Ministry of Forests, Lands, Natural Resource Operations & Rural Development
General Arrangement / Conceptual Design

Southern Engineering Group
SAMPLE STANDARD DRAWING
COMPLEX BRIDGE

SITE INFORMATION
DISTRICT          ROCKY MOUNTAIN DISTRICT
SITE No.          RM-1234
STRUCTURE No.    RM-1234A
FSR NAME & KM    SAMPLE FSR 3.24km
LATITUDE         49°41'17.377"N
LONGITUDE        115°43'37.22"W

DESIGN SUMMARY
27.832m O/O CONCRETE/STEEL COMPOSITE BRIDGE ON STEEL TOWERS AND PRECAST CONCRETE SPREAD FOOTINGS

NOTE: THIS SAMPLE DWG. PROVIDES ONE EXAMPLE OF A TYPICAL BRIDGE DWG. WITH TYPICAL NOTES. A PROFESSIONAL OF RECORD (POR) MUST DEVELOP SPECIFIC NOTES AND DWGS. APPROPRIATE FOR A PARTICULAR SITE AND MUST ENSURE ALL MINISTRY AND PROFESSIONAL STANDARDS ARE MET

DRAWING SCHEDULE
<table>
<thead>
<tr>
<th>DRAWING NUMBER</th>
<th>DESCRIPTION</th>
<th>REV</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>11250-SS-RM-1234-01</td>
<td>GENERAL NOTES - SHEET 1</td>
<td>0</td>
<td>10/07/2018</td>
</tr>
<tr>
<td>11250-SS-RM-1234-02</td>
<td>GENERAL NOTES - SHEET 2</td>
<td>0</td>
<td>10/07/2018</td>
</tr>
<tr>
<td>11250-SS-RM-1234-03</td>
<td>EXISTING PLAN VIEW</td>
<td>0</td>
<td>10/07/2018</td>
</tr>
<tr>
<td>11250-SS-RM-1234-04</td>
<td>EXISTING PROFILE &amp; SECTION VIEWS</td>
<td>0</td>
<td>10/07/2018</td>
</tr>
<tr>
<td>11250-SS-RM-1234-05</td>
<td>PROPOSED PLAN VIEW</td>
<td>0</td>
<td>10/07/2018</td>
</tr>
<tr>
<td>11250-SS-RM-1234-06</td>
<td>PROPOSED PLAN VIEW</td>
<td>0</td>
<td>10/07/2018</td>
</tr>
<tr>
<td>11250-SS-RM-1234-07</td>
<td>PROPOSED PROFILE VIEWS &amp; MISC DETAILS</td>
<td>0</td>
<td>10/07/2018</td>
</tr>
<tr>
<td>11250-SS-RM-1234-08</td>
<td>PROPOSED ABUTMENT VIEWS &amp; DETAILS</td>
<td>0</td>
<td>10/07/2018</td>
</tr>
<tr>
<td>11250-SS-RM-1234-09</td>
<td>PROPOSED ROAD SECTIONS</td>
<td>0</td>
<td>10/07/2018</td>
</tr>
<tr>
<td>11250-SS-RM-1234-10</td>
<td>PROPOSED WB-19 VEHICLE TRACKING</td>
<td>0</td>
<td>10/07/2018</td>
</tr>
<tr>
<td>11250-SS-RM-1234-11</td>
<td>EXISTING PHOTOS</td>
<td>0</td>
<td>10/07/2018</td>
</tr>
</tbody>
</table>

PLOT DATE: July 30, 2018
2. SITE SURVEY

<table>
<thead>
<tr>
<th>DATE OF SURVEY</th>
<th>2017-05-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITE LOCATION</td>
<td>49°41'17&quot;N, 115°53'27&quot;W</td>
</tr>
<tr>
<td>SURVEYOR</td>
<td>MP &amp; PK</td>
</tr>
<tr>
<td>COMPANY</td>
<td>FLNRORD</td>
</tr>
</tbody>
</table>

3. GEOTECHNICAL

3.1. A formal geotechnical assessment was not carried out. The site appears to be composed of a blanket of granular colluvium. If excavation of foundations reveals deviations, the professional of record is to be advised prior to continuation of work. Subsurface information has been inferred from the site observations of soil exposures in road cuts and along stream banks.

