



601-2005 ADDENDUM 3

KENASTON UNDERPASS PROJECT

URGENT

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

ISSUED: November 22, 2005
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**THIS ADDENDUM SHALL BE INCORPORATED
INTO THE BID OPPORTUNITY AND SHALL
FORM A PART OF THE CONTRACT
DOCUMENTS**

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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 D – SUPPLEMENTAL CONDITIONS

Add: D26 Excavation Plan

The Contractor shall provide the Contract Administrator with a complete drawing showing the limits of the proposed excavation at least two (2) business days prior to the commencement of any Work on the Site, or within two (2) business days of a request, by the Contract Administrator for this drawing but in no event later than the date specified in GC:4.1 for the return of the executed Contract. This drawing shall include all elevations related to the excavation, limits of excavation, slopes, and location of shoring (as required). The drawing shall include a plan, elevation, and sections at the abutment and pier.

PART E – SPECIFICATIONS

Revise: E5.2.3 to read: Testing

All materials supplied under this Specification shall be subject to inspection and testing by the Contract Administrator by the Testing Laboratory designated by the Contract Administrator. All costs for material testing shall be covered by the City. Testing shall be undertaken by a CSA certified laboratory designated by the Contract Administrator. There shall be no charge to the City for any materials taken by the Contract Administrator for testing purposes.

All materials shall conform to CSA Standard CAN/CSA A23.1-2000.

All testing of materials shall conform to CSA Standard CAN/CSA A23.2-2000.

All materials shall be approved by the Contract Administrator at least seven (7) days before any construction is undertaken. If, in the opinion of the Contract Administrator, such materials, in whole or in part, do not conform to the specification detailed herein or are found to be defective in manufacture or have become damaged in transit, storage or handling operations, then such material shall be rejected by the Contract Administrator and replaced by the Contractor at his own expense.

Frequency of tests shall be in accordance with CSA A23.2-2000. A minimum of one slump and air test shall be conducted for each pour complete with one set of cylinders (3) for concrete strength compressive tests.

Revise: E7.3.2 Paragraph one to read:

The distance centreline to centreline of bearings shall not vary by more than 13 mm from the lengths shown on the plans, when measured 24 hours after the completion of the stress transfer.

Revise: E7.3.4 to read: Stressing

The Contractor shall submit to the Contract Administrator the following at least 7 days prior to the start of stressing operations.

- (a) Copies of the stressing sequence and of the strand elongation calculations as well as all data required for checking these calculations. Separate elongation calculations will be required for each significant variation in the modulus of elasticity of the strand.
- (b) A calibration graph for each jack to be used in the stressing operation.
- (c) The proposed method of tensioning the strands.
- (d) The proposed method of distressing and the distressing sequence.
- (e) The anchorage losses experienced by the Contractor under similar loading applications, and the proposed method of measuring the anchorage losses during the stressing operation.
- (f) A copy of the proposed "Record of Concrete Strength" form, and the "Record of Pre-Tensioning" to be used by the Contractor.
- (g) Camber calculations of girder at release.

The elongation calculations, distressing sequence and all other items having an effect upon the design and performance of the members shall be prepared by a Professional Engineer Registered in Manitoba and the required submissions shall be stamped by the Professional Engineer.

The submission of the stressing calculations to the Contract Administrator shall in no way relieve the Contractor of the Full responsibility for the success or failure of the stressing operations.

The initial force in each strand shall be as shown on the plans or as specified by the Contract Administrator. Prior to the stressing of the strands to the initial force, a 2.2 kN load shall be applied to each strand to eliminate slack and equalize stresses. For the first member stressed, the 2.2 kN load shall be applied to all strands and then rechecked before stressing any of the strands to the initial force.

A pre-calibrated pressure gauge, tensionmeter or load cell shall be used as a check on the elongation, the accuracy of which shall be verified by the Contractor whenever the Contract Administrator considers it necessary.

Before the stressing operation begins, the Contractor shall have filled out on the approved "Record of Pre-tensioning" form the calculated jack gauge reading, the required gross elongation (based on estimated anchorage losses), and the required net elongation of the each strand. During the stressing operation, the Contractor shall record the actual jack gauge reading, the measure gross elongation, the measured anchorage losses, and then calculate the actual net elongation for each strand.

