

TEMPORARY CONSTRUCTION CROSSING OVER CRITICAL INFRASTRUCTURE

1.0 GENERAL

1.1 Scope of work

- 1.1.1 Any vehicle crossings of City of Regina critical infrastructure outlined in this specification requires temporary crossing protection.
- 1.1.2 All costs associated with crossing protection as outlined in this section are the responsibility of the applicant. The applicant shall be responsible to install and remove any temporary crossing protection and restore the ground surface to original condition.

1.2 General Conditions

- 1.2.1 The City of Regina operates several large diameter water supply lines and forcemains including:
- .1 Buffalo Pound Water Supply Mains (BPWSM), including:
 - 900 mm diameter steel supply main, and
 - 1050 mm diameter steel supply main.
 - .2 McCarthy Boulevard Pump Station Sanitary Force Mains (MBPSSFM), including:
 - 1050 mm diameter steel force main,
 - 1050 mm diameter PVC force main, and
 - 1500 mm diameter PVC force main.
- 1.2.2 The BPWSM and MBPSSFM are critical components of the City of Regina's infrastructure. Working pressures in the lines may range from approximately 350 kPa to 690 kPa. Inadvertent damage caused to the pipe has potential for severe impact to City's water and sanitary sewer system operation. Crossing of these pressure pipes shall be undertaken with an abundance of caution.
- 1.2.3 A general summary of the critical infrastructure is as follows:
- .1 BPWSM
 - .1 The Buffalo Pound Water Treatment Plant pumps water to the City of Regina through two, 56 kilometer long steel supply pipelines. These pipelines are the primary potable water supply conduits for the entire City of Regina.
 - The original 900 mm diameter steel supply pipeline was installed in 1950.
 - A second 1,050 mm diameter supply pipeline was installed in three sections in 1990, 1998 and 2003.

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- .2 MBPSSFM
 - .1 The McCarthy Boulevard Pump Station (MBPS) pumps raw sewage to the waste water treatment plant through three, six kilometer long force mains. These pipelines are the primary means for transferring raw sewage from the MBPS to the City's waste water treatment plant.
 - A 1050 mm steel forcemain was installed in 1991 and the original steel forcemain installed in 1958 was abandoned.
 - A second 1050 mm PVC force main was installed in 2010.
 - A third 1500 mm PVC forcemain was installed in 2017.
 - 1.2.4 The Contractor shall plan and implement temporary crossings for the BPWSM and MBPSSFM to minimize the time that work is carried out in close proximity to the pipe, to minimize the number of crossing locations and to minimize the number of crossing events to only what is reasonably necessary. The Contractor shall ensure that the pipeline is not subjected to excessive construction related loads, including excessive vibrations and/or concentrated or asymmetrical lateral loads during backfill placement or any other Work.
 - 1.2.5 The Contractor shall be responsible for ensuring all work undertaken is in adherence with the specifications contained within the Contract Documents. Repair and restoration of damages to the infrastructure and any resulting incidental and collateral damages, as a result of failure to abide by the specifications and good construction practice, shall be the responsibility of the Contractor.
- 1.3 Temporary Crossing Submittal**
- 1.3.1 The Contractor shall submit all the required information to the City of Regina for review a minimum of fifteen (15) business days prior to crossing the BPWSM and MBPSSFM. The submittal shall include all of the Contractor's proposed equipment to be used at the Place of Work. Submittal shall include, at a minimum for each vehicle and piece of equipment to be used:
 - .1 Vehicle and equipment operating weight and dimensions including wheel or track base, track width and length or axle spacing, tire spread area or wheel configurations. Refer to the attached vehicle configuration plans.
 - .2 Gross Vehicle Weight and Tare Weight.
 - .3 Axle loads (kg).
 - .4 Site specific Emergency Response Plan including primary contacts
 - .5 Temporary crossing location plan.
 - .6 Depth of cover (actual depth confirmed in field by Contractor's excavation of the pipe using soft dig methods).
 - .7 Crossing schedule including start and end date the temporary crossing will be used, hours of operation for each working day and an estimate of the frequency of and number of crossing events per working day for each piece of equipment.

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- .8 Method of protection to be used including details and load ratings for any engineered rig matting to be used.
 - .9 Any other information requested by the City.
- 1.3.2 Temporary Construction Crossings that do not meet the limitations outlined in this specification will require a site specific crossing design.

