

**PART E**  
**SPECIFICATIONS**

## PART E - SPECIFICATIONS

### GENERAL

#### E1. APPLICABLE SPECIFICATIONS, STANDARD DETAILS AND DRAWINGS

- E1.1 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.1.1 *The City of Winnipeg Standard Construction Specifications* is available in Adobe Acrobat (.pdf) format on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division internet site at <http://www.winnipeg.ca/matmgt>.
- E1.1.2 Further to GC:2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.2 The following Drawings are applicable to the Work:

<i>Drawing Title</i>	<i>Drawing No.</i>	<i>File Name</i>	<i>Size</i>
Cover Sheet	P-3249-01	108-2004_Drawing_CT01-R0.pdf	A1
Construction Staging	P-3249-02	108-2004_Drawing_CT02-R0.pdf	A1
Plan/Profile Trinity Street to Station 1+60	P-3249-03	108-2004_Drawing_CT03-R0.pdf	A1
Plan/Profile Station 1+60 to Station 3+00	P-3249-04	108-2004_Drawing_CT04-R0.pdf	A1
Plan/Profile Station 3+00 to Station 4+20	P-3249-05	108-2004_Drawing_CT05-R0.pdf	A1
Plan/Profile Station 4+20 to Station 5+60	P-3249-06	108-2004_Drawing_CT06-R0.pdf	A1
Plan/Profile Station 5+60 to Reitta Street	P-3249-07	108-2004_Drawing_CT07-R0.pdf	A1

#### E2. SOILS INVESTIGATION REPORT

- E2.1 Further to GC:3.1, the Project Geotechnical Investigation Report is included following these Specifications.

#### E3. OFFICE FACILITIES

- E3.1 The Contractor shall supply office facilities meeting the following requirements:
- The field office shall be for the exclusive use of the Contract Administrator.
  - The building shall be conveniently located near the site of the Work.
  - The building shall have a minimum floor area of 20 square metres, height of 2.4 metres with two windows for cross ventilation and an entrance door with suitable lock.
  - The building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between 16-18 C. and 24-25 C.
  - The building shall be adequately lit with fluorescent light fixtures and have a minimum of three wall outlets.
  - The building shall be furnished with two desks, one drafting table, one table 3 m x 1.2 m, one stool, one four drawer legal size filing cabinet and a minimum of twelve (12) chairs.
  - A portable toilet shall be located near the field office building. The toilet shall have a locking door and be for the exclusive use of the Contract Administrator and other personnel from the City.

- (h) The field office building and the portable toilet shall be cleaned on a weekly basis immediately prior to each site meeting. The Contract Administrator may request additional cleaning when he deems necessary.

E3.2 The Contractor is advised that the property at the south-west corner of Logan Avenue and Arlington Street is owned by The City of Winnipeg. Therefore the Contractor may use this property as a site for the field office and material storage.

#### **E4. PROTECTION OF EXISTING TREES**

- E4.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the construction area:
- (a) The Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards within 2 metres of trees.
  - (b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400mm wood planks, or suitably protected as approved by the Contract Administrator.
  - (c) Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation.
  - (d) Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.
  - (e) Work on-site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.
- E4.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his designate.
- E4.3 No separate measurement or payment will be made for the protection of trees.
- E4.4 Elm trees cannot be trimmed between April 1 and July 31, inclusive.

#### **E5. TRAFFIC CONTROL**

- E5.1 Further to clauses 3.6 and 3.7 of CW 1130-R1:
- (a) Where directed, the Contractor shall construct and maintain temporary asphalt ramps to alleviate vertical pavement obstructions such as manholes and planing drop-offs to the satisfaction of the Contract Administrator. No measurement for payment will be made for this work.

#### **E6. TRAFFIC MANAGEMENT**

- E6.1 Further to clause 3.7 of CW 1130-R1:
- (a) Stage 1A
    - (i) Traffic will be maintained in the existing lanes except that the westbound gutter lane will be closed for construction of the temporary asphalt pavement.

