



Document Type:	TECHNICAL APPRAISAL FORM Bridges
Submission Name:	TB-4 - Trail Bridge over Cabana Rd. – Todd LN.
Document Number:	285380-03-127-0058

Design Consultant:		HMM
Date	Revision	Description
Jul. 3, 2014	0	IFC Substructure Submission

Issued by: Jeffrey Luckai
Name

Jul. 3, 2014
Date


Signature

This document has been prepared for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of HMM being obtained. HMM accepts no responsibility or liability for the consequence of this document being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on the document for such other purpose agrees, and will by such use or reliance be taken to confirm his agreement to indemnify HMM for all loss or damage resulting therefrom. HMM accepts no responsibility or liability for this document to any party other than the person by whom it was commissioned.

To the extent that this report is based on information supplied by other parties, HMM accepts no liability for any loss or damage suffered by the client, whether contractual or tortious, stemming from any conclusions based on data supplied by parties other than HMM used by HMM in preparing this report.

TABLE OF CONTENTS

1	DESIGN PACKAGE DESCRIPTION	4
1.1	NAME AND LOCATION OF STRUCTURE.....	4
2	PROPOSED STRUCTURE	4
2.1	DESCRIPTION OF STRUCTURE	4
2.2	PROPOSED MEANS FOR INSPECTION AND MAINTENANCE.....	4
2.3	MATERIALS AND FINISHES	4
2.3.1	Cast-In-Place Concrete	4
2.3.2	Reinforcing Steel	4
2.3.3	Structural Steel	5
2.3.4	Finishes	5
3	DESIGN/ASSESSMENT CRITERIA	5
3.1	LIVE LOADING AND CLEARANCES	5
3.1.1	Design Live Loading.....	5
3.1.2	Other Live Loading	5
3.1.3	Provision for Exceptional Abnormal Loads	5
3.1.4	Any Special Loading Not Covered.....	5
3.1.5	Minimum Clearance Provided.....	5
3.1.6	Authorities Consulted and Any Special Conditions Required	5
3.2	LIST OF RELEVANT DESIGN DOCUMENTS.....	5
4	STRUCTURAL ANALYSIS	6
4.1	METHODS OF ANALYSIS	6
4.1.1	Superstructure	6
4.1.2	Substructure and Foundations	6
4.2	CALCULATION OF STRUCTURAL STIFFNESS.....	6
4.3	EARTH PRESSURE COEFFICIENTS	6
5	GROUND DESIGN CONSIDERATIONS	6
5.1	GROUND CONDITIONS	6
5.2	GEOTECHNICAL DESIGN PARAMETERS	6
5.3	DIFFERENTIAL SETTLEMENT	6
5.4	ANTICIPATED GROUND MOVEMENTS OR SETTLEMENT	6
5.5	GROUNDWATER CONDITIONS AND MITIGATIVE MEASURES	6
5.6	VARIANCE FROM GEOTECHNICAL MEMO RECOMMENDATIONS	6
6	CONSTRUCTION CONSIDERATIONS	7
7	DRAWINGS AND DOCUMENTS	7
7.1	LIST OF DRAWINGS (INCLUDED IN THIS SUBMISSION)	7
7.2	LIST OF DOCUMENTS (INCLUDED IN THIS SUBMISSION)	7
7.3	LIST OF REFERENCE DRAWINGS AND DOCUMENTS (NOT INCLUDED IN THIS SUBMISSION).....	8
8	CHECKING AND REVIEW.....	8
8.1	INDEPENDENT CHECK	8
8.2	RESPONSIBLE DESIGN PERSONNEL	8

9	APPENDIX A - REFERENCED DRAWINGS AND DOCUMENTS	10
---	--	----

1 Design Package Description

This submission contains design drawings and geotechnical recommendations associated with Trail Bridge #4 over Cabana Rd./Todd Lane. This is the IFC submission for the substructure deliverables.

1.1 Name and Location of Structure

Trail Bridge #4 carries pedestrian traffic over Cabana Rd./Todd Lane.

2 Proposed Structure

2.1 Description of Structure

TB-04 is a single span, truss bridge designed by others (superstructure supplier).

Structural Summary

Structure Type:	Steel truss simply supported on concrete abutments.
Span Arrangement:	One span with length of 40 m, aligned east-west and perpendicular to Cabana Rd./Todd Lane.
West Abutment:	Reinforced concrete 4.6m x 7.0m shallow foundation (high abutment)
East Abutment:	Reinforced concrete 4.6m x 7.0m shallow foundation (high abutment)
Span Articulation:	Superstructure is not integral with the abutments.
Barrier Type:	Pedestrian railing with rub rail and vertical balustrades safety rails to run entire length of structure to approach walls.

2.2 Proposed Means for Inspection and Maintenance

All exposed elements are accessible through the use of scaffolding and / or mobile manlifts.

2.3 Materials and Finishes

2.3.1 Cast-In-Place Concrete

Substructure: Minimum compressive strength at 28 days: 30 MPa.

Deck: Minimum compressive strength at 28 days: 40 MPa.

Remainder: Minimum compressive strength at 28 days: 30 MPa.

2.3.2 Reinforcing Steel

Plain reinforcing steel bars: CAN/CSA G30.18-M92; Grade 400W

Stainless steel reinforcing bars: Type 316LN or Duplex 2205 or Type XM-28;
Grade 500

2.3.3 Structural Steel

CAN/CSA-G40.20-04/G40.21-04 Grade 350AT Category 2

Structural steel used only in superstructure.

2.3.4 Finishes

Concrete finishes shall comply with the applicable requirements of Project Agreement, Schedule 15-2.

Requirements for trail bridge painting, animal icons and other aesthetic treatments are provided in the Technical Memo for Aesthetics package (Doc. No. 285380-72-126-0014).

