert
3. Installing a catchbasin or swale at the northern property limit of 1005 Dundas to convey flows to the Eighth Line storm system (Shieldbay Pond 32)
4. Installing a catchbasin at the northern limit of 1005 Dundas to capture and convey flows within the DUC, discharging to the existing culvert on Dundas Street.

As part of the investigation it was determined that Option 1 was not feasible as the 100yr Hydraulic Grade Line (HGL) within the Redoak/ Capoak subdivision was expected to be too high that the headwall would act as an outlet for flows, and also that the drainage would be taken to Joshua's Creek under interim conditions as opposed to East Morrison Creek. Option 2 was not preferred as it would require a large temporary retaining wall on either side of the swale and reduce the usable DUC space for both properties. Option 3 could not be determined at this time however it was suggested by Shieldbay that SWM Pond 32 was tight for capacity and that there may not be adequate space within the pond.

Option 4 was chosen as the preferred solution as it resulted in the minimal disturbance to 1005 Dundas and Capoak, optimized the grading between the two properties to minimize the height of retaining walls on site, and allowed runoff to continue to the Dundas Street

culvert under interim conditions. The proposed catchbasin will be installed at the northeast corner of 1005 Dundas, at an elevation of 176.85, low enough to allow for positive drainage from the holdout properties to the catchbasin. Detailed design of the proposed catchbasin and storm sewer system for this alternative will be provided as part of the 1005 Dundas St. site plan submission.

Figure 7.2B shows the existing drainage areas from 3043 Eighth Line and 3053 Eighth Line. This figure highlights the areas from the holdout properties that will be directed to the Redoak/ Capoak subdivision and the proposed catchbasin on 1005 Dundas. Approximately 0.1 Ha from 3053 Eighth Line will drain directly to the Redoak/ Capoak subdivision, either through sheet drainage overtop of the boulevard or through a CB that can be installed in the ROW. 0.3 Ha from 3053 Eighth Line and 0.4 Ha from 3043 Eighth Line will be directed to the proposed catchbasin. To be conservative it was assumed that the entirety of 3043 Eighth Line would drain into this existing swale, although it is understood that a small portion of the front yard actually drains to Eighth Line.

Proposed Interim Conditions Grading

A small cut-off swale is proposed at the property line to direct drainage to the south to ensure that runoff from the holdout properties will be able to drain to the catchbasin on 1005 Dundas. The grading associated with the cut-off swale can be contained within the ROW on the Redoak/ Capoak lands and has been shown on **Drawing 8D**. Cross sections were taken at 4 locations along the holdout properties; Section A is taken along the 3053 Eighth Line property boundary before the retaining wall begins, Section B is taken at the highest portion of the retaining wall along the 3053 Eighth Line boundary, Section C is taken at the deepest section of swale along the 3043 Eighth Line boundary, and Section D is taken at the downstream end of the swale along the 3043 Eighth Line boundary before it discharges to the proposed catchbasin. Multiple grading options have been provided for each cross-section, as discussed below:

Section A

This section is taken through the 3053 Eighth Line and Street 'C' within the Redoak/ Capoak subdivision. The existing grades along the holdout property are generally within 0.2m of the proposed road centerline grade and as such the grading transition can be accommodated through the use of 3:1 sloping.

Option 1 uses 3:1 transition sloping up to the boulevard within the ROW. The boulevard is sloped at 2% towards the road.

Option 2 uses 3:1 transition sloping up to the boulevard within the ROW. The boulevard is sloped at 2% away from the road to provide more "usable" space within the boulevard.

Section B

This section is taken through the southernmost point of 3053 Eighth Line and Street 'C'. The existing grades along the holdout property are generally 1m lower than the proposed road centerline grade.

Option 1 uses a retaining wall along the property boundary to make up the grade transition. This option provides the Town with the most usable space within the boulevard however it is likely that the retaining wall would need to be removed in the future to accommodate the future roads/ lots if 3053 Eighth Line is developed.

Option 2 uses 3:1 transition sloping up to the boulevard within the ROW. This allows the boulevard to be easily filled in in the future if 3053 Eighth Line is developed. This option does not provide enough usable space within the boulevard for a sidewalk on the west side of Street 'C'.

Option 3 uses 2:1 transition sloping up to the boulevard within the ROW. Similar to Option 2 this allows the boulevard to be easily filled in in the future if 3053 Eighth Line is developed however this option also allows for a 1.5m sidewalk within the west boulevard of Street 'C'.

Section C

This section is taken through the deepest section of swale along 3043 Eighth Line. The existing grades along the holdout property are generally 1m lower than the proposed road centerline grade. The difference between Section B and Section C is that Section C includes a small cut-off swale within the ROW to allow for positive drainage to the proposed catchbasin.

Option 1 uses a retaining wall along the property boundary to make up the grade transition. This option provides the Town with the most usable space within the boulevard however it is likely that the retaining wall would need to be removed in the future to accommodate the future roads/ lots if 3053 Eighth Line is developed.

Option 2 uses 2:1 transition sloping up to the boulevard within the ROW. This allows the boulevard to be easily filled in in the future if 3053 Eighth Line is developed. This option does not provide enough usable space within the boulevard for a sidewalk on the west side of Street 'C'.

Option 3 uses a combination of 2:1 transition sloping and retaining wall. This provides enough space for a 1.5m sidewalk within the boulevard while minimizing the retaining wall height.

Section D

This section is taken at the downstream end of the swale along the 3043 Eighth Line boundary before it discharges to the proposed catchbasin. The road centerline grade is higher than Section C however the existing grade at the property boundary is also lower, requiring less space for the cut-off swale.

Option 1 uses a retaining wall along the property boundary to make up the grade transition. This option provides the Town with the most usable space within the boulevard however it is likely that the retaining wall would need to be removed in the future to accommodate the future roads/ lots if 3053 Eighth Line is developed.

Option 2 uses 2:1 transition sloping up to the boulevard within the ROW. This allows the boulevard to be easily filled in in the future if 3053 Eighth Line is developed. This

option does not provide enough usable space within the boulevard for a sidewalk on the west side of Street 'C'.

Option 3 uses a combination of 2:1 transition sloping and retaining wall. This provides enough space for a 1.5m sidewalk within the boulevard while minimizing the retaining wall height.