- (b) Stage 1B
  - (i) One lane of traffic will be maintained westbound in the north gutter lane of Logan Avenue between Reitta Street and the rail crossing west of Trinity Street.
  - (ii) Right in/right out access to all intersecting streets and private approaches on the north side of Logan Avenue shall be maintained at all times.
  - (iii) Access to all residences and businesses on the south side of Logan Avenue shall be maintained from side-streets and Alexander Avenue. The Contractor shall not be allowed to stockpile material or store equipment on any side-street between Logan Avenue and Alexander Avenue, throughout the project limits and for one block beyond the project limits.
- (c) Stage 1C
  - (i) One lane of traffic will be maintained in the westbound centre lane and one lane of traffic will be maintained in the eastbound centre lane of Logan Avenue between Reitta Street and the rail crossing west of Trinity Street.
  - (ii) Access to Trinity Street, Tecumseh Street, Beacon Street and Reitta Street on the south side of Logan Avenue shall be maintained on the newly constructed pavement.
- (d) Stage 2
  - (i) Except for the first 5 Working Days of Stage 2, when traffic will be in the centre lanes of Logan Avenue, one lane of traffic per direction shall be maintained on Logan Avenue in the eastbound gutter and centre lane. The westbound centre lane shall remain closed to allow for construction of the westbound gutter lane.
  - (ii) Access to all intersecting streets and private approaches on the south side of Logan Avenue shall be maintained at all times.
  - (iii) Access to all residences and businesses on the north side of Logan Avenue shall be maintained from side-streets and Henry Avenue. The Contractor shall not be allowed to stockpile material or store equipment on any side-street between Logan Avenue and Henry Avenue.

E6.2 The Contractor shall maintain at all times one lane per direction on Arlington Street and over the Arlington Street Bridge. The only exception shall be during the bridge closures previously mentioned.

E6.3 The Contractor shall maintain turns to and from Arlington Street during Stage 1A, Stage 1C and Stage 2, as indicated on the staging plan.

E6.4 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.

## **E7. PEDESTRIAN SAFETY**

E7.1 During the project, on the north side of Logan Avenue from the rail crossing west of Trinity Street to Reitta Street, a temporary snow fence shall be erected and maintained between the temporary asphalt paving and the sidewalk. This fence shall be maintained for the duration of Stage 1 and through Stage 2 until the commencement of sidewalk construction. The Contractor shall also erect and maintain a temporary snow fence between the excavation and the sidewalk on the south side of Logan Avenue during Stage 1, until the commencement of sidewalk construction. No measurement for payment shall be made for this work.

## **E8. WATER USED BY CONTRACTOR**

E8.1 Further to clause 3.7 of CW 1120-R1, the Contractor shall pay for all costs associated with obtaining water in accordance with the Waterworks By-law. Sewer charges will not be assessed for water obtained from a hydrant.

## **E9. SURFACE RESTORATIONS**

E9.1 Further to clause 3.3 of CW 1130-R1, when Total Performance is not achieved in the year the Contract is commenced, the Contractor shall temporarily repair any Work commenced and not completed to the satisfaction of the Contract Administrator. The Contractor shall maintain the temporary repairs in a safe condition as determined by the Contract Administrator until permanent repairs are completed. The Contractor shall bear all costs associated with temporary repairs and their maintenance.

## **E10. SAWCUTTING**

E10.1 Further to CW 3240-R3, the Contractor will be required to sawcut the existing concrete pavement or sidewalk full depth as follows:

- (a) Transversally across Logan Avenue at the east reconstruction limit, across Arlington Street at the reconstruction limits north and south of Logan Avenue. Longitudinally on the west side of Arlington Street, 150 mm from the face of curb for construction of the right-turn cut-off.
- (b) Longitudinally on Logan Avenue for the full length of the project to separate Stage 1 Pavement Removal from Stage 2 Pavement Removal.
- (c) Longitudinally, as required, along the sidewalk on the north side of Logan Avenue to separate sidewalk required to remain, from sidewalk removed for the temporary asphalt paving.

E10.2 All costs in connection with the above sawcutting are incidental and shall be included in the Contract Unit Price for "Removal of Existing Pavements, i) Concrete" and "Miscellaneous Concrete Slab Removal, i) Sidewalk".

## **E11. CONCRETE PAVEMENT JOINTS**

E11.1 Further to CW 3310-R7, Portland Cement Concrete Pavement Works, Clause 9.3, all transverse and longitudinal concrete pavement joints shall be sand-cleaned using sand blasting equipment of a type approved by the Contract Administrator and capable of removing any dirt, loose material, form release agents, curing compound, cement residue or any foreign materials which might prevent bonding. The sandblasting nozzle shall be mounted on a mechanical frame on wheels and shall direct the sand spray towards the face of the pavement joint at an angle of 30 degrees to the face of the joint. Both faces of the pavement joint shall be cleaned in this manner.

E11.2 Immediately prior to the sealing operation, the joint shall be cleaned and blown dry with compressed air that is water and oil free with a minimum pressure of 0.6 MPa (90 Psi). The joint must be surface dry at the time of filling and the ambient temperature must be at least 4 degrees C. and rising.

E11.3 All costs associated with the sand cleaning shall be incidental to the applicable type of pavement construction.

