



24-2010 ADDENDUM 1

2010 REGIONAL STREET RENEWAL PROGRAM – TAYLOR AVENUE – WAVERLEY STREET TO WILTON STREET RECONSTRUCTION AND REHABILITATION

URGENT

**PLEASE FORWARD THIS DOCUMENT TO
WHOEVER IS IN POSSESSION OF THE BID
OPPORTUNITY**

ISSUED: May 7, 2010
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TELEPHONE NO. (204) 943-3178

**THIS ADDENDUM SHALL BE INCORPORATED
INTO THE BID OPPORTUNITY AND SHALL
FORM A PART OF THE CONTRACT
DOCUMENTS**

Template Version: A20070419

Please note the following and attached changes, corrections, additions, deletions, information and/or instructions in connection with the Bid Opportunity, and be governed accordingly. Failure to acknowledge receipt of this Addendum in Paragraph 10 of Form A: Bid may render your Bid non-responsive.

PART A – BID SUBMISSION

Replace: 24-2010 Bid Submission with 24-2010 Addendum 1- Bid Submission. The following is a summary of changes incorporated in the replacement Bid Submission:

Form B (R1): Add Item No.A.33 under Feedermain Crossing.

Form G1 (R1): Replaced incomplete Original Form G1.

Page numbering on some forms may be changed as a result.

PART E – SPECIFICATIONS

Add: E14. OPERATING CONSTRAINTS FOR WORK IN CLOSE PROXIMITY TO THE MID TOWN FEEDERMAIN.

E14. OPERATING CONSTRAINTS FOR WORK IN CLOSE PROXIMITY TO THE MID TOWN FEEDERMAIN

E14.1 Description

E14.1.1 This Section details operating constraints for all work to be carried out in close proximity to the Mid Town Feedermain. Close proximity shall be deemed to be any construction activity within a 5 m offset from the centreline of the feedermain.

E14.2 General Considerations for Work in Close Proximity to the Mid Town Feedermain

E14.2.1 The Mid Town Feedermain is a critical component of the City of Winnipeg Regional Water Supply System and work in close proximity to the pipeline shall be undertaken with an abundance of caution. The pipe cannot be taken out of service for extended periods to facilitate construction and inadvertent damage caused to the pipe would likely have catastrophic consequences.

Work around the Feedermain shall be planned and implemented to minimize the time period that work is carried out in close proximity to the pipe and to 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.

E14.2.2 The Mid Town Feedermain is constructed of Prestressed Concrete Cylinder Pipe (Embedded Core) conforming to AWWA Standard C301. The South Fort Garry Feedermain was manufactured and installed in 1959.

AWWA C301 pipe has limited ability to withstand increased earth and live loading. Therefore, every precaution must be undertaken to ensure that applied loading during all phases of construction is within accepted loading parameters.

Loading limitations and calculated loads associated with typical construction equipment is attached to this specification for illustrative purposes. See Figures 1 – 3. The loading calculations shall be interpreted with caution, however, as many factors can cause applied loads to increase considerably, such as unbalanced loading, variations in wheel base or track width, payload, impact factors due to excessive speed or vibration, etc.

E14.3 Submittals

E14.3.1 Submit proposed construction equipment specifications to the Contract Administrator for review seven (7) days prior to construction. The submissions need to include sufficient data on operational weights, dimensions, and payloads to facilitate assessment that the proposed construction equipment is not in excess of the typical construction loading that this assessment was based on. Submittal shall include:

- (a) Equipment operating weight and dimensions including wheel or track base, track length or axle spacing, track widths or wheel configurations
- (b) Payload weights
- (c) Load distributions in the intended operating configuration

E14.3.2 Submit a Construction Method Statement with proposed construction plan including haul routes, excavation equipment locations, loading positioning and base construction sequencing, to the Contract Administrator for review seven (7) days prior to construction. Do not commence construction until the Construction Method Statement has been reviewed and accepted by the Contract Administrator.