Text Inclusion for Section 7.8.3 & 7.11 of the Redoak/Capoak EIR/ FSS Addendum:

The text for External Areas 9 and 10 under Section 7.8.3 will be revised to the following:

- External Area 9 has been revised from the Final Joshua's Creek EIR/FSS. The remaining 1.2ha area (revised External Area 9), owned by others and illustrated on Figure 7.1, currently drains through a catchbasin and pipe system, south of Dundas Street that has only been sized to convey the predevelopment flows. The Site Plan for the Oakville Urban Core Developments proposes to direct drainage from the revised External Area 9 to the existing system south of Dundas Street to Subcatchment EM4.
- External Area 10 has been revised to include the 3053 Eighth Line Property. Under ultimate conditions, Pond 52 has been sized to accommodate both properties at a post-development runoff coefficient. There will be an interim condition where 1005 Dundas (External Area 9) and Redoak/Capoak develop ahead of External Area 10. Under this interim condition a catchbasin will be located on the northwest corner of 1005 Dundas. This catchbasin will collect flows from External Area 10 and convey them through the storm sewers within the site plan, before discharging to the existing Dundas St. culvert. A small cut-off swale may be required along the property boundary to direct drainage south towards the proposed catchbasin. The swale can be contained entirely within the Street C right-of-way. The detailed grading associated with these swales is discussed in Section 7.11.

Text discussing the grade transition for Street P (now Street 'C') under Section 7.11, will be revised to include the following text:

- **Street C:** A retaining wall is proposed along Street C adjacent to 3053 Eighth Line, 3043 Eighth Line, and 1005 Dundas. Street C has been graded to direct major overland flow to the pond and as a result the road is up to 2.85m higher than existing grade on the adjacent properties. Road grades within the site were adjusted to provide localized sags to lower the average road slope to 0.3%. This minimized the height of the proposed retaining wall/ transition sloping required at the property boundary. The grading along the 1005 Dundas property boundary has been coordinated with the adjacent site plan to minimize the grade transition between the two properties. As discussed in Section 7.8.3, a small cut-off-swale may be required within the Street C ROW to direct drainage south to the proposed catchbasin. Four cross sections have been cut through the Street C ROW and adjacent holdout properties. ***Text from the "Proposed Interim Conditions Grading" section will be inserted here.***

March 30th, 2021

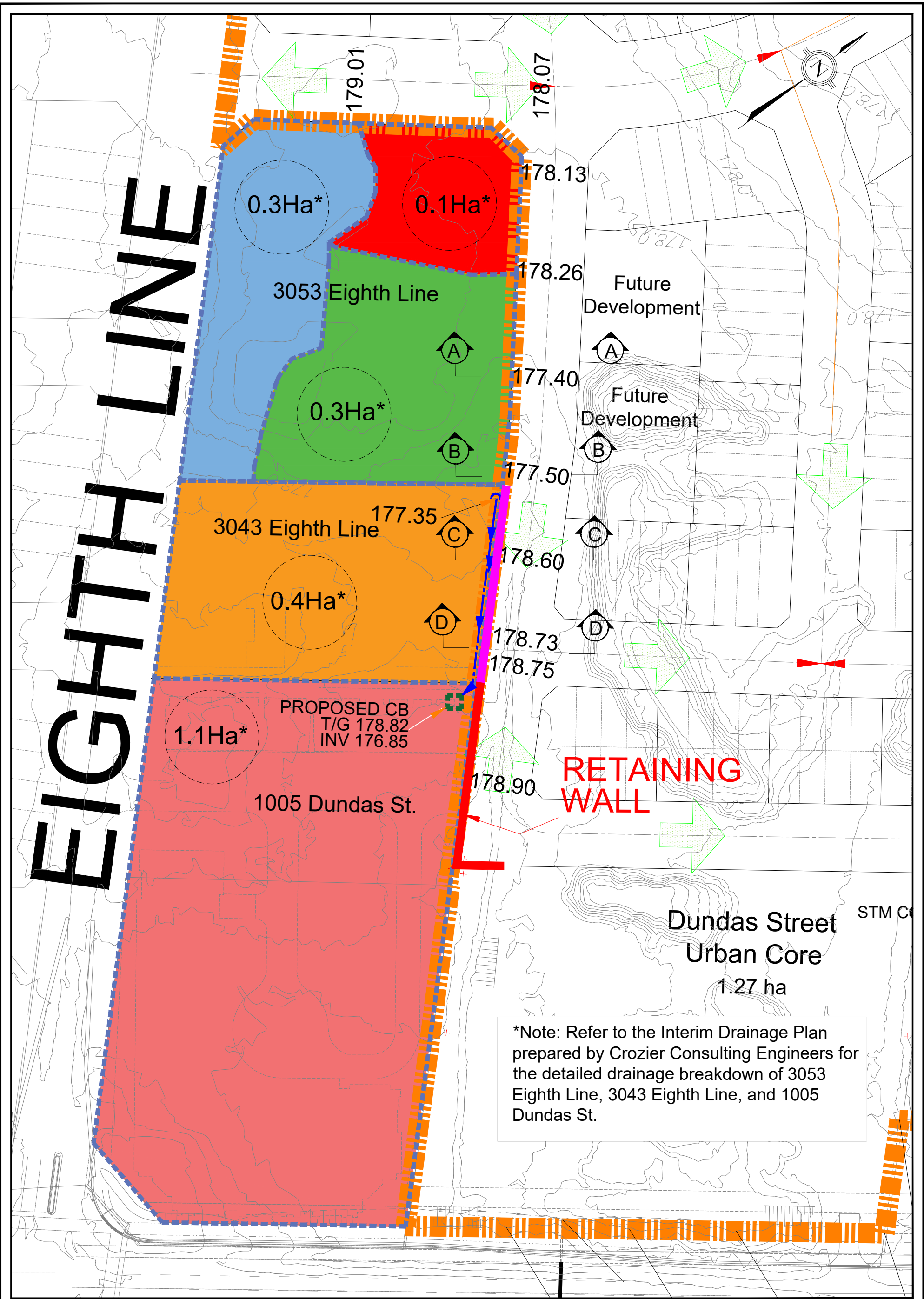
We trust the above is satisfactory, and if we can assist in your review of our letter please do not hesitate to contact the undersigned.

Yours truly,
David Schaeffer Engineering Ltd.