The actual net elongation of a strand shall not vary from the required net elongation by more than 3.5 mm. The actual anchorage losses encountered shall be used to modify the gross elongation required, if the actual net elongations are consistently greater or less than the required net elongation.

At no time shall the actual jack pressure exceed the pressure corresponding the calculated gross elongation by the 5 percent. If the required gross elongation is not obtained by stressing to this maximum allowable jack pressure at one end of the member, it will be necessary to complete the stressing from the other end of the member.

A copy of the "Record of Pre-Tensioning" form shall be submitted to the Contract Administrator upon completion of the pre-tensioning of each member.

Tensioning shall be carried out in a manner such that the jack is coaxial with the tendon or strand. If the strands are tensioned individually, care shall be taken to ensure the unravelling of the strand does not take place.

For pre-tensioned members, the Contract Administrator has allowed for a stress loss due to an increase in temperature of the prestressing strands from the time of tensioning to the time of initial set of the concrete. In order to verify the design value used for this stress loss, the Contractor shall keep an accurate record of the temperature of the concrete in each member from the time of placing of the concrete until the completion of the steam curing of the first three (3) members fabricated and every third member thereafter. The results shall be plotted on the graph with the ambient air temperature of the same member.

Transfer of the pre-tensioning force shall be carried out by a method approved by the Contract Administrator. If the strands are to be cut, the distressing sequence shall be approved by the Contract Administrator.

All pre-tensioning strands shall be cut off flush with the end of the member and the exposed ends of the pre-tensioning strands and a 50 mm strip of adjacent concrete shall be cleaned and painted. Cleaning shall be by abrasive blast to remove all dirt and residue that is not firmly bonded to the metal or concrete surfaces. The surfaces shall be immediately coated with 25 mil coat of zinc-rich paint approved the Contract Administrator. The paint shall be thoroughly mixed at the time of application and shall be worked into any voids in the pre-tensioning strands.

Revise E7.3.7 to read: Testing of Concrete

Concrete compressive strength requirements will consist of a minimum strength, which must be attained before various loads, or stresses are applied to the concrete. With the exception of the concrete strengths required for:

- (a) Transfer of the pre-tensioning forces.
- (b) Subjecting a member to freezing temperatures.
- (c) Hauling and erecting a member.

All concrete shall attain the minimum strength as shown the Drawings and indicated in this Specification at the age of 28 days. The compressive strength of the concrete is to be determined in accordance with CSA Standard A23.2-2000.

The minimum number of test cylinders that a Contractor shall mold from each 10 cubic metres of concrete to be placed in a member is as follows:

- (a) Two (2) cylinder to be tested prior to the transfer of the pre-tensioning forces where applicable.
- (b) Three (3) cylinders for the 28 day strength.
- (c) Two (2) cylinder to be tested prior to the member being hauled to the site and erected, where applicable.

In the event that the strength of the concrete cylinder(s) tested prior to the transfer of the pre-tensioning forces is less than the strength required for transferring the pre-tensioning forces, the Contractor shall mould and test additional cylinders from each subsequent batch of concrete. The number of additional cylinders to be moulded and tested for the purpose of establishing the required concrete strength for the transfer of the pre-tensioning forces will be determined by the Contract Administrator.

All test cylinders shall be cured under the same conditions as the member until such time as the steam curing or moist curing of the member has been completed.

In addition to the moulding of the specified number of test cylinders the Contractor will be required to perform the following tests on every separate batch of concrete to be placed in a member:

- (a) slump
- (b) air
- (c) temperature

and to record the results of such tests. The Contractor shall be responsible for maintaining an up-to-date record of all test results on a "Record of Concrete Strength" form approved by the Contract Administrator. A separate "Record of Concrete Strength" form is to be prepared for each member and the strengths of the test cylinders as well as the pertinent data are to be listed in the same order as the batches of concrete were placed in the forms. A complete set of test results is to be submitted to the Contract Administrator within seven (7) days after the date that the 28 day cylinders from the last member were tested. All costs involved in performing and recording the previously mentioned tests will be the responsibility of the Contractor.

The Contract Administrator at his own discretion and at the Owner's expense may make any other tests deemed necessary on the concrete, on the components of the concrete as well as on any finished or partially finished member. The Contractor must allow the Contract Administrator unhindered access to the concrete, concrete components and members and to also assist the Contract Administrator in carrying out any test.