E14.4 Protection of the Mid Town Feedermain During Construction

E14.4.1 The section of the Feedermain affected by construction crosses Taylor Avenue between Waverley and Cambridge. The existing and proposed cover over the main is approximately 1.4 metres and cover after subgrade excavation will be as little as 0.6 metres.

E14.4.2 Contractors carrying out repair work or working in close proximity to the Feedermain shall meet the following conditions and technical requirements:

- (a) Pre-Work, Planning and General Execution
 - (i) No work shall commence at the site until the Equipment Specifications and Construction Method Statement have been submitted and accepted, and the Feedermain location has been clearly delineated in the field. Work over the feedermain shall only be carried out with equipment that has been reviewed and quantified in terms of its loading implications on the pipe. All proposed construction equipment must be submitted to Contract Administrator for review prior to construction. Work in areas in close proximity to the Feedermain shall only be carried out with equipment that has been reviewed and quantified in terms of its loading implications by the Contract Administrator.
 - (ii) Contact the City of Winnipeg WWD Department, Construction Services Coordinator (Andy Vincent) prior to construction.
 - (iii) Notify WWD well in advance of construction to coordinate required service interruptions
 - (iv) Where work is in close proximity to the Feedermain, utilize construction practices and procedures that do not impart excessive vibration loads on the feedermain or that would cause settlement of the subgrade below the feedermain.
 - (v) Crossings of the Feedermain are prohibited in the time period from removal of existing pavement until the completion of granular base construction. At all times prior to completion of final paving; reduce equipment speeds to levels that minimize the effects of impact loading to the pipe
 - (vi) For construction work activities either longitudinally or transverse to the alignment of the Feedermain, work only with equipment and in the manner stipulated in the accepted Construction Method Statement and the supplemental requirements noted herein.
 - (vii) Where work is in proximity to the Feedermain, utilize construction practices and procedures that do not impart excessive vibration loads on the Feedermain or that would cause settlement of the subgrade below the Feedermain.
 - (viii) The pipeline elevation datum relative to the proposed roadway shall be adequately verified. Deviations from the elevations noted herein shall be reported to Contract Administrator for review prior to construction of the subgrade.
 - (ix) Construction operations should be staged in such a manner as to limit multiple construction loads at one time, (e.g. offset crossings sufficiently from each other, rollers should remain a sufficient distance behind spreaders to limit loads. A reasonable offset distance is 3m between loads).
 - (x) The contractor and all site supervisory personnel and equipment operators have to be formally briefed to ensure that they are fully cognizant of the associated restrictions, constraints, and risks associated with working adjacent to and over this pipeline. New personnel introduced after commencement of the project need to be formally orientated as to the significance and constraints associated with working over the feedermain.
- (b) Demolition and Excavation
 - (i) Use of pneumatic concrete breakers within 3 metres of the Feedermain is prohibited. Pavement shall be full depth sawcut and carefully removed. Use of hand held jackhammers for pavement removal will be allowed.
 - (ii) Where there is less than 1.6 metres of earth cover over the Feedermain and further excavation is required either adjacent to or over the feedermain, utilize only smooth edged excavation buckets, soft excavation or hand excavation techniques. Where there is less than 1 metre of cover over the Feedermain, carefully expose the Feedermain by hand excavation to delineate the location and depth of the main, and provide full time supervision of the excavation.