Brian Betts

DRAFT_March1521_Letter_Red oakCap oak_External Area
Drainage.docx

Brian Betts

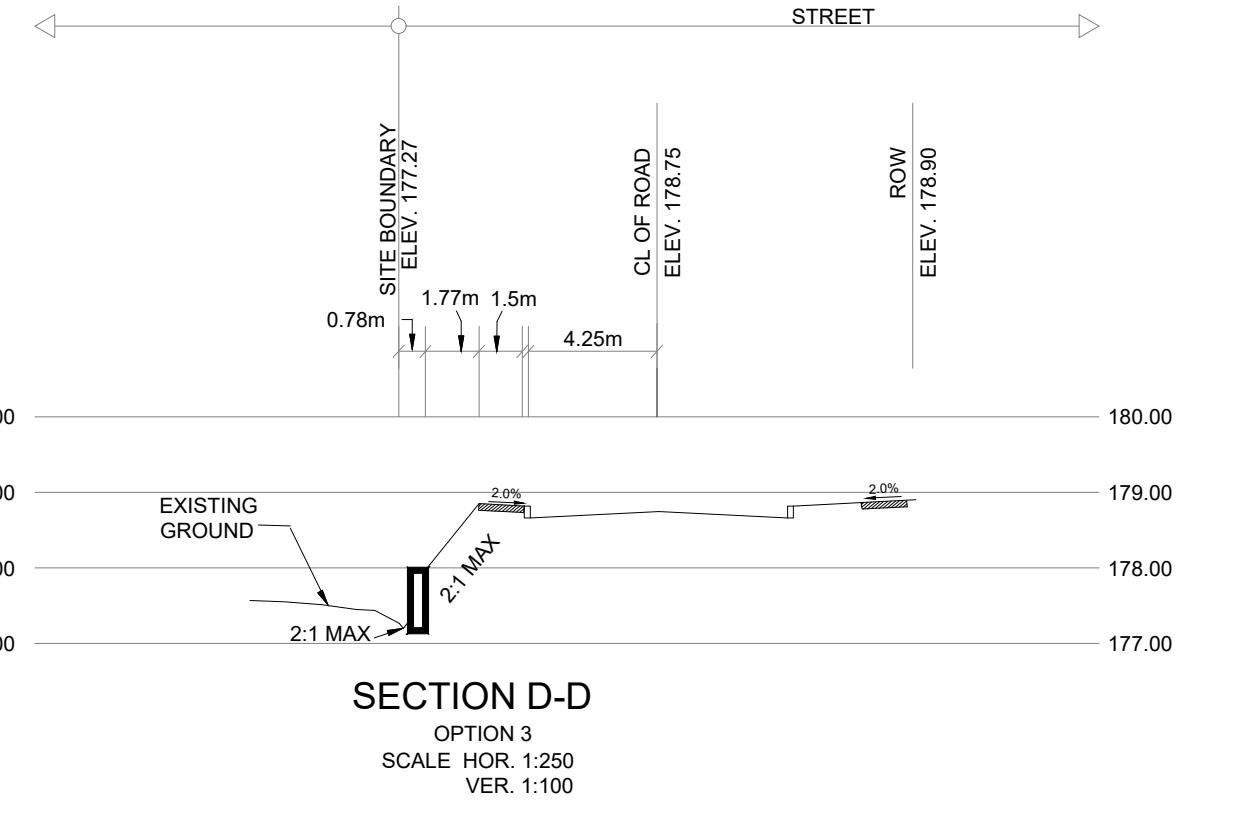
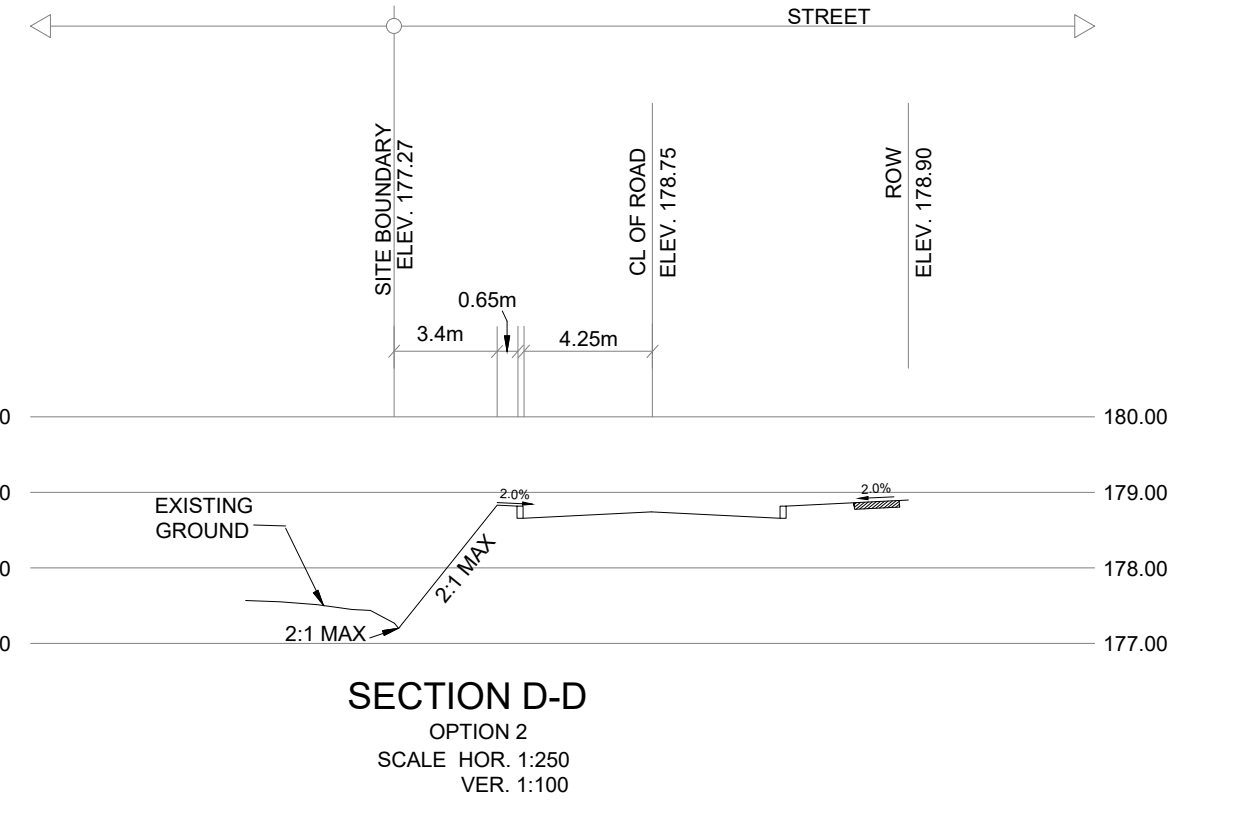
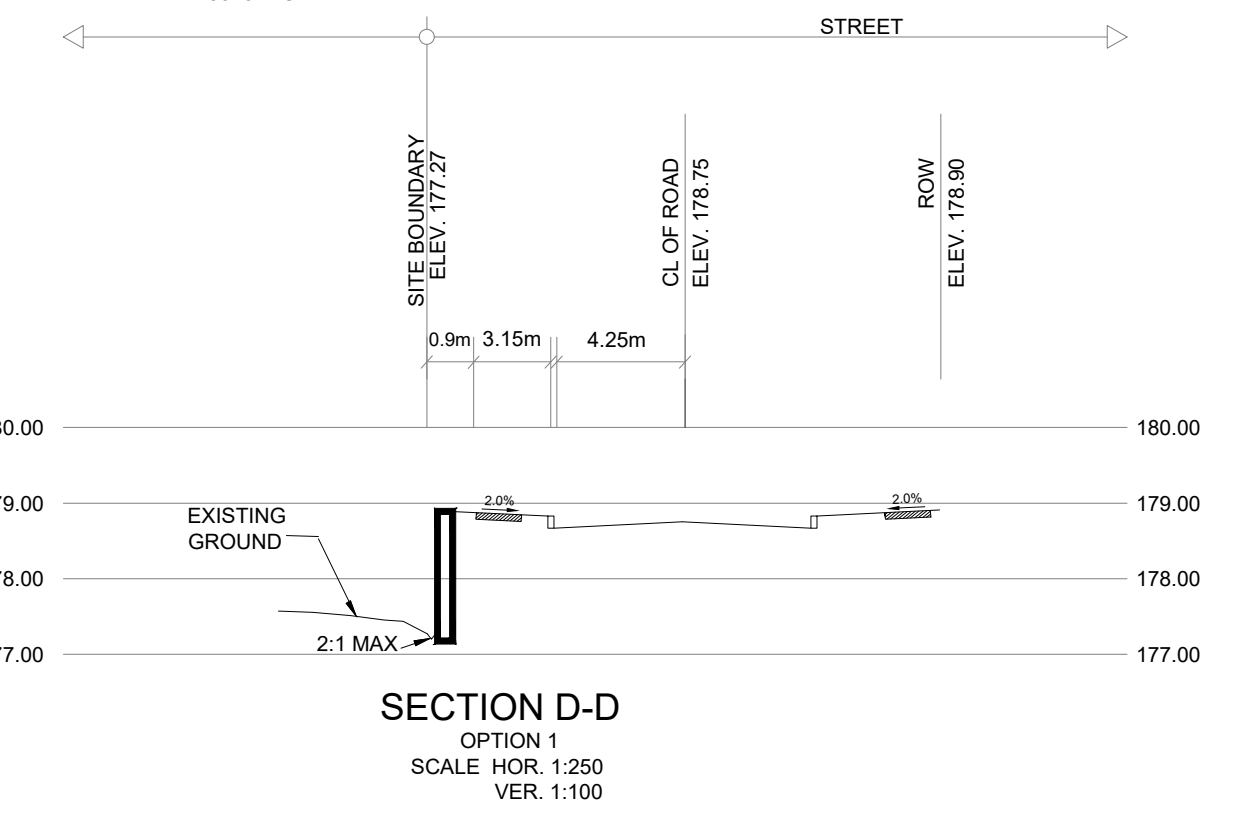