3 Design/Assessment Criteria

3.1 Live Loading and Clearances

3.1.1 Design Live Loading

Maintenance vehicle in accordance with CAN/CSA-S6-06.

3.1.2 Other Live Loading

Uniformly distributed 3.67 kPa pedestrian loading as per CAN/CSA-S6-06 Cl.3.8.9.

3.1.3 Provision for Exceptional Abnormal Loads

None

3.1.4 Any Special Loading Not Covered

None

3.1.5 Minimum Clearance Provided

Vertical: 5.3 m for Cabana Rd./Todd Lane

3.1.6 Authorities Consulted and Any Special Conditions Required

None

3.2 List of Relevant Design Documents

Design Criteria in accordance with Part 2 of Project Agreement - Schedule 15-2:

Article 1 - Highway Geometrics Design Criteria

Article 3 - Structural Design Criteria

Article 5 - Geotechnical and Foundation Design Criteria

In the event of discrepancy, the hierarchy of referenced documents shall be as instructed.

4 Structural Analysis

4.1 Methods of Analysis

4.1.1 Superstructure

Superstructure design is by others (superstructure supplier).

4.1.2 Substructure and Foundations

Analysis and design of the abutments using a combination of hand calculations and spreadsheets was used to determine reinforcing steel requirements and checking stresses.

4.2 Calculation of Structural Stiffness

Structural stiffness was calculated according to CAN/CSA-S6-06.

4.3 Earth Pressure Coefficients

Refer to "Geotechnical Investigation and Design Report – Pedestrian Bridges", Doc. No. 285380-04-119-0150.

5 Ground Design Considerations

5.1 Ground Conditions

Refer to "Geotechnical Investigation and Design Report – Pedestrian Bridges", Doc. No. 285380-04-119-0150.

5.2 Geotechnical Design Parameters

Refer to "Geotechnical Investigation and Design Report – Pedestrian Bridges", Doc. No. 285380-04-119-0150.

5.3 Differential Settlement

Refer to "Geotechnical Investigation and Design Report – Pedestrian Bridges", Doc. No. 285380-04-119-0150.

5.4 Anticipated Ground Movements or Settlement

Refer to "Geotechnical Investigation and Design Report – Pedestrian Bridges", Doc. No. 285380-04-119-0150.

5.5 Groundwater Conditions and Mitigative Measures

Refer to "Geotechnical Investigation and Design Report – Pedestrian Bridges", Doc. No. 285380-04-119-0150.

5.6 Variance from Geotechnical Memo Recommendations

None.

6 Construction Considerations

TBD

7 Drawings and Documents

7.1 List of Drawings (included in this submission)

Drawing No.	Revision	Drawing Title
285380-03-060-SEG1-6400	0	COVER SHEET, SITE PLAN, AND KEY PLAN
285380-03-060-SEG1-6401	0	GENERAL ARRANGEMENT
285380-03-060-SEG1-6402	0	GENERAL NOTES
285380-04-090-SEG1-6403	0	BOREHOLE LOCATIONS & SOIL STRATA
285380-04-091-SEG1-6404	0	SOIL STRATIGRAPHY
285380-04-094-SEG1-6407	0	GROUND IMPROVEMENTS – BACKFILL AT STRUCTURES
285380-04-094-SEG1-6408	0	GROUND IMPROVEMENTS – LIGHTWEIGHT FILL MATERIAL
285380-03-061-SEG1-6409	0	FOUNDATION LAYOUT AND DETAILS
285380-03-061-SEG1-6410	0	ABUTMENT LAYOUT AND DETAILS
285380-03-061-SEG1-6411	0	ABUTMENT REINFORCEMENT
285380-03-061-SEG1-6412	0	RSS WINGWALL LAYOUT AND DETAILS I
285380-03-061-SEG1-6413	0	RSS WINGWALL LAYOUT AND DETAILS II
285380-03-062-SEG1-6414	0	MISCELLANEOUS DETAILS
285380-03-065-SEG1-6415	0	PEDESTRIAN BARRICADES LAYOUT AND DETAILS
285380-03-065-SEG1-6416	0	6000mm APPROACH SLABS
285380-03-066-SEG1-6417	0	STANDARD DETAILS
285380-07-067-SEG1-6418	0	EMBEDDED ELECTRICAL WORK

7.2 List of Documents (included in this submission)

Document No.	Revision	Description
285380-04-119-0150	0	Geotechnical Investigation Design Report – Pedestrian Bridges

7.3 List of Reference Drawings and Documents (not included in this submission)

See Appendix A.

8 Checking and Review

8.1 Independent Check

Independent check is required as per Project Agreement – Schedule 15-2, Part 2, Article 3 3.2 (c) (i).

Independent Checking Team: INTERNATIONAL BRIDGE TECHNOLOGIES.

8.2 Responsible Design Personnel

Originator: Boris Malac, P.Eng.

Checker: Jeffrey Luckai

Reviewer: Biljana Rajlic, P.Eng.

The above TAF is submitted for review

Signed: Biljana Rajlic
Design Manager

Name: Biljana Rajlic

Engineering Qualifications: P.Eng.

Date: JULY 03/2014

Professional Registration Number: 100041385

Affix Professional Seal



Signed: Martina Currie

Project Co Representative

Name: MARTINA CURRIE

Date: 31st July 2014

Professional Registration Number:

Affix Professional Seal:

9 Appendix A - Referenced Drawings and Documents

Referenced Drawing(s)

Drawing No.	Revision	Drawing Title

Certificate(s)

Certificate No.	Revision	Certificate Name

Special Provision(s)

Document No.	Revision	Description
285380-72-126-0014	F	Technical Memo for Aesthetics Package