- (iii) Where there is less than 2.5 m of earth cover over the feeder mains, offset backhoe or excavation equipment from Feedermain, a minimum of 3 m from Feedermain centerline, to carry out excavation.
 - (iv) Equipment should not be allowed to operate while positioned directly over the Feedermain.
 - (v) Upon completion of subgrade excavation, expose the top 1/3 of the Feedermain by hand excavation, for a minimum length of 1 metre, to allow City to inspect condition of the main. Notify City a minimum of 24 hours in advance of exposure, and allow a minimum of 2 hours for City to complete inspection works. Backfill test excavation with bedding sand upon completion.
 - (vi) Upon completion of pipeline inspection, install rigid insulation over the pipeline.
- (c) Subgrade Construction
- (i) Subgrade compaction shall be prohibited within 2 metres of the feeder main. Subgrade compaction within 3 metres of the Feedermain shall be limited to non vibratory methods only.
 - (ii) Subgrade, sub-base and base course construction shall be kept in a rut free condition at all times. Construction equipment is prohibited from crossing pipelines if the grade is insufficient to support the equipment without rutting.
 - (iii) Subgrade conditions should be inspected by personnel with competent geotechnical experience (e.g. ability to adequately visually classify soils and competency of subgrade, subbase, and base course materials). In the event of encountering unsuitable subgrade materials above the feeder main, proposed design revisions shall be submitted to this office for review to obtain approval from the Water and Waste Department relative to any change in conditions.
 - (iv) Construction operations shall be staged to minimize the time period between excavation to subgrade and placement of granular subbase materials. Should bare subgrade be left overnight, measures shall be implemented to protect the subgrade against inadvertent travel over it and to minimize the impact of wet weather.
- (d) Subbase and Base Course Construction
- (i) Granular material, construction material, soil or other material shall not be stockpiled on the pipelines or within 5 metres of the pipe centerline.
 - (ii) Subbase or base course materials shall not be dumped directly on pipelines but shall be stockpiled outside limits noted in these recommendations and shall be carefully bladed in-place.
 - (iii) Subbase compaction within 3 metres of the centreline of the Feedermain 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.

E14.5 Method of Measurement and Payment

- E14.5.1 Payment for removal of pavements, placement of granular materials, subgrade compaction, placement of new concrete pavement, exposing the feeder main by hand excavation, backfilling, and installation of rigid insulation shall be a lump sum under the contract item "Construction over and Insulation of Feedermain" in Part A "Taylor Avenue Reconstruction – Waverley to Nathaniel Eastbound".

The work under this payment item shall include all excavation, compaction, sub-base and base course construction associated construction over and the insulation of the feeder main. The payment item also includes submittals, protection of feeder main during construction, Pre-work, Planning and General Execution as outlined above in E14.4.2.

Figure 1 – Combined-Load Diagram (Long Term Operating Conditions)