3.2. Foundations have been designed with the Ministry assumed standard 200 kPa maximum allowable soil bearing pressure.

3.3. Foundation design has been carried out in accordance with the Canadian Foundation Engineering Manual.

4. HYDROLOGY AND HYDRAULIC ASSESSMENT

4.1. A peak flow for design purposes was determined based on a review of channel characteristics, previous high flow evidence, and review of the results of applying several peak flow empirical models. These empirical models estimate rates of time of concentration, hydrometric statistics, watershed characteristics, and other relevant information to estimate peak flow.

4.2. Freeboard height requirement shown refers to upstream face of structure.

4.3. Landslide and debris flows have been considered based on no evidence being found on site.

5. BRIDGE DESIGN

5.1. Loading: L-165 (149700 kg G.V.W.) in accordance with Ministry standard bridge design vehicles - Dwg. STD-EC-000-01 to 02.

5.2. Horizontal alignment tracking vehicle: Low-bed WB-19m AASHTO 2004

6. FURTHER DESIGN WORK

6.1. All components require structural design.

6.2. If the depth of the girders is 100mm deeper than is shown on the drawings the professional of record must be advised.

7. SITE PREPARATION AND INSTALLATION GENERAL

7.1. Representative of the professional of record to be on-site for the following phases and contractor requires approval from the Rep. prior to continuing to the next phase:

7.1.1. Preparation of foundation.

7.1.2. Placement of rip rap.

7.1.3. Review of substructure prior to being covered.

7.1.4. Review of final superstructure installation.

7.2. Check required bearing distance and depth of actual structure prior to construction.

8. CLEARING AND GRUBING

8.1. Remove trees, stumps, logs, brush, shrubs, vines, undergrowth, rotten wood, dead plant material, exposed boulders and debris within areas designated on drawings.

8.2. Remove stumps and tree roots below footings, slabs, and paving.

8.3. Dispose of cleared and grubbed material off site daily to disposal areas acceptable to authority having jurisdiction.

9. RIP RAP AND GRANULAR MATERIAL

9.1. Rip rap shall be supplied and placed in accordance with the Ministry “Bridge Design and Construction Manual”. Sources for gravel, and rip rap shall be approved by the Ministry prior to source development. Permits from other regulatory agencies may also be required. Following the removal of material from an approved site, side slopes must be dressed to the natural angle of repose of the material, but in no case greater than 45 degrees, unless the material is solid rock.

9.2. Rip rap gradation and thickness shown on drawings.

10. FOOTING EXCAVATIONS

10.1. Excavations for all footings shall be kept free of water during construction. For excavation in material other than rock, care shall be taken not to disturb the bottom of the excavation.

10.2. Where foundation materials encountered do not meet the design assumptions shown on the drawings or in the construction specifications, the professional of record shall be consulted prior to completion of foundations. The professional of record shall be responsible to stipulate measures to meet design requirements and consult the structure design engineer as required. The professional of record shall include the prescribed measures in the certification document.

10.3. All excavations to comply with WorkSafe BC regulations, where the information on these drawings does not meet or exceed WorkSafe BC regulations, the WorkSafe BC regulations shall govern.
11. FILL PLACEMENT (INCL. BACKFILLING)

11.1 REMOVE SNOW, ICE, CONSTRUCTION DEBRIS, ORGANIC SOIL AND STANDING WATER FROM SPACES TO BE FILLED.

11.2 LATERAL SUPPORT: MAINTAIN EVEN LEVELS AROUND STRUCTURES AS WORK PROGRESSES, TO EQUALIZE EARTH PRESSURES.

11.3 FILL MATERIAL: CLEAN FREE DRAINING SAND AND GRAVEL WITH A MAXIMUM AGGREGATE SIZE OF 100mm AND A MAXIMUM FINES CONTENT (SILT/CLAY PARTICLES) OF 5%, OR OTHER MATERIAL PRE-APPROVED BY POR.

11.4 PLACING: PLACE FILL MATERIAL IN 300mm LIFTS. ADD WATER AS REQUIRED TO ACHIEVE SPECIFIED DENSITY.

11.5 COMPACTION: EACH LAYER OF MATERIAL AND EXISTING SUBGRADE UNDER FOOTING TO BE COMPACTED TO 95% STANDARD PROCTOR DENSITY (ASTM D698), COMPACTED WITH A MIN. 1000lb VIBRATORY COMPACTOR. ANY ALTERNATIVE COMPACTION SPECIFICATION TO BE PRE-APPROVED BY POR.