## **E12. ADJUSTMENT OF EXISTING CATCHBASINS**

E12.1 Further to CW 3210-R5, Adjustment or Abandonment of Existing Pavement and Boulevard Structures and Appurtenances, the Contractor shall be required to adjust the existing catchbasin frames in the north boulevard of Logan Avenue, within the limits of the temporary asphalt pavement, to the elevation of the temporary asphalt pavement. The Contractor shall supply grated manhole covers for installation on the adjusted catchbasin frames. Upon removal of the temporary asphalt pavement and abandonment of the existing catchbasins, the Contractor shall deliver the grated manhole covers to a City of Winnipeg Yard as directed by the

Contract Administrator. There shall be no measurement or payment made for removal and delivery of the grated manhole covers. This work shall be considered incidental to the "Adjustment of Existing Catchbasins/Manholes.

**E13. EXCAVATION**

E13.1 Further to CW3110-R6, all excavation on this project shall be performed with backhoe type equipment.

**E14. ALUMINUM BALANCED BARRIER**

E14.1 Further to CW 3650-R4, Installation of Aluminum Balanced Barrier, the Contractor shall salvage and safely store, the existing Aluminum Balanced Barrier on Arlington Street for reinstallation following completion of the pavement and sidewalk reconstruction on Arlington Street north of Logan Avenue.

**E15. INSULATION IN SUBDRAIN TRENCHES AND CATCHBASIN EXCAVATIONS**

DESCRIPTION

E15.1 General

E15.1.1 This specification shall cover the placement of insulation in subdrain trenches and catchbasin excavations identified by the Contract Administrator. Insulation shall be required in the bottom of subdrain trenches and catchbasin excavations, which occur longitudinally along the north and south gutters of Logan Avenue, within project limits.

E15.2 Definitions

E15.2.1 Insulation in subdrain trenches and catchbasin excavations – insulation to be installed in the bottom of subdrain trenches and catchbasin excavations prior to installation of the subdrains or catchbasins to prevent frost penetration.

E15.3 Referenced Standard Construction Specifications

E15.3.1 CW 2030 – Excavation, Bedding and Backfill

E15.3.2 CW 2130 – Gravity Sewers

E15.3.3 CW 3120 – Installation of Subdrains

E15.4 Referenced Standard Details

E15.4.1 SD 024 Catchbasin with Curb and Gutter Inlet

E15.4.2 SD 025 Standard Catchbasin

E15.4.3 SD 245 Subdrain Installation Detail

MATERIALS

E15.5 Insulation

E15.5.1 Insulation shall be 50 mm thick Styrofoam HI-40 Brand extruded polystyrene sheets or approved equal.

E15.6 Sand

E15.6.1 Sand shall be supplied in accordance with Section 2.1 of CW 2030.

## CONSTRUCTION METHODS

### E15.7 Excavation

E15.7.1 Excavate for the catchbasins and subdrains in accordance with CW 2130 and CW 3120.

### E15.8 Installation of Insulation

E15.8.1 Place insulation one sheet in thickness on the bottom of the subdrain trench or catchbasin excavation. The insulation shall extend the full length of the subdrain trench and cover the entire bottom of the catchbasin excavation. Ensure that the bottom of the trenches are trimmed smooth to allow the insulation to lay flat on the bottom. Utilize sand bedding to correct any deformities in the base of the subdrain trench as required. Place the insulation in the catchbasin excavations on 50 mm of sand bedding, following which, place the sand bedding as specified in SD 024 or SD 025 for the catchbasin.

### E15.9 Installation of Subdrains

E15.9.1 Following installation of the insulation, install subdrains in accordance with CW 3120 and SD 245.

### E15.10 Installation of Catchbasins

E15.10.1 Following installation of the insulation, install catchbasins in accordance with CW 2130 and SD 024 and SD 025.

## MEASUREMENT AND PAYMENT

### E15.11 Insulation in Subdrain Trenches and Catchbasin Excavations

E15.11.1 Insulation in subdrain trenches and catchbasin excavations will be measured on an area basis and paid for at the Contract Unit Price per square metre for insulation in subdrain trenches and catchbasin excavations. The area to be paid for will be the total number of square metres of insulation installed in accordance with this specification, accepted and measured by the Contract Administrator.

## E16. CONSTRUCTION OF CONCRETE RETAINING CURB

### DESCRIPTION

#### E16.1 General

E16.1.1 This Specification covers the construction of concrete retaining curb in the window wells located at 925 Logan Avenue.

#### E16.2 Definitions

E16.2.1 Concrete retaining curb – concrete curb constructed in the concrete window wells at 925 Logan Avenue to contain the base materials required under the sidewalk, due to elevation changes in the sidewalk on Logan Avenue.

