

The background features a large light blue rectangle on the left, a red rectangle below it, and a dark grey rectangle at the bottom right.

Structural Assessment Report

Environmental Assessment (EA) and Preliminary
Design for Ninth Line from Eglinton Avenue
West to Derry Road West

City of Mississauga
October 9, 2020



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Appendix A Site Photographs

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1. Introduction

HDR has been retained by the City of Mississauga to carry out an Environmental Assessment and Preliminary Design for the proposed transportation improvements to Ninth Line from Eglinton Avenue West to Derry Road West in the City of Mississauga. The scope of the EA study includes a Structural Assessment based on visual inspections of four (4) culverts within the study area. A site visit was conducted by HDR on October 1, 2020. The preliminary structural assessment presented in this report is based on the review of the available materials and visual observation of existing culverts, and may be modified as design progresses or when additional information becomes available.

2. Available Information

- Ninth Line Over Sixteen Mile Creek Bridge Biennial Inspection Report (Asset ID: 056005), prepared by Engineered Management Systems Inc., dated May 27, 2019;
- Ninth Line Over Creek Culvert Biennial Inspection Report (Asset ID: 057003), prepared by Engineered Management Systems Inc., dated September 14, 2019;
- Ninth Line Over Creek Culvert Biennial Inspection Report (Asset ID: 057004), prepared by Engineered Management Systems Inc., dated September 12, 2019;
- Ninth Line Over Sixteen Mile Creek Tributary Culvert Biennial Inspection Report (Asset ID: 057005), prepared by Engineered Management Systems Inc., dated September 14, 2019;
- Ninth Line Culvert (Asset ID: 056005), Drawing No. C-32155 to C-32161, prepared by McCormick Rankin, dated April 1996;
- Storm Drainage Channel STA. 0+000 to STA. 0+200 (Asset ID: 057003), Drawing No. C-36175, prepared by Rand Engineering Corporation, dated October, 1998;
- Storm Drainage Channel STA. 0+000 to STA. 0+200 (Asset ID: 057004), Drawing No. C-41176, prepared by Rand Engineering Corporation, dated August 1998;
- Ninth Line STA. 0+240 to STA. 0+480 (Asset ID: 057005), Drawing No. C-40770, prepared by Marshall Macklin Monaghan consulting engineers, dated September, 1998.

3. Existing Structures

The structures located along Ninth Line between Eglinton Avenue West and Derry Road West include the following:

- Ninth Line Over Sixteen Mile Creek Bridge (Asset ID: 056005);
- Ninth Line Over Creek Culvert (Asset ID: 057003);
- Ninth Line Over Creek Culvert (Asset ID: 057004); and
- Ninth Line Over Sixteen Mile Creek Tributary Culvert (Asset ID: 057005).

Site photographs taken from the site visit on October 1, 2020 are provided in *Appendix A*.

3.1 Ninth Line Over Sixteen Mile Creek Bridge (Asset ID: 056005)

Culvert 056005 is 100% owned by the City of Mississauga.

3.1.1 Location

Culvert 056005 is located approximately 335m north of Britannia Road West, in the City of Mississauga. It currently extends across the northbound and southbound lanes of Ninth Line over Sixteen Mile Creek. The culvert is crossing the Osprey Marsh located at the east side of the structure.

3.1.2 Existing Structure

Culvert 056005 is a triple cell cast-in-place concrete box culvert that was constructed in 1996. The structure is 27.26m in length and it has an overall span length of 23.20m. The size of each culvert opening is approximately 8.44m in width and 2.40m in height.

Parapet walls with single railing were noted above the east and west headwalls. Four (4) retaining walls and two (2) approach slabs were also noted. The Biennial Inspection Report dated May 27, 2019, found in *Appendix B*, notes that the culvert was found to be in generally good condition with the exception of the following:

- Spall, delamination and narrow to medium transverse cracks on concrete sidewalks;
- Medium to wide longitudinal, transverse and map cracks on the asphalt wearing surface. Cracks were recently sealed after the last inspection;
- Narrow to medium cracks on parapet walls; and
- Efflorescence stained cracks inside culvert barrels soffit and walls.

Minor rehabilitation work may be required for the structure including the following:

- Repave asphalt wearing surface;
- Seal concrete cracks; and
- Concrete patch repair.

The site investigation carried out by HDR on October 01, 2020 confirmed that the 2019 inspection report findings are consistent with the current site conditions.

