

APPENDIX E: EXAMPLE CPKC CONSTRUCTION PLAN APPLICATION



CPKC CONSTRUCTION APPLICATION R1

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Subject: Lagimodiere Twin Overpasses Over Concordia Ave & CPKC Mile 122.4 Keewatin Subdivision – Construction Methodology

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1.0 INTRODUCTION

This technical memo discusses the construction plans of the major rehabilitation of the Lagimodiere Boulevard Twin Overpasses over Concordia Avenue and CPKC Mile 122.4 Keewatin Subdivision tracks. Tetra Tech have prepared site access plan and construction staging works plan with focus on work affecting the CPKC tracks below. Provided in the following figure is the location plan of the twin overpasses that are proposed to be rehabilitated.

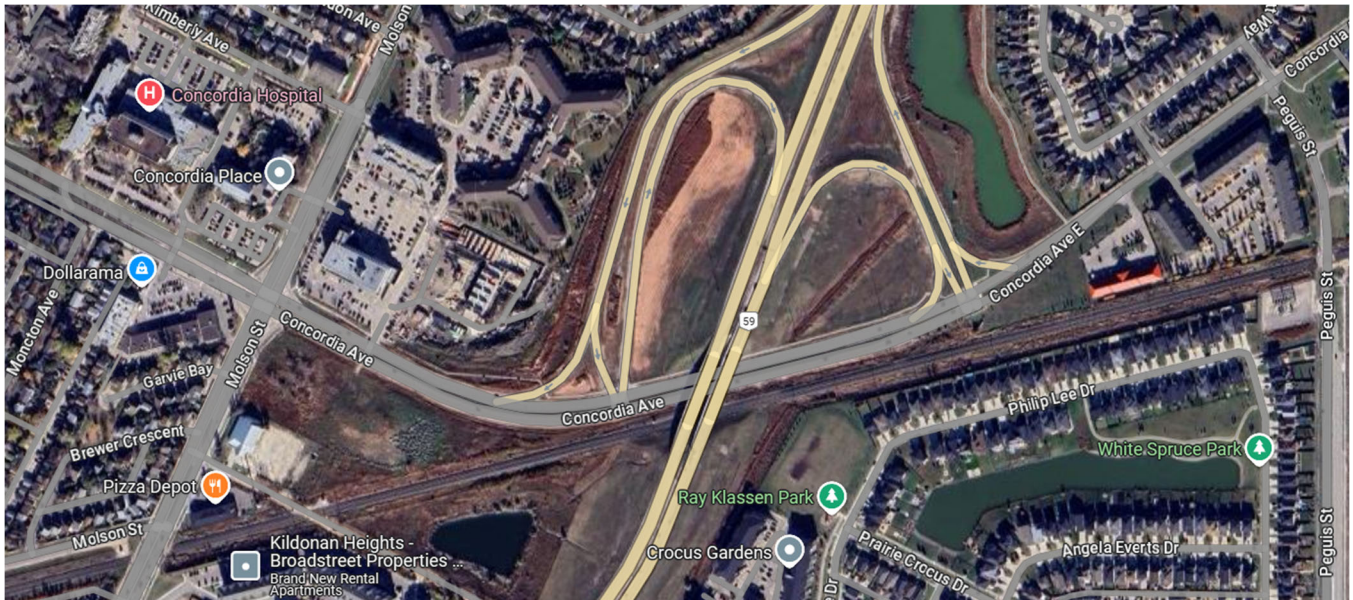


Figure 1: Location of the Lagimodiere Twin Overpasses over Concordia Avenue and CPR Keewatin

2.0 PROJECT CONSIDERATIONS AND REQUIREMENTS

Provided below is a summary of identified project considerations and requirements, as well as, information requests:

1. A site plan shows the limits of work and the CPKC corridor and Right of Way (ROW) including an existing corridor access from Concordia Avenue.
2. A copy of the Rail tender specification are attached for review.
3. The revised drawing set attached represents all works proposed that are near, adjacent to and within CPKC property and therefore triggering flagging protection.

4. We anticipate that all works, except for concrete girder strengthening and jacking, can be completed under flagging protection.
5. Gaps in railway traffic, a minimum of four hours, will be required for mobilization, girder preparation, epoxy resin mixing and set-up, resin and FRP sheet application and demob off of the ROW. This work does not need to be consecutive but do need to be scheduled between end of May through September.
6. Track blocks or railway traffic stopped are required when the girders are raised and lowered for bearing replacement works.
7. Consideration has been given to protecting against falling debris onto the rail yard below the work areas.