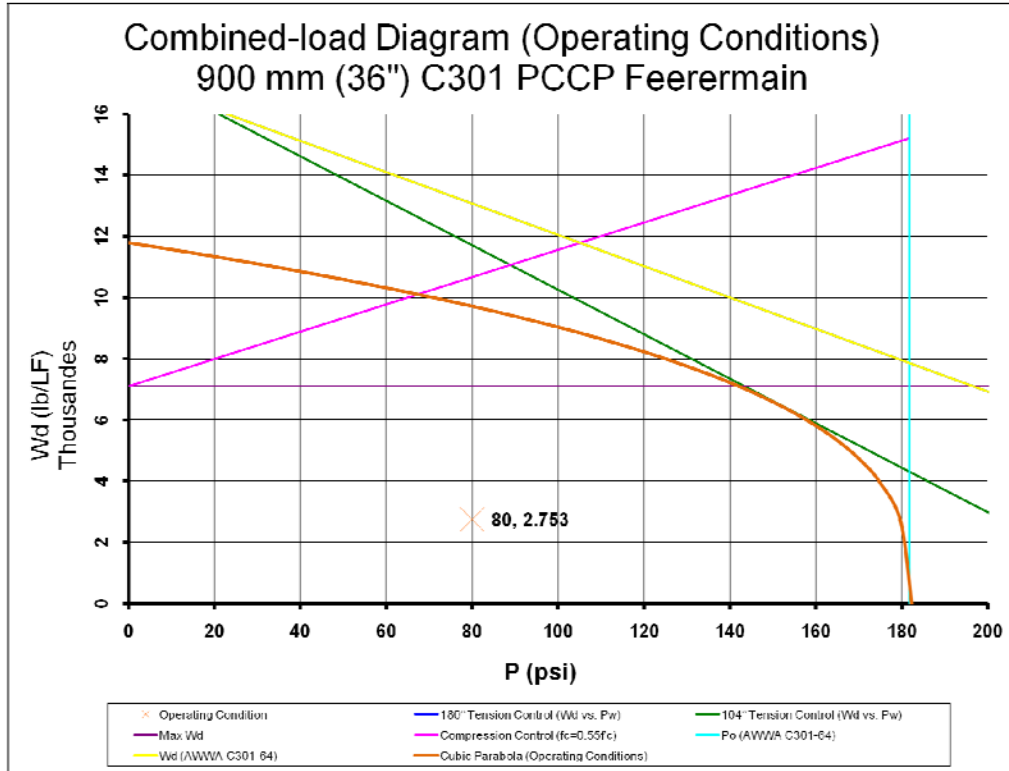
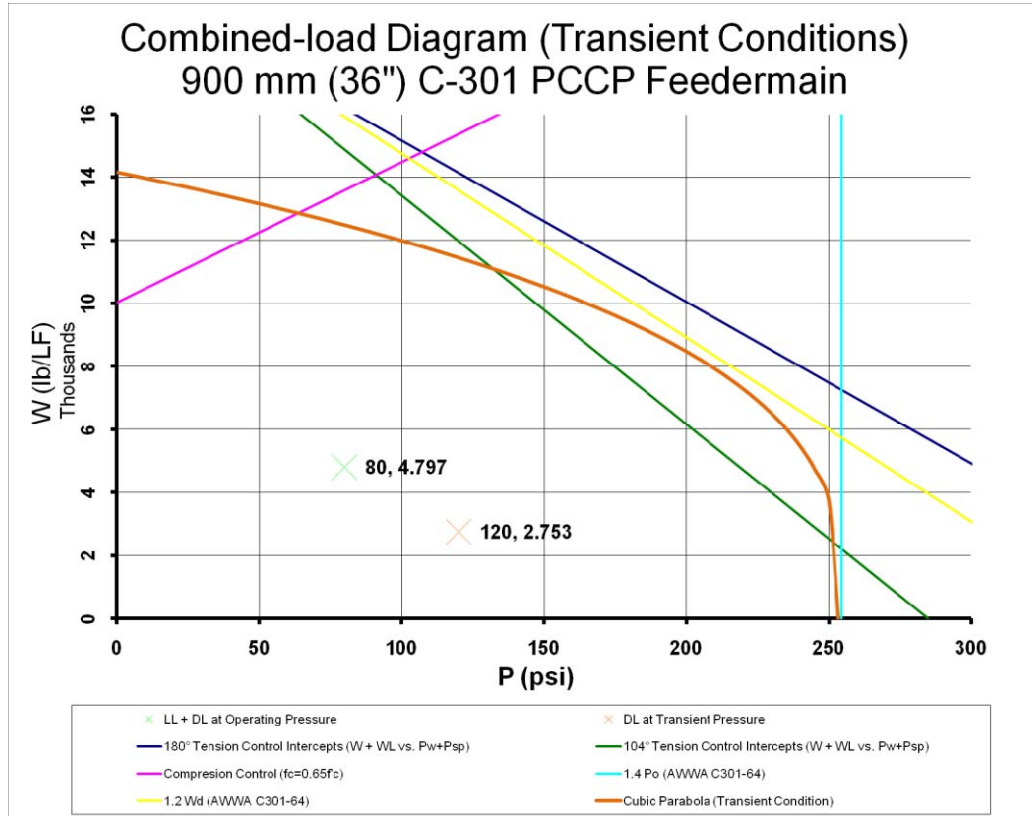