1.4 Loading

- 1.4.1 A temporary construction crossing and the associated protection method outlined by this specification is required when the equipment loading exceeds the weights as outlined below. Equipment outside of the loading limits will required a site specific review and approval by the Engineer.
- 1.4.2 Protection Methods for Temporary Crossings

The Contractor shall provide protection methods for the temporary crossing in accordance with the following table:

Table 1.1 – Crossing Protection Requirements

Depth of Cover measured from Surface to Top of Pipe (m)	Weight of Largest Axle Group (kg)	Protection Method
Cover < 1.8	Steel Lines with Axle Weight < 5,000 PVC Lines with Axle Weight < 9,500 kg	Provide minimum 300 mm granular as per Standard Drawing W-38 or engineered rig matting.
Cover < 1.8	Steel Lines: 5,000 < Axle Weight < 24,300 PVC Lines: 9,500 < Axle Weight < 24,300	Increase cover over lines to be minimum of 1.8m. Refer to standard Drawing W-38. Rig matting proposed in lieu of increasing cover will require a site specific crossing design*. Crossing design using rig matting shall demonstrate a reduction in surface pressures to a maximum 40 kPa for steel lines and 125 kPa for PVC lines
1.8 < Cover < 4.3	Axle Weight < 24,300	Provide minimum 300 mm granular as per Standard Drawing W-38 or rig matting.
Cover > 4.3	Axle Weight > 5,000	Specific site review required.

**If engineered rig matting is proposed in lieu of increased cover, calculations stamped by a professional engineer confirming the loads are within acceptable limits as outlined in this specification are to be provided as part of the submittals.*

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2.0 PRODUCTS

2.1 Materials

- 2.1.1 All materials shall meet the City of Regina Standard Construction Specifications.
- 2.1.2 Rig mats shall be a rigid, portable platform, engineered to withstand vehicle and equipment loads over an unsupported span of at least one meter.

3.0 EXECUTION

3.1 Operational Limitations

- 3.1.1 Shutdown of the MBPSSFM or BPWSM will not be permitted unless approved by the Engineer. Under no circumstances with shut down of the BPWSM's be permitted between April 30 and November 1.

3.2 Pre-Work Planning

- 3.2.1 No work shall commence overtop of (vertically) or within 5.0 m (horizontally) of the centerline of the BPWSM and MBPSSFM until the Temporary Crossing Submittal has been reviewed and approved by the City.
- 3.2.2 Requests for Temporary Crossings shall be submitted to utilityreview@regina.ca.
- 3.2.3 Excavation within the City of Regina's right-of-way is strictly forbidden without a City of Regina representative on site.
- 3.2.4 Contractor shall carefully expose the BPWSM and/or MBPSSFM using soft dig methods at a minimum of two locations per pipeline to delineate the location, crossing angle and check the actual depth of the BPWSM and/or MBPSSFM. Contractor shall provide full time supervision for the soft dig excavations. The Contractor shall provide GPS coordinates including ground elevations and depth of cover for each location.
- 3.2.5 Work shall only be carried out with proposed equipment identified in the Temporary Crossing Submittal that has been reviewed and quantified in terms of its loading implications on the BPWSM and MBPSSFM.
- 3.2.6 Where work is within 10.0 m (horizontally) of the centerline of the BPWSM and MBPSSFM, utilize construction practices and procedures that do not impart excessive vibration loads on the BPWSM and MBPSSFM or that would cause settlement of the subgrade below the BPWSM and MBPSSFM.
- 3.2.7 Excavated, granular, or other materials shall not be stockpiled within 10.0 m (horizontally) of the BPWSM and MBPSSFM centerline.

3.3 Surface Works

- 3.3.1 The temporary road crossings shall be installed in accordance with the approved protection method for the corresponding crossing location as per Table 1.1.
- 3.3.2 The Contractor shall ensure that no surface ruts greater than 100 mm are created by any work within the right of way limits.

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- 3.3.3 Fill and granular materials shall not be dumped directly over top of the BPWSM and MBPSSFM but shall be stockpiled outside the limits noted in these specifications and carefully placed or bladed into place.
- 3.3.4 Compaction of fill or granular materials within 10.0 m (horizontally) of the BPWSM and MBPSSFM shall be either carried out by static methods (without vibration) or with smaller approved equipment such as hand held plate packers or smaller roller equipment.
- 3.3.5 Visibly delineate the location of the temporary crossing at surface above the existing pipes by use of construction fencing, snow fencing or other suitable methods to ensure that crossings only occurs at approved locations.
- 3.3.6 Post signage at the crossing location outlining the following:
 - .1 The maximum permitted axle weight.
 - .2 The maximum speed for the crossing which shall under no circumstances be more than 10 km/hr.
 - .3 Warning signs that unauthorized crossing is prohibited.
- 3.3.7 Maintain the crossing such that ruts are maintained less than 100 mm deep at all times.
- 3.3.8 Limit road crossings at each location to one unit at a time. Multiple vehicles shall not cross concurrently at the same crossing.
- 3.3.9 When crossing is no longer required, remove all crossing protection and restore surface to the original conditions.