3.0 PROJECT TEAM

Tetra Tech is the Engineer of Record for the Rehabilitation of the Lagimodier Twin Overpass bridge and is also responsible for liaison services with CPKC and for preparing and submitting the Grade Separation Application. The City of Winnipeg (COW) will be tendering the rehabilitation works to a General Contractor (GC). The GC will be responsible for overall site coordination and safety, as well as finalizing the construction methodology.

Tetra Tech has prepared the Grade Separation Application document and has since been working with CPKC and their representative AECOM on developing a construction methodology that minimizes impacts to CPKC, while still providing opportunities to complete the proposed rehabilitation works.

The intent of this memo is to describe our proposed construction methodology for CPKC review and general acceptance. Once accepted in principle, the GC will have a construction methodology developed and accepted by CPKC for bidding purposes. The GC will still be required to submit a Construction Plan to CPKC for review and acceptance.

4.0 PROPOSED SITE ACCESS PLAN

The primary laydown area for works within the ROW and south of the tracks is west of Lagimodier and south of CPKC mainlines. Access is proposed from Concordia Avenue to the laydown area, crossing the tracks at a temporary crossing. Drawing No. 1 of the attached drawing set shows the proposed laydown area and temporary crossing. Equipment required to complete the proposed rehabilitation works within the ROW, will access the bridge from the temporary crossing location. The Contractor shall prepare and submit a Temporary Crossing Application as part of the required submittals for CPKC to review.

5.0 PROPOSED CONSTRUCTION STAGING & PROJECT EXECUTION

Proposed Work Plans have been prepared regarding various construction activities and rehabilitation components. Provided below is a brief description of the work activity and impacts to CPKC.

5.1 General Construction Activities

5.1.1 Install Steel Security Fence

Upon project start-up, a construction security fence will be installed aligned with the existing piers. The fence will have access points to CPKC ROW for workers and construction equipment, which will be locked. Under flagging protection, the fencing will be installed to CPKC standards.

The security fence will prevent workers and the public from randomly entering CPKC ROW within the project limits. Access gates and man gates will be provided for workers to access the ROW. However, workers will only be able to access the ROW once cleared and approved by CPKC flagging. Tracked or any equipment cannot cross tracks without confirmation of track protection from CPKC.

The Security fence will be removed in a similar fashion as it was installed.

5.1.2 Construct Multi-Use Path

Outside of the CPKC ROW, there is a proposed pathway, constructed from asphalt with a granular base. The pathway follows Concordia Ave. and is parallel with the CPKC ROW for around 350 m. The new pathway will be sloped at a 2% crossfall and will drain towards Concordia Ave. No additional water will be discharged to CPKC ROW, rather, the new pathway will reduce the amount of water discharged to CPKC ROW.

The construction of the pathway will be completed under flagging protection, since it will be adjacent to CPKC ROW. CPKC operations will not be impacted by construction of the new pathway.

5.1.3 Install Chain Link Fence and Sliding Gate

A chain link fence will be installed next to the new pathway for approximately 520 m. The fence limits extend well past the parallel section of the pathway with CPKC tracks. The chain link fence will be 1.8 m high and built on City property, adjacent to CPKC ROW and will be constructed to City Standards.

Within the section of chain link fence, a sliding gate is proposed to provide access to CPKC ROW from Concordia Ave., maintaining an existing access point. The gate is proposed to have a clear opening of 7.01 m (23'), from post to post. Gate is proposed on the inside of the fence and slides east.

Installation of the fence and gate will be completed under flagging protection and therefore will not impact CPKC operations. Underground locates will need to be completed to confirm that there are no utilities within the fence limits.

5.2 Deck Removal

5.2.1 Installation of Solid Wood Blocking

With use of an aerial work platform, the GC will install timber blocking between the girders to prevent debris from falling onto the track during deck removal. The blocking will be lined with poly or plywood to further contain debris. The blocking will be installed on the bottom flange of the concrete I girder. The blocking will not impact existing vertical clearance of the rail lines.

The blocking will be installed under flagging protection, between normal train traffic intervals, with nematic tire mobile aerial work platform equipment.

5.2.2 Exterior Debris Containment System

With use of an aerial work platform, the GC will install a cantilever scaffolding system and fence on the exterior girder. The exterior containment system, shall be poly lined to prevent concrete saw cutting, cement paste and debris from falling onto the track during removal of the deck cantilever and barrier parts of the bridge deck. The scaffolding system will be installed on the bottom flange and side of the exterior girder. The exterior containment system and vertical netting will not impact existing vertical clearance of the rail lines.