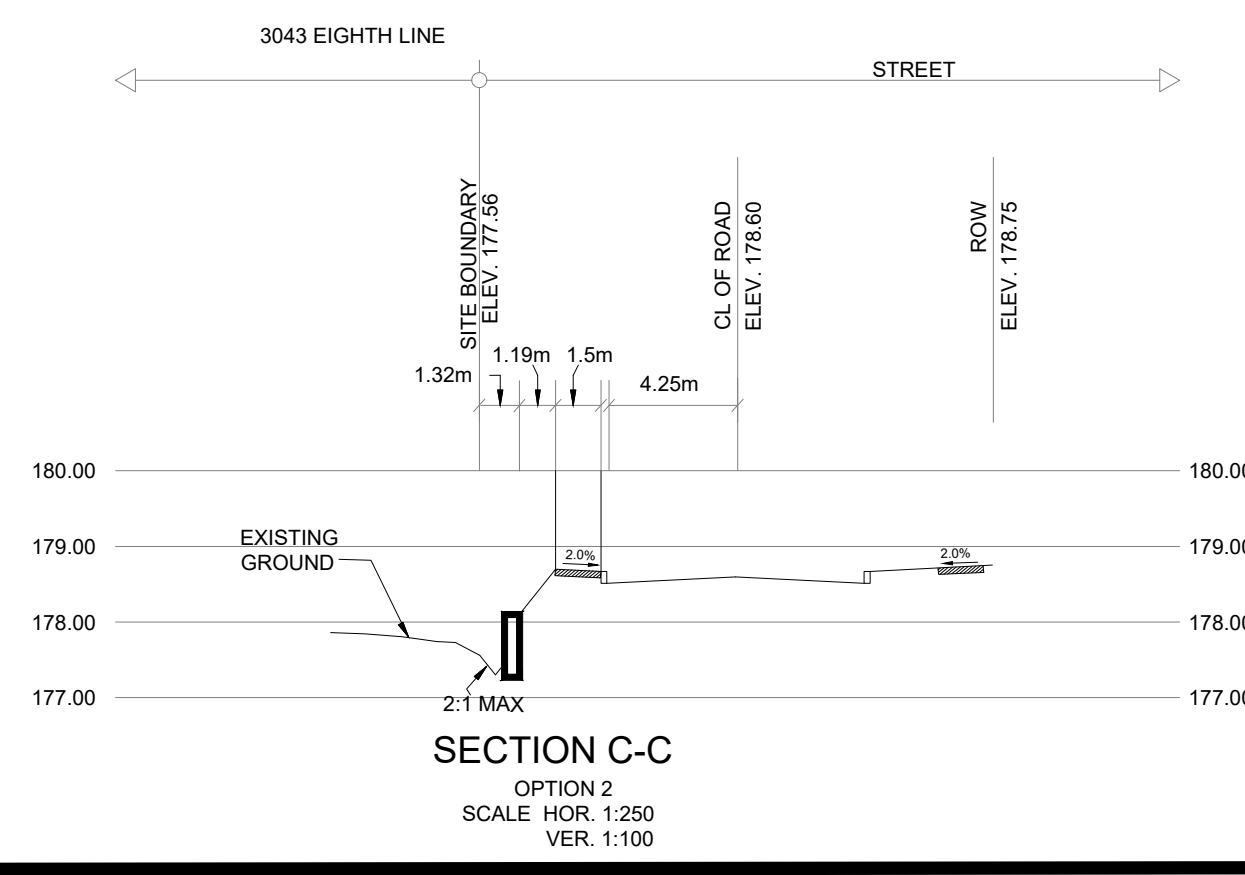
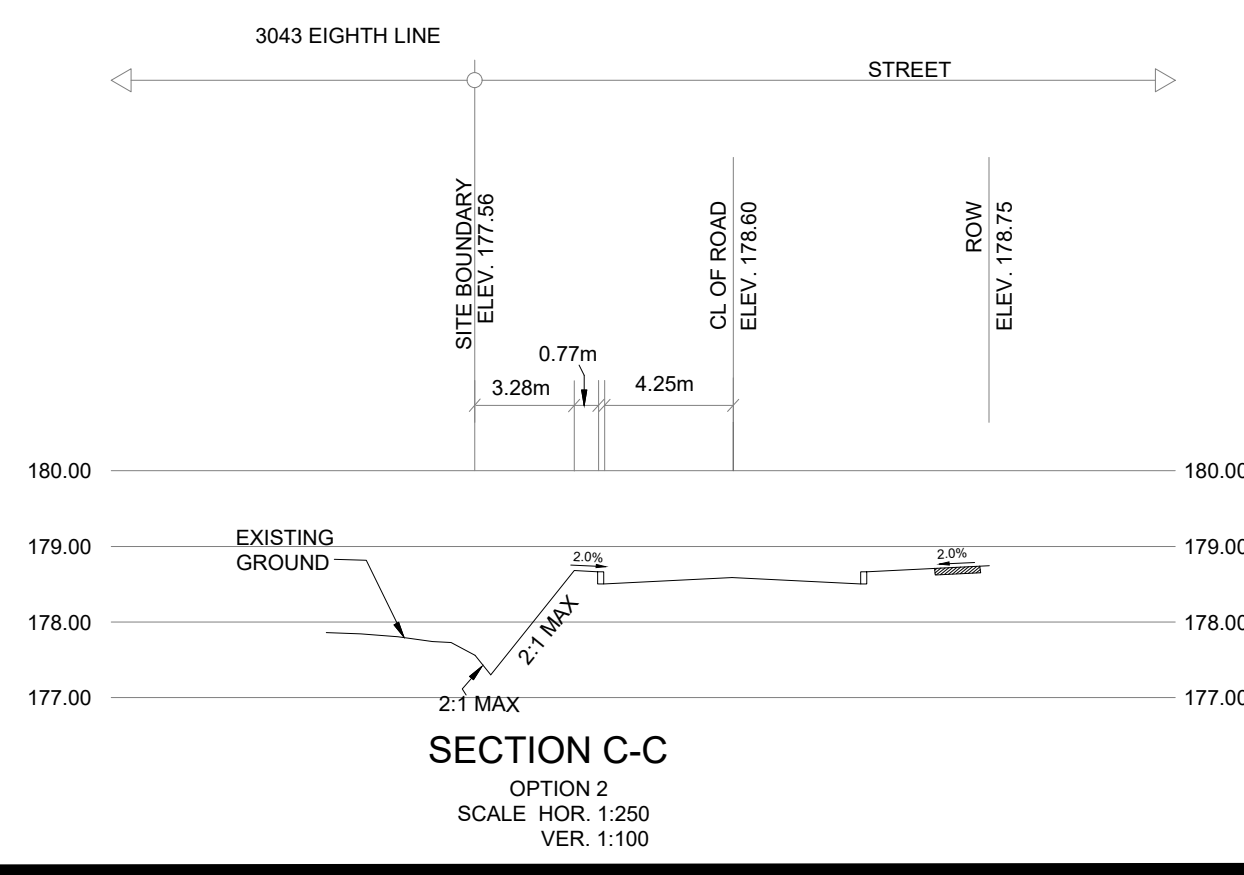
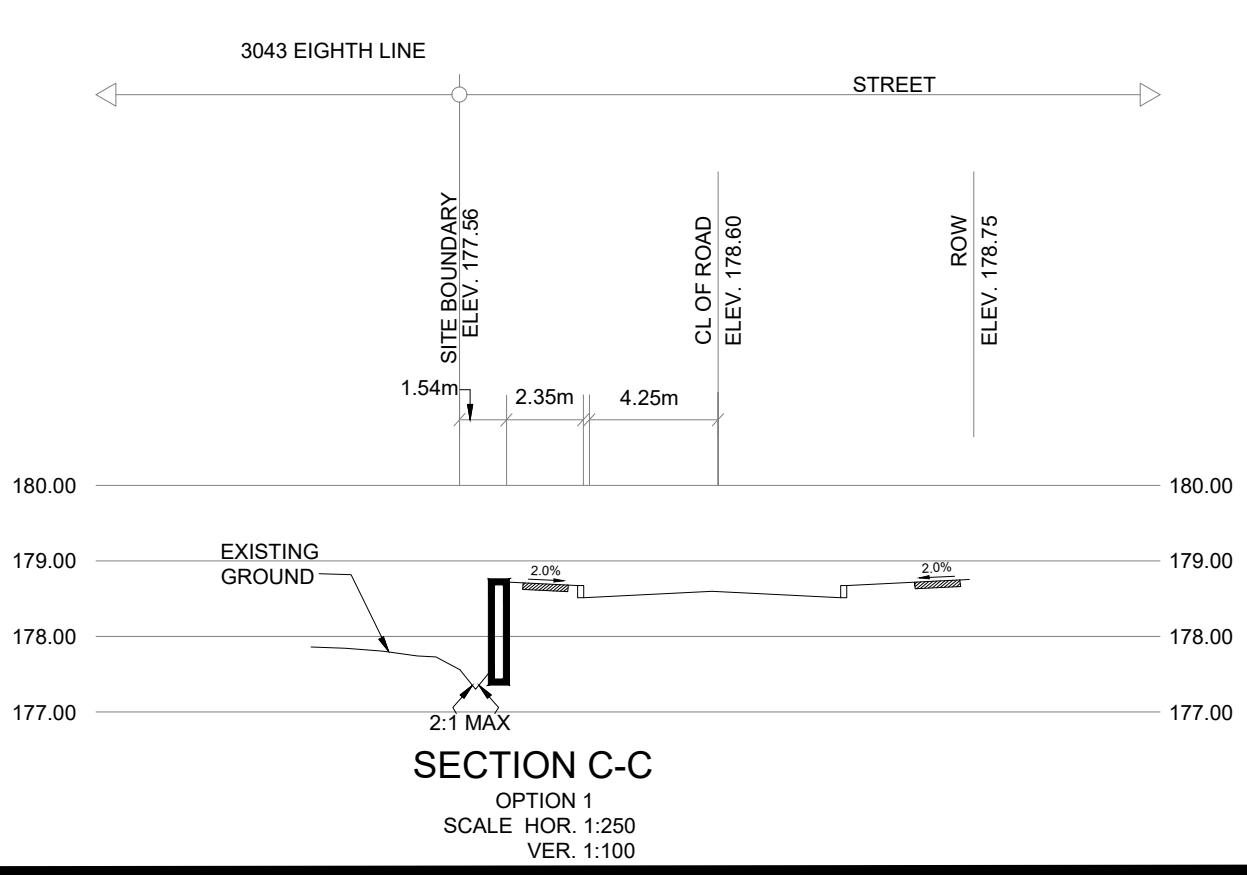