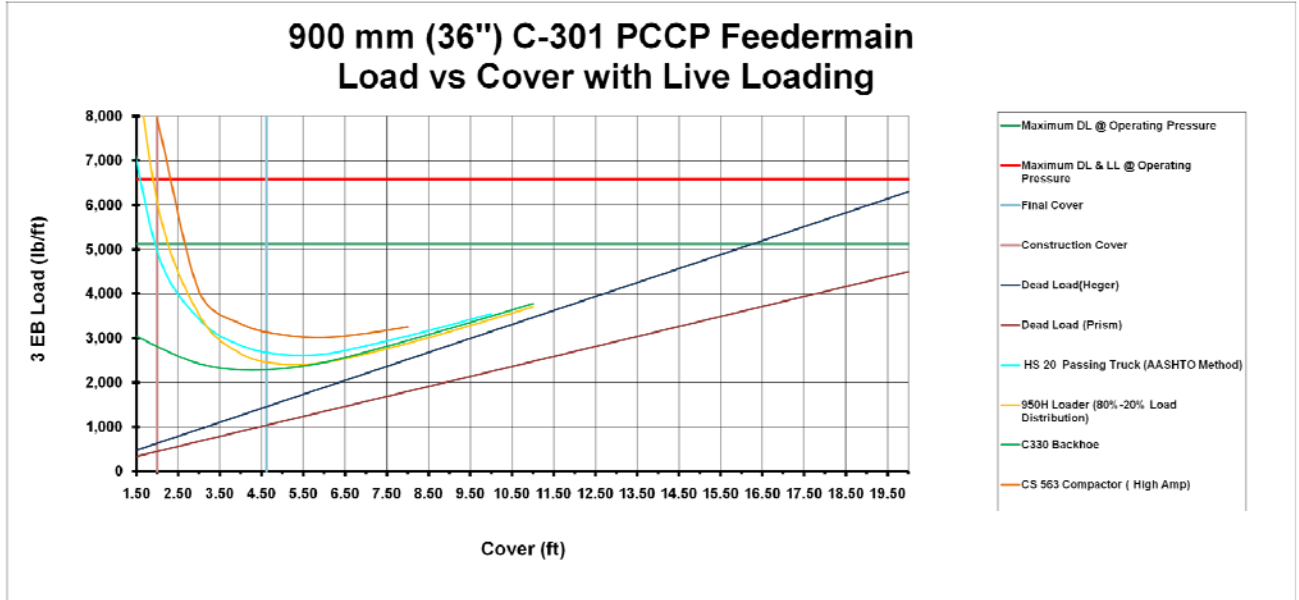
Figure 2 – Combined-Load Diagram (Long Term Transient Conditions)



During construction live loads imparted on the pipe are considerably higher than those imparted during long term operating conditions. **Figure 3** includes a summary of loading analysis for several typical types of construction equipment that may be utilized at this site. Maximum allowable load values depicted in **Figure 3** are derived using the slightly more conservative cubic parabola method and plotted against estimated 3 edge bearing loads, using a bedding factor of 1.9. Due to the shallow cover at the site several pieces of equipment approach or exceed the allowable maximum combined load under construction cover conditions. Due to the high potential for over excavation or rutting over the pipeline, equipment operation or crossing of the Feedermain should be prohibited until after completion of base construction.

This information is provided as a guideline for potential contractors to assess equipment requirements for construction. Actual equipment used must be verified in terms of the recommendations provided below.

Figure 3 - Combined Load vs. Cover (900 mm C-301 Feedermain)



Thermal Protection and Frost Loading

The proposed construction does not change the pipe cover significantly. Cover over the pipe does not meet City of Winnipeg design standards and exposure of the pipe to frost is anticipated. It is expected that the frost front will engage the pipeline; therefore, additional frost protection is warranted.

Additional frost protection shall be in the form of 100 mm thick rigid polystyrene insulation as per City of Winnipeg Standard Construction Specification Standard Detail SD-018. The insulation shall be placed with the top of the insulation flush with the sub grade (bottom of subbase material) at a width of 3.5m, centred over the feedermain.

Feedermain Operational Limitations

Due to the shallow depth of the feedermain during subgrade and base, we would recommend that the feedermain be taken out of service during excavation and placement of subbase material. In this context taken out of service can be inferred as depressurization only as opposed to depressurization and dewatering.

Temporary depressurization of the Midtown Feedermain for brief periods should not cause significant service disruption, provided other major regional infrastructure in the area is in service. Coordination with the WWD Department and sufficient advance notice of requirement for depressurization must be made.

In addition to shutting down of the feedermain, construction equipment cannot be allowed to cross the feedermain prior to placement of base material. Construction monitoring and controls noted herein should be adhered to in order to preclude a feedermain failure.