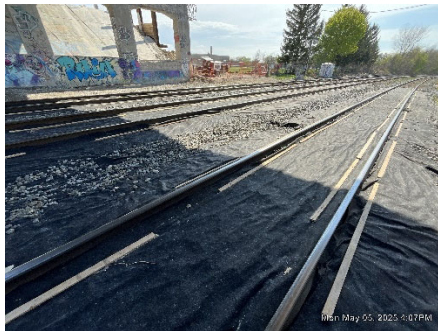
The exterior debris containment scaffolding will be installed under flagging protection between normal train traffic intervals with nematic tire mobile aerial work platform equipment.

5.2.3 Track Protection

Temporary Track Tarps

During deck removal, construction tarps will be placed over the tracks under the location of deck removal, to further protect the track from deck debris. Tarps will be placed on the tracks when permitted by onsite flagging, between normal train traffic intervals and shall be removed in such a manner so that any debris on the tarp is not deposited on to the ballast. Removal of the tarp will be completed when directed by the flagger.

Ballast Protection



The existing ballast will be protected with geotextile material installed upon commencement of this project and removed upon completion of a Phase or entire project. The geotextile will be secured to the track ties and held in place outside of the track to ensure CPKC operations are not impacted by the ballast protection system.

In the event the protection system is damaged during construction, the system will be repaired to restore ballast projection.

5.2.4 Demolish Existing Deck

The existing deck will be removed by two methods. As much as possible, sections of the deck will be saw cut and hoisted onto a dump truck for disposal. For other areas, standard jack-hammer techniques will be used to remove concrete around reinforcing from the girders. The debris will fall onto the containment system below and will be hand collected for disposal.

5.2.5 Demolish Concrete Barrier and Overhang

The deck cantilevers will be removed by similar methods as the main concrete deck. As much as possible, sections of the barriers and deck overhang will be saw cut and hoisted onto a dump truck for disposal. For other areas, standard jack-hammer techniques will be used to remove concrete around reinforcing from the girders. The debris will fall onto the containment system below and will be hand collected for disposal.

5.2.6 Demolish Existing Intermediate Concrete Diaphragms

The deck cantilevers will be removed by similar methods as the main concrete deck. As much as possible, sections of the barriers and deck overhang will be saw cut and hoisted onto a dump truck for disposal. For other areas, standard jack-hammer techniques will be used to remove concrete around reinforcing from the girders. The debris will fall onto the containment system below and will be hand collected for disposal.

5.3 Bridge Superstructure Works

5.3.1 Bearings Replacement

All existing bearings need to be replaced. To complete this task, the bridge will be raised and re-supported so that the existing bearings can be removed. Based on discussion with CPKC and our experience with other projects, we

understand that during the lifting process, train operations cannot continue, therefore a track block or stoppage of railway traffic is required for this activity. Once the bridge has been raised and jacks locked-off or temporary supports installed, railway operations can resume. A detailed schedule, in 15 minute increments, is attached to this memo showing the breakdown of work activities. A schedule, similar to the example will need to be provided to CPKC in order to schedule the temporary stoppage of railway traffic.

All preparation works will be completed under flagging protection. Lifting the bridge will require a stoppage of railway traffic on both mainline tracks, with the understanding that the stoppage of railway operations may need to be extended in the event something goes wrong during the lifting or lowering activity.

Preparation works, jacking, and bearing replacement works will occur from the temporary steel scaffolding installed during pier shaft surface repairs.

5.3.2 Girder Repairs and Strengthening

The existing concrete I girders need to be locally repaired and strengthened with carbon FRP sheets. The sheets are installed in layers. Each FRP sheet needs to be glued to the girder. The girder strengthening design will be completed between natural railway gaps under flagging protection, however the minimum time required to complete this work is four hours. Due to surface preparation of the girder, mixing and preparing of the epoxy resin and careful application process of the FRP sheets, a minimum of four hours is required. Once works have commenced, this process needs to be completed per girder.

We require a four-hour gap in railway traffic for each girder, 10 days in total are required, but not consecutively. This task will need to be completed during warm weather, May-September, to allow for the resin to cure properly.

Crews will access the girders via the scaffolding and an aerial lift platform as permitted by CPKC flagging between natural intervals of railway traffic.

5.3.3 New Concrete Bridge Deck

To construct the new concrete deck, forms will be placed on the girders and overhangs to permit installation of the reinforcing. Once the reinforcing has been installed, concrete will be placed via a concrete pumping truck. The deck concrete will be placed in stages and will require flagging, since the boom of the pumper truck could foul the track if it were to fall. After concrete placement, the deck will be wet cured with sprinklers and tarps. The debris containment system shall remain in place during new concrete deck construction.

All works required to place forms, rebar, and concrete will be completed from on top of the bridge.