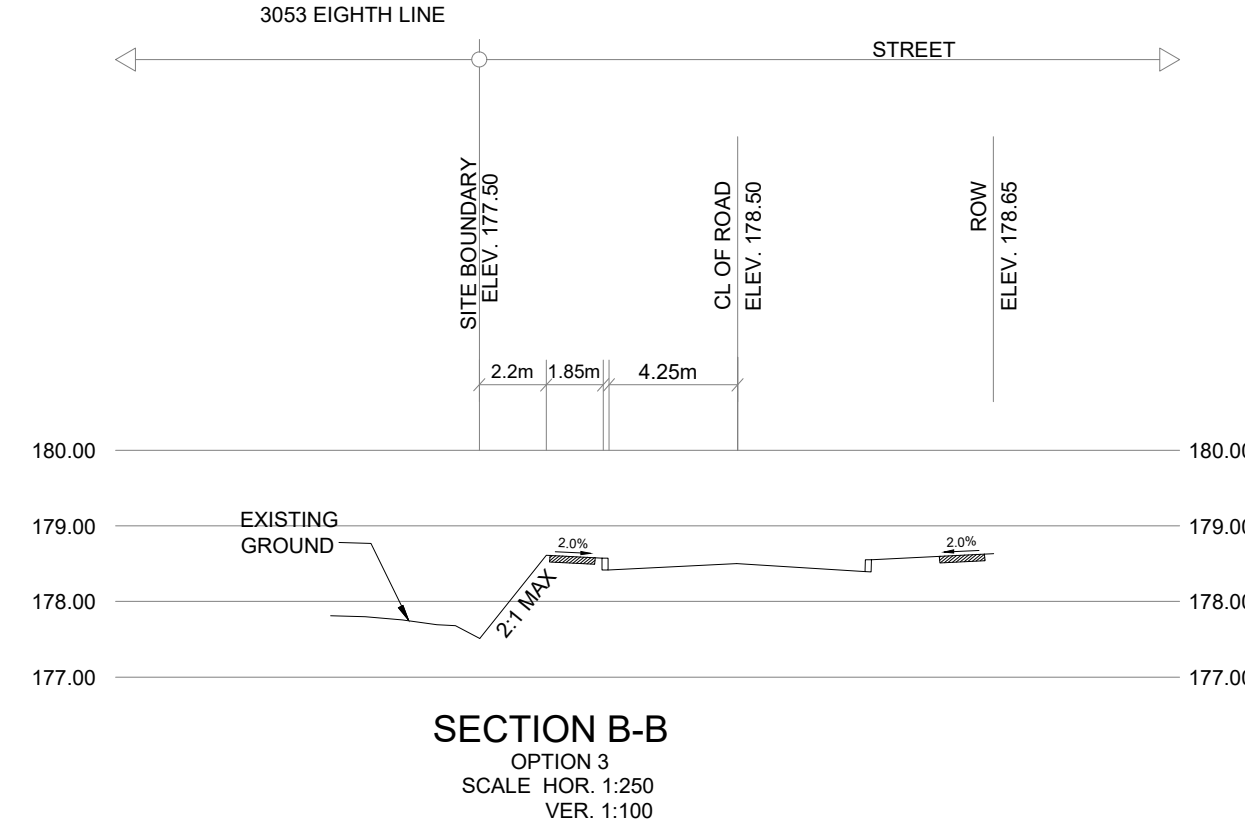
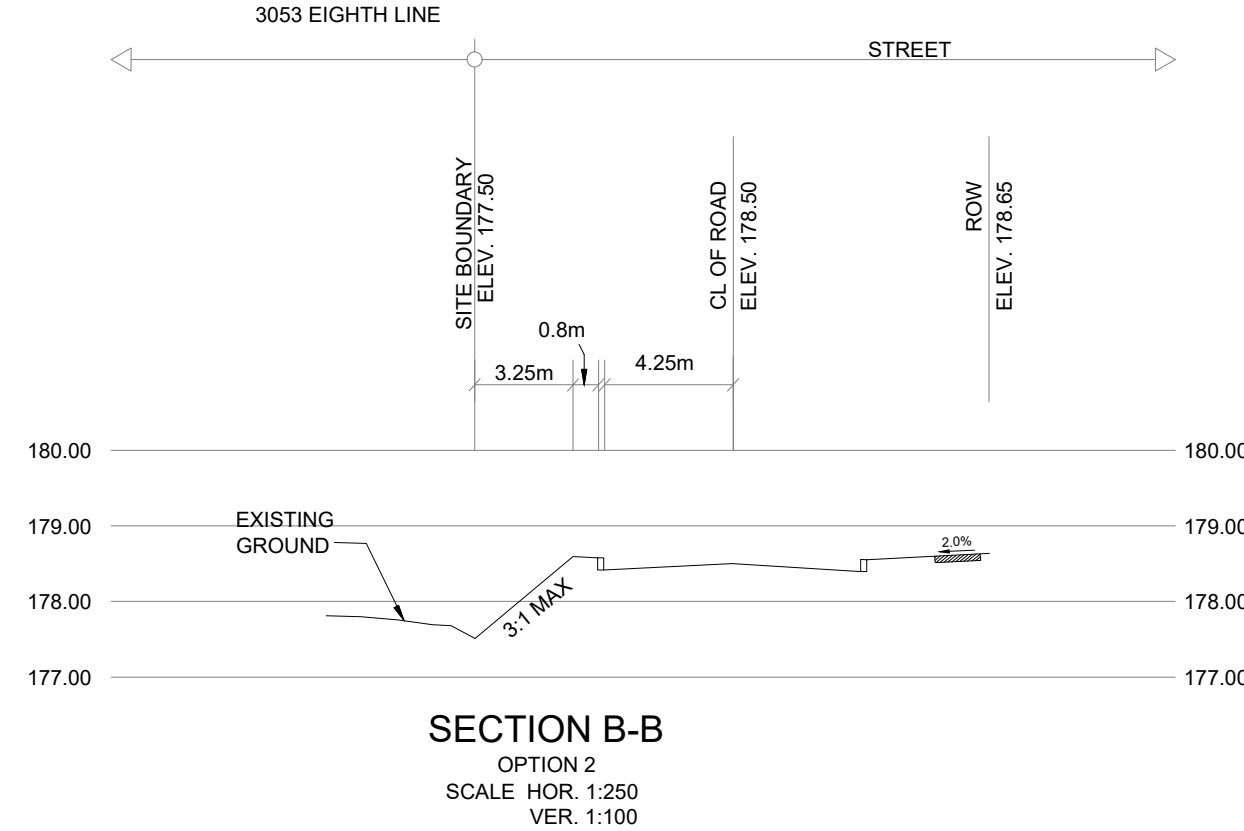