END OF SPECIFICATION

**City of Regina
Standard Construction Specifications**

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Vehicle Equipment Crossing Application Form (Page 1/3)

Requestor Information:

Date of Application: _____
 Company Name: _____
 Contact Name: _____
 Email: _____
 Phone: _____

Schedule:

Planned Start Date: _____
 Planned Completion Date: _____

Location of Crossing:

Land Location:
 LSD or ¼ _____ Section _____ Township _____ Range _____ W2M
 or
 Latitude: _____ Longitude: _____
 or
 UTM Coordinates Northing: _____ Easting: _____

Please list all equipment that will cross the City Facility (attach additional sheets if necessary):

Make and Model	Gross Vehicle Weight (GVW) Kilograms	Front Axle Weight Kilograms	Distance Between Axles meters	Middle Axle Weight Kilograms	Distance Between Axles meters	Rear Axle Weight Kilograms

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Vehicle Equipment Crossing Application Form (Page 2/3)

Make and Model	Gross Vehicle Weight (GVW) Kilograms	Track Width meters	Track Length meters	Trace Spacing meters

Actual Depth of Cover at crossing Location:

Line Description	Line Diameter	Depth of Cover	Northing	Easting

Note: Must notify City before existing line are exposed.

Proposed Protection Method:

If cover depth < 1.8m, increase cover of lines.

Minimum 300 mm of granular protection.

Rig Matting *

If rig-matting is proposed, attached product details with application form. If cover is less than 1.8m, submit calculations stamped by professional engineer indicating surface pressure are within allowable limits.

Plan of Crossing:

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Vehicle Equipment Crossing Application Form (Page 3/3)

For City Use Only:

Reference No: _____

Date: _____

Reviewed by: _____

Crossing Approved:

Revise and Resubmit:

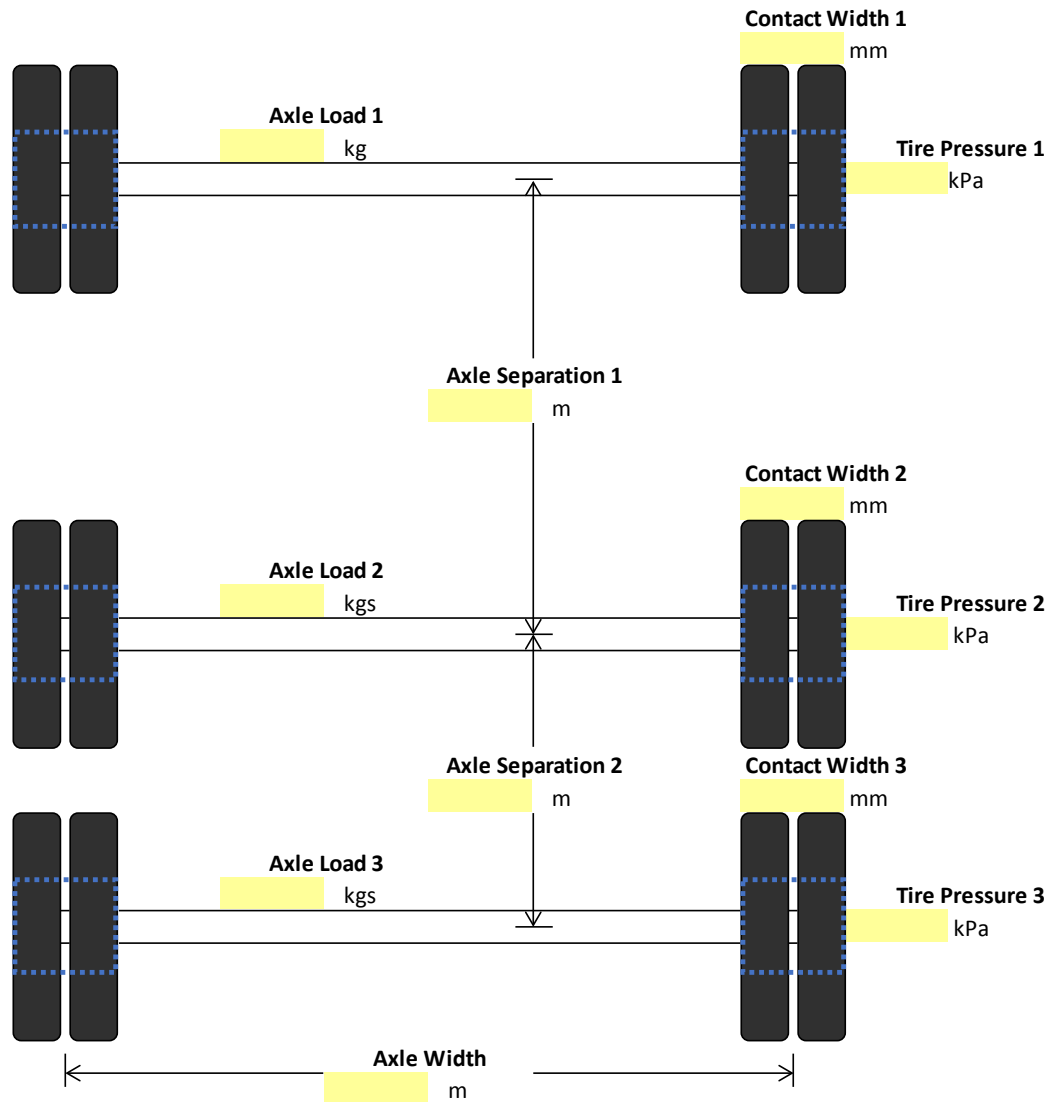
Submit additional information as follows:

Submit completed application form along with all supporting information to utilityreview@regina.ca. Allow a minimum of 15 working days for review.

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Input for Surface Vehicle Live Load

VEHICLE INFORMATION:	
VEHICLE TYPE:	



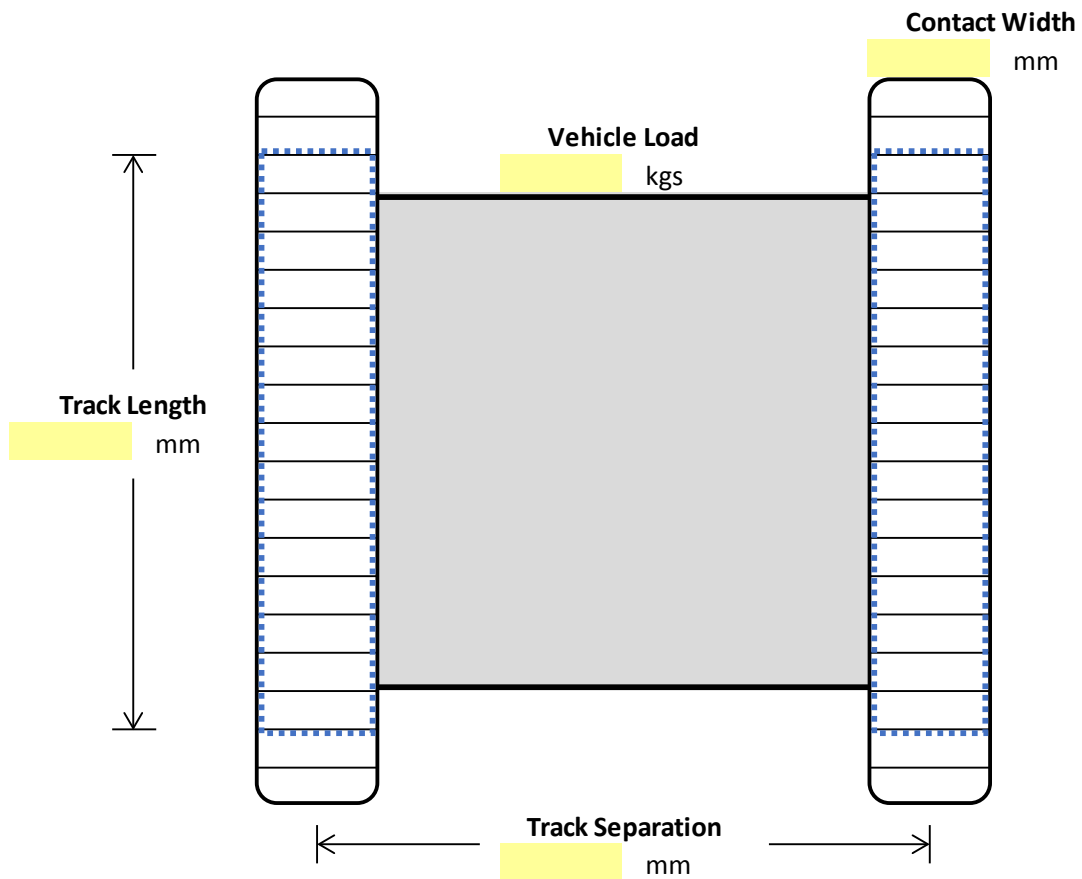
GENERAL NOTES:

- Loading configuration should always be perpendicular to pipeline.
- Dual tires as seen on pick-up and semi-trucks can be treated as a single tire due to their close proximity to one another.

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Input for Surface Vehicle Live Load

VEHICLE INFORMATION:	
VEHICLE TYPE:	



GENERAL NOTES:

- Loading configuration should always be perpendicular to pipeline.