3.2 Ninth Line Over Creek Culvert (Asset ID: 057003);

Culvert 057003 is 100% owned by the City of Mississauga.

3.2.1 Location

Culvert 057003 is located approximately 630m south of Britannia Road West, in the City of Mississauga. It currently extends across northbound and southbound lanes of Ninth Line over a creek.

3.2.2 Existing Structure

Culvert 057003 consists of two concrete pre-cast box culverts and four (4) armor stone retaining walls. The culvert was constructed in 1998 and it is approximately 45.00m in length. The culvert opening is 1.80m in height and 2.40m in width for each cell.

The Biennial Inspection Report dated September 14, 2019, found in *Appendix B*, notes that the culvert was found to be in generally good condition with the exception of localized spalls at the exterior faces of the culvert.

Rehabilitation work is not required for this culvert structure.

The site investigation carried out by HDR staff on October 01, 2020 confirmed that the 2019 inspection report findings are consistent with the current site conditions.

3.3 Ninth Line Over Creek Culvert (Asset ID: 057004)

3.3.1 Location

Culvert 057004 is located approximately 1.23km south of Britannia Road West, in the City of Mississauga. It currently extends across northbound and southbound lanes of Ninth Line over Crossing B (Tributary 2)

3.3.2 Existing Structure

Culvert 057004 consists of two pre-cast concrete box culverts and four (4) armor stone retaining walls. The culvert was constructed in 1998 and it is approximately 45.00m in length. The culvert opening is 1.80m in height and 2.40m in width for each cell.

The Biennial Inspection Report dated September 12, 2019, found in *Appendix B*, notes that the culvert was found to be in generally good condition with no significant structural deterioration noted.

The site investigation carried out by HDR on October 01, 2020 confirmed that the 2019 inspection report findings are consistent with the current site conditions.

3.4 Ninth Line Over Sixteen Mile Creek Tributary Culvert (Asset ID: 057005)

3.4.1 Location

Culvert 057005 is located approximately 333m south of Britannia Road West, in the City of Mississauga. It currently extends across northbound and southbound lanes of Ninth Line over a Sixteen Mile Tributary Creek.

3.4.2 Existing Structure

Culvert 057005 consists of a single cell cast-in-place box culvert and two (2) concrete retaining walls located at the west end. The culvert was constructed in 1998 and it is approximately 18.60m in length. The culvert opening is 1.45m in height and 2.45m in width.

The Biennial Inspection Report dated September 14, 2019, found in *Appendix B*, notes that the culvert was found to be in generally good condition with no significant structural deterioration noted.

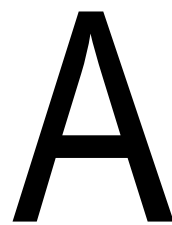
The site investigation carried out by HDR on October 01, 2020 confirmed that the 2019 inspection report findings are consistent with the current site conditions.

4. Structural Evaluation

Evaluation of the structures is not required as part of the scope of works for this assessment. However preliminary geotechnical recommendations will be reviewed to determine the best approach to the structural work.

5. Conclusion

Recommendations for the rehabilitation/modification/strengthening, or replacement of existing structures will be updated as the study progresses and alternative designs for the Ninth Line are developed. The preliminary design of each structure shall include, but is not limited to, consideration of structural bearing capacity, remaining service life, and constructability.



A

Site Photographs

Ninth Line Over Sixteen Mile Creek Bridge (Asset ID: 056005)



Photo #1: East elevation looking north.



Photo #2: West elevation looking north.



Photo #3: Top of culvert looking north.



Photo #4: East sidewalk and parapet wall looking north.



Photo #5: Culvert barrel looking west from east.



Photo #6: Watercourse looking east.

Ninth Line Over Creek Culvert (Asset ID: 057003)



Photo #7: East elevation looking northwest.



Photo #8: Top of culvert looking west.



Photo #9: Top of culvert looking east.



Photo #10: West end culvert looking west.

Ninth Line Over Creek Culvert (Asset ID: 057004)



Photo #11: East elevation looking southwest.



Photo #12: Top of culvert looking west.



Photo #13: Top of culvert looking east



Photo #14: West end of culvert looking west.

Ninth Line Over Sixteen Mile Creek Tributary Culvert (Asset ID: 057005)



Photo #15: West elevation looking southeast.



Photo #16: West end culvert looking west.



Photo #17: Top of culvert looking west.