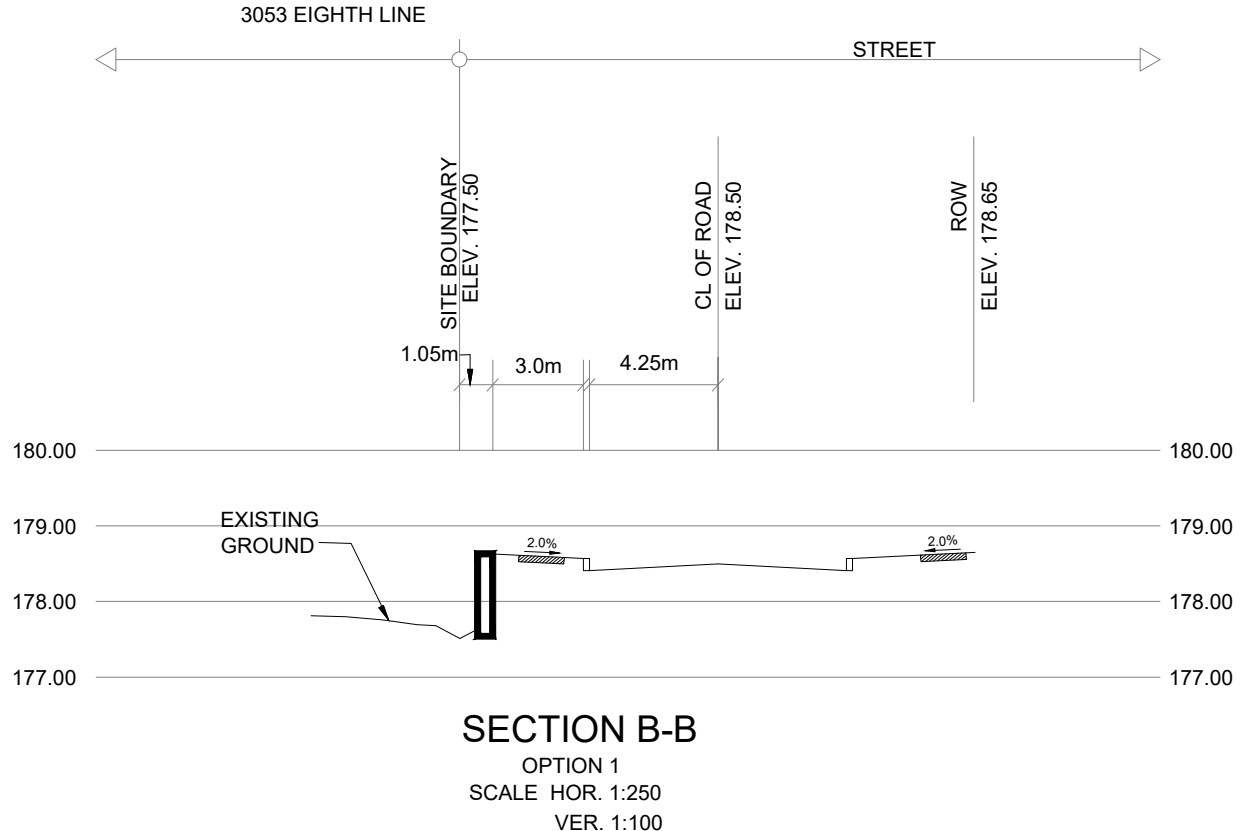
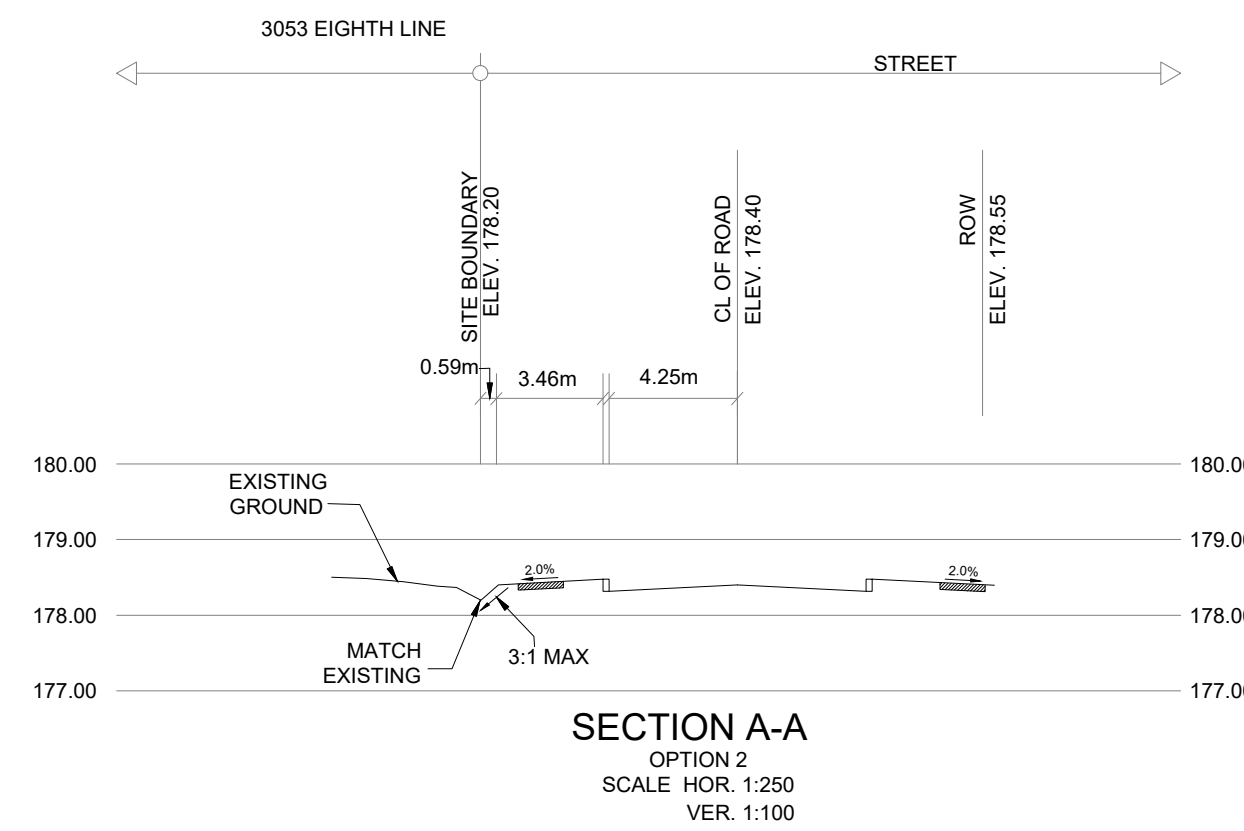
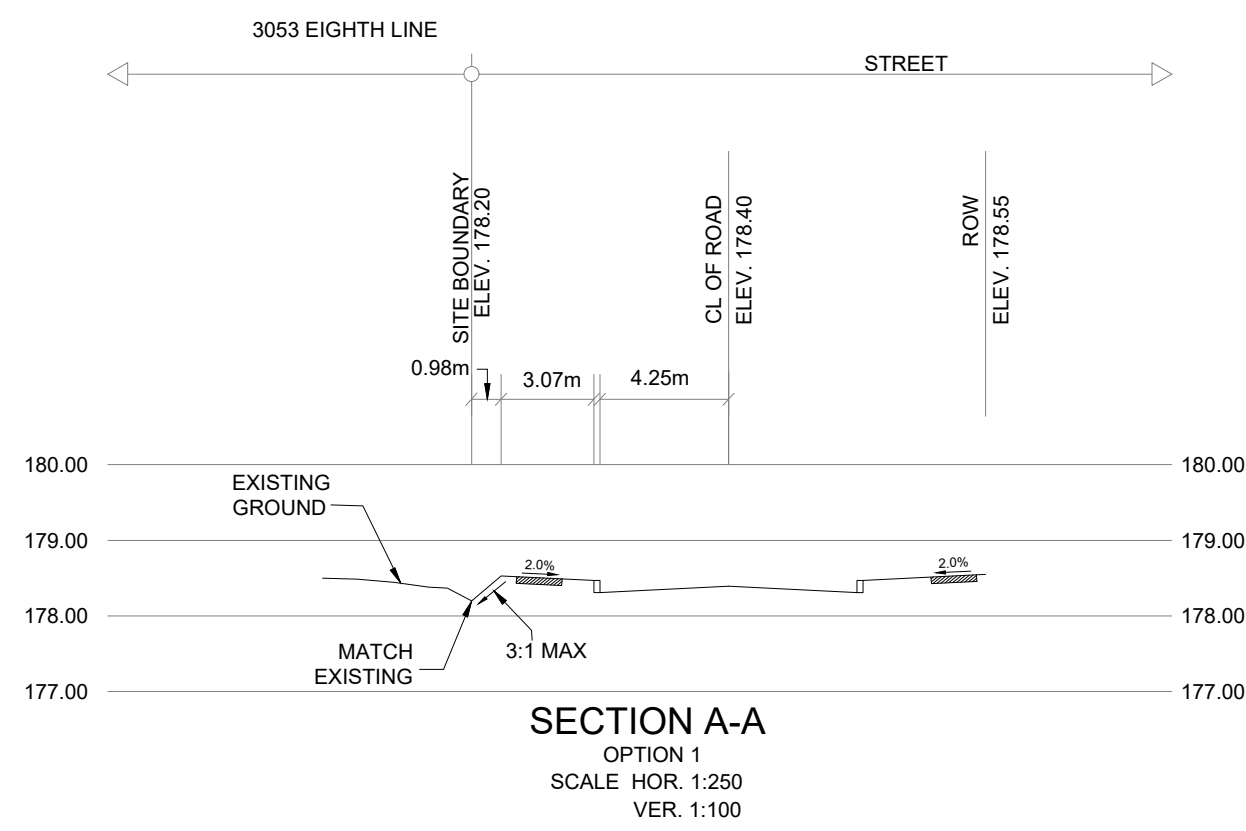