Revise E7.3.10 Paragraph three to read:

From the time of pre-tensioning to the time of initial set, the ambient air temperature of the member shall not vary by more than $\pm 3^{\circ}$ C. During steam curing the ambient air temperature shall rise at a rate not to exceed 20° C per hour to a maximum temperature of 70° C.

Revise E10.2.3 (d) to read:

The concrete compressive strength of the pre-cast concrete piles shall be 20 MPa minimum at time of stress transfer (distress), and shall be 35 MPa minimum at time of driving.

Add: E14.1.1 Limits of Excavation

The Contractor may, at his own discretion, increase the limits of the excavation shown in the Drawings but may not decrease the limits of excavation as shown in the Drawings. The Contractor shall include in the Lump Sum Unit Price for Excavation all costs associated with any alteration to the limits of excavation as shown on the Drawings, including, but limited to, shoring increased depth of excavation, slopes, machinery, labour, materials and all other items incidental to the acceptable completion of this item of the Work as described in this Specification and on the Drawings and/or the drawing submitted to the Contract Administrator by the Contractor in accordance with D26. The excavation shall strictly follow the guidelines of Workplace Health and Safety and shall not interfere with or damage CN property or works such as the fibre optic cables, GT property or works such as the fibre optic cable, the Kenaston Blvd. temporary detour, and shall maintain the clearance of three (3) metres from the Kenaston Blvd. temporary detour as shown on the Site Plan, retain the temporary traffic barrier configuration as shown on the Site Plan, or any other existing items or works.

Revise E16.3.10 to Read: Conduits and Related Materials

All conduits shall be 50 mm diameter in accordance with the Canadian Electrical Code.

All conduits, pull boxes and junction boxes for the lighting electrical embedded work shall be Rigid PVC (polyvinyl chloride) conforming to the requirement of CSA C22.2 No. 136.

All covers for boxes shall be stainless steel and fastened with stainless steel vandal-proof screws.

Flexible couplings shall be such as Cooper Crouse-Hinds XD series, sized to suit conduit. Four 50mm couplings for lighting conduit required.

Revise E 18.2.2 to read: Conduits

Conduit shall be as follows and shall include all fittings, couplings and expansion joints:

- i) Standard Conduit

Standard Conduit shall be rigid unplasticized PVC in accordance with CSA C22.2 No. 136 c/w appropriate approved fittings, couplings and expansion joints. Conduit sizes shall be 100 mm diameter

ii) Split Conduit

Split Conduit shall be rigid unplasticized PVC in accordance with CSA C22.2 No. 136. The belled ends of the conduit shall be removed and the conduit shall be cut in half longitudinally to facilitate live wire installation. Split couplers, stainless steel straps and PVC Cement shall be used to connect split conduits together.

Add: E18.2.4 Expansion Couplers

Expansion couplers shall be Cooper Crouse-Hinds XD Series (XD010). Expansion couplers shall be used at each expansion/fixing superstructure joint on all standard conduit signal communication ducts. The expansion couplers shall be installed as shown on the drawings and in accordance with the manufacturer's recommendations. All costs for material supply and labour installation shall be incidental to standard conduit. Fifty couplings for standard communication cable conduits required.

Elastomeric sleeves and PVC sleeves shall be used for all split conduit expansion and fixed joints as shown on the drawings. All costs for material supply and labour installation shall be incidental to split conduit.

Add: E18.2.5 PVC Cement

PVC Cement with Micro Balloons synthetic filler shall be used to bond the split conduits together. Micro Balloons additive, as available from Specialty Construction Ltd., shall be used to thicken the PVC Cement to a paste like consistency as to provide a watertight seal. The PVC Cement shall be used at all coupler locations. The split conduits shall be clamped with stainless steel straps for refastening.

DRAWINGS

Replace: Drawing P-3258-128-R0 with Drawing P-3258-128-R1

Drawing P-3258-142-R0 with Drawing P-3258-142-R1

Drawing P-3258-145-R0 with Drawing P-3258-145-R1

APPENDIX D RAILWAY REQUIREMENTS

Revise: D1.4.4 a) i) to read:

Before entering CN right-of-way, Contractors shall:

- Undertake in writing, before commencing any activities whatsoever on Site, to respect these safety guidelines.
- Submit to and have reviewed by CN the Contractor's Safety Program and those of Subcontractors before any activity begins at the Site.
- Authority to commence work will be authorized only once this step has been completed.