12. GRADING

12.1 GRADING TO THAT WATER WILL DRAIN AWAY FROM THE STRUCTURE APPROACHES TO CATCH BASINS OR OTHER DISPOSAL AREAS APPROVED BY THE MINISTRY REPRESENTATIVE.

12.2 CONSTRUCT APPROACH Fills TO LINES AND GRADATIONS SHOWN ON DRAWINGS.

13. SITE CLEANUP

13.1 CLEANUP OF THE SITE MUST BE COMPLETED IMMEDIATELY FOLLOWING CONSTRUCTION. THIS SHALL INCLUDE THE PICKUP AND REMOVAL OF ALL EQUIPMENT, MATERIALS, TRASH, EQUIPMENT REFUSE AND CONSTRUCTION DEBRIS, AND CLEANING THE BRIDGE GIRDERS, DECKS AND BEARINGS TO THE SATISFACTION OF THE PROFESSIONAL OF RECORD.

13.2 ALL DISTURBED AREAS SHALL BE SEEDED WITH AN APPROVED EROSION CONTROL SEED MIX AT THE COST OF THE CONTRACTOR.

14. ENVIRONMENTAL MANAGEMENT PLAN

14.1 ALL INSTREAM WORKS SHALL COMPLY TO A SITE SPECIFIC ENVIRONMENTAL MANAGEMENT PLAN (EMP) MEETING ALL APPROPRIATE ENVIRONMENTAL PROTECTION LEGISLATION.

15. SIGNS

15.1 W-054 Delineators shall be mounted at each corner of the bridge.

15.2 W-051 Narrow Structure Ahead Sign shall be installed approximately 50m from each structure end.

16. ESTIMATED EARTHWORKS VOLUMES

16.1 EXCAVATION INCLUDING SUBEXCAVATION ON EXISTING ROADWAYS: 100m³

16.2 FILL REQUIRED: 150m³

16.3 ROADWAY SURFACING: 200m³

16.4 PLACED RIP RAP: 140m³

16.5 NOTE THE ABOVE VOLUMES ARE ESTIMATES ONLY AND DO NOT ACCOUNT FOR UNEXPECTED CONDITIONS.

17. SUPPLEMENTAL DOCUMENTATION

17.1 ENVIRONMENTAL MANAGEMENT PLAN (ATTACHED):
NOTE: THIS SAMPLE DWG. PROVIDES ONE EXAMPLE OF A TYPICAL BRIDGE DWG. WITH TYPICAL NOTES. A PROFESSIONAL OF RECORD (POR) MUST DEVELOP SPECIFIC NOTES AND DWGS. APPROPRIATE FOR A PARTICULAR SITE AND MUST ENSURE ALL MINISTRY AND PROFESSIONAL STANDARDS ARE MET.
End of Construction
Blend into Existing Road Surface

PROPOSED STRUCTURE PLAN VIEW
T50

NOTE: THIS SAMPLE DWG. PROVIDES ONE EXAMPLE OF A TYPICAL BRIDGE DWG. WITH TYPICAL NOTES. A PROFESSIONAL OF RECORD (POR) MUST DEVELOP SPECIFIC NOTES AND DWGS. APPROPRIATE FOR A PARTICULAR SITE AND MUST ENSURE ALL MINISTRY AND PROFESSIONAL STANDARDS ARE MET.
NOTE: THIS SAMPLE DWG. PROVIDES ONE EXAMPLE OF A TYPICAL BRIDGE DWG. WITH TYPICAL NOTES. A PROFESSIONAL OF RECORD (POR) MUST DEVELOP SPECIFIC NOTES AND DWGS. APPROPRIATE FOR A PARTICULAR SITE AND MUST ENSURE ALL MINISTRY AND PROFESSIONAL STANDARDS ARE MET.
NOTE: THIS SAMPLE DWG. PROVIDES ONE EXAMPLE OF A TYPICAL BRIDGE DWG. WITH TYPICAL NOTES. A PROFESSIONAL OF RECORD (POR) MUST DEVELOP SPECIFIC NOTES AND DWGS. APPROPRIATE FOR A PARTICULAR SITE AND MUST ENSURE ALL MINISTRY AND PROFESSIONAL STANDARDS ARE MET.