*Note: Refer to the Interim Drainage Plan prepared by Crozier Consulting Engineers for the detailed drainage breakdown of 3053 Eighth Line, 3043 Eighth Line, and 1005 Dundas St.

David Schaeffer Engineering Ltd.
 Beacon Environmental
 J.F. Sabourin and Associates Inc.
 R.J. Burnside & Associates Limited
 Stonybrook Consulting Inc.
 EXP
 Bird and Hale Limited

- Legend**
- Redoak/Capoak Lands
 - Interim Drainage Boundary
 - Proposed Cut-off Swale
 - Proposed Catchbasin (By Others)
 - Temporary Retaining Wall
 - Retaining Wall
 - Proposed Overland Flow Direction
 - External Drainage Area
 - Minor System Flow Direction
 - Area to drain to Existing Ditch on Eighth Line
 - Sheet Drainage To Redoak/Capoak
 - Area to be Directed to CB on 1005 Dundas St.
 - 3043 Eighth Line (Assumed to be Directed to 1005 Dundas St.)
 - 1005 Dundas St.

REDOAK/CAPOAK ADDENDUM #1 TO THE JOSHUA'S CREEK TRIBUTARIES EIR/FSS
FIGURE 7.2B
 Interim Condition Drainage Areas
 MARCH 2021



David Schaeffer Engineering Ltd.
Beacon Environmental
J.F.Sabourin and Associates Inc.
R.J.Burnside & Associates Limited
Stonybrook Consulting Inc.
EXP
Bird and Hale Limited

REDOAK/CAPOAK ADDENDUM #1 TO THE
JOSHUA'S CREEK TRIBUTARIES EIR/FSS

DRAWING 8D

Sections

MARCH 2021