5.4 Bridge Substructure Works

5.4.1 Pier Repairs

All piers require minor chip and patch repairs. To complete this work, the GC will need to install steel frame scaffolding to provide access to the pier and allow the workers to remove the concrete via jack-hammer and saws. The scaffolding would remain in place throughout this activity and would be tied to the existing pier. The scaffolding will be located within CPKC ROW with an approximate width of 1500 mm, 3160 mm (10.4') from the edge of scaffolding to centreline of south track. The minimum distance between the track centreline and pier scaffolding is 10.4'. The required tangent track clearance envelope is 17' wide (8.5' from centreline track). The proposed clear distance from centreline track (10.4') is more than the required clearance (8.5'). The proposed pier scaffolding therefore will not impact the horizontal minimum clearance. Contractor to provide shop drawings for review prior to installation and field measurements will be taken to confirm actual clearances.

Installation and removal of the proposed scaffolding system will be completed under flagging protection. When working on the scaffolding, workers shall stop working and put down any equipment when directed by the flagger to allow trains to travel through the worksite. Construction workers will exit the scaffolding and CPKC ROW when a train is passing through. The scaffolding will be tarped to prevent construction debris from entering CPKC ROW.

5.4.2 Pier Cap Widening

The pier caps need to be widened to increase the strength of the pier. Scaffolding used for pier surface repairs will also be used for pier widening works. Dowels to the existing cap are required to develop load transfer from the existing cap to the new widened section. Forms will be installed, and new concrete will be placed to widen the cap on each side of the pier.

Construction workers will exit the scaffolding and CPKC ROW when a train is passing through.

5.4.3 Slope Paving Replacement

The existing bridge has concrete slope paving under the end spans covering the embankment. The slope paving extends beyond the bridge deck footprint. The slope paving starts at the abutment and extends down at a 4:1 slope to beyond the existing pier and within CPKC ROW, see drawing No. 3, Section 4. The slope paving thrust block adjacent to the south track will remain. The slope paving will be cut near the thrust block, removed and the ground regraded. The concrete slope paving will be saw cut and removed in sections by a mini excavator or skid steer.

New slope paving is proposed to protect the embankment under the twin bridges. The slope paving is proposed between the abutment and first pier, but not beyond the pier. The slope paving footprint has been reduced and will no longer extend past the existing concrete pier.

5.5 Drainage

5.5.1 Ditch Regrading

Drawing 7 and 8 illustrate the proposed drainage plan for this project. Whenever possible, existing drainage ditch infrastructure was used, reducing the overall amount of work to be completed. Along Concordia Ave., the existing ditch will be filled in at some locations and other locations just reshaped and new swales constructed. The ditch regrading will be completed by an excavator while under flagging protection.

5.5.2 Culvert Extension

There is an existing 700 mm diameter culvert that runs under CPKC tracks, just east of the existing overpass. As part of this project, the culvert will be extended since the existing ditch along Concordia will be filled in. Refer to the drainage drawings, station 559.40 for a section showing the existing culvert and proposed extension.

In order to extend the culvert, a section of the embankment needs to be removed to allow installation of a coupler. The proposed excavation is outside of the CPKC Potential Zone of Track Loading. The excavation will be completed with an excavator under flagging protection. The excavator will be positioned north of the north track. The excavator will stop work operations, move the excavator outside the ROW, away from the north track and put the bucket down when notified that a train will be passing through. Once the train has passed and with flagging direction, excavation works will continue.

Prior to undertaking the culvert extension works, the Contractor will work with CPKC on developing and implement a track monitoring program as per CPKC Guidelines.

5.5.3 Abandoned Culvert

The existing 1000mm diameter culvert at Sta. 0+559.40 will be abandoned in place. The culvert will be infilled with grout and capped. The north end of the culvert will be buried as part of the surface regrading. The south end of the culvert will be exposed, however capped. CPKC standards will be followed for culvert abandonment.

6.0 LIMITATIONS OF TECHNICAL MEMO

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7.0 CLOSURE

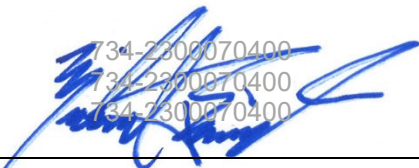
Attached to this memo is the following:

- AECOM Comment Tracker (June 24, 2025)
- Railway Drawing Set
- FRP Girder Strengthening Detailed Workplan
- Girder Jacking Detailed Workplan
- Rail Specification
- Drainage Model Analysis and Upgrades

This memo with the attached documents constitutes our CPKC application. The proposed works are scheduled to commence in winter/spring 2026. All works mentioned herein this memo will be required for the Lagimodiere northbound and southbound structures. Each are scheduled to take one year to complete.

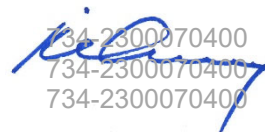
If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
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