#### E16.3 Referenced Standard Construction Specifications

E16.3.1 CW 3235 - Renewal of Existing Miscellaneous Concrete Slabs

E16.3.2 CW 3310 - Portland Cement Concrete Pavement Works

## MATERIALS

### E16.4 Bonding Agents

- E16.4.1 Supply bonding agents for installing curb reinforcing steel into existing concrete foundation in accordance with ASTM C881. Bonding agents will be Type 1, Grade 3 Epoxy Resins.
- E16.4.2 Bonding agents other than epoxy resins must be capable of developing a minimum pull out resistance of 50 kN, 48 hours after installation.
- E16.4.3 Use only those materials listed as Approved Products for Surface Works.

### E16.5 Concrete Materials

- E16.5.1 Supply concrete materials in accordance with Sections 5 and 6 of CW 3310.

### E16.6 Reinforcing Steel

- E16.6.1 Supply curb reinforcing steel in accordance with Clause 5.4.4 of CW 3310.

## CONSTRUCTION METHODS

### E16.7 Sidewalk Removal

- E16.7.1 Remove the existing sidewalk in front of 925 Logan Avenue in accordance with Section 3.1 of CW 3235.

### E16.8 Concrete Retaining Curb Construction

- E16.8.1 Construct a 150 mm wide x 1100 mm long x 200 mm (average) high concrete retaining curb in the window wells at 925 Logan Avenue, as directed by the Contract Administrator.
- E16.8.2 Thoroughly clean and remove any loose or scaling concrete on the foundation wall in the window well where the new concrete will meet the existing concrete.
- E16.8.3 Drill and grout 10 M Reinforcing steel to a minimum depth of 100 mm into the foundation surrounding the window well at 300 mm o/c, or as directed by the Contract Administrator. Non-pneumatic drilling equipment shall be used for drilling reinforcing steel into the existing foundation.
- E16.8.4 Construct formwork for both the interior and exterior faces of the curb and apply an approved bonding agent to the existing concrete prior to placement of the new concrete.
- E16.8.5 Install a minimum of one 10 M longitudinal reinforcing bar in the retaining curb.
- E16.8.6 Place concrete in accordance with CW 3310.

## MEASUREMENT AND PAYMENT

### E16.9 Construction of Concrete Retaining Curb

- E16.9.1 Construction of Concrete Retaining Curb will be measured on a cubic metre basis. The number of cubic metres paid for shall be the total number of cubic metres of concrete retaining curb constructed, based on the width and thickness of concrete retaining curb specified, from the base of the window well to the height specified above the finished sidewalk elevation, including all; forming, installing reinforcing steel and supplying and placing concrete, in accordance with this Specification, as accepted and measured by the Contract Administrator.



## **E17. CONCRETE CURB**

- E17.1 Further to CW 3240 – R4 and CW 3310 – R8, the Contractor shall construct modified barrier curb on side-street and private approach turnouts in conjunction with monolithic curb and sidewalk. Slope faced bullnoses will be constructed on island bullnoses and monolithic median slab as directed by the Contract Administrator.
- E17.2 Further to CW 3240 – R4 and CW 3310 – R8, the Contractor shall not be allowed to drill into the new roadway slab to brace curb face forms for new monolithic curb and sidewalk.
- E17.3 All costs associated with construction of slope faced bullnoses at locations of “Construction of Monolithic Concrete Median Slab”, or construction of modified barrier curb at locations of “Construction of Monolithic Concrete Curb and Sidewalk” are considered incidental to the “Construction of Monolithic Concrete Median Slab” and “Construction of Monolithic Concrete Curb and Sidewalk” and no additional payment shall be made.

## **E18. EXISTING STREET CAR TRACK BEDDING**

### DESCRIPTION

#### E18.1 General

- E18.1.1 This Specification covers the removal of existing street car track bedding on Logan Avenue within project limits.

#### E18.2 Definitions

- E18.2.1 Street Car Track Bedding – The concrete bedding, including wooden ties, for the two sets of street car tracks previously located in the centre lanes of Logan Avenue. The concrete bedding is estimated to be approximately 2.7 metres wide by 0.6 metres thick.

#### E18.3 Referenced Standard Construction Specifications

- E18.3.1 CW 1130 – Work Site Requirements

### CONSTRUCTION METHODS

#### E18.4 Removal of Existing Street Car Track Bedding

- E18.4.1 Remove the existing concrete bedding by demolishing, loading, hauling and disposing of the existing concrete bedding, including ties and any other materials encountered from the site.
- E18.4.2 Due to the requirement for staged pavement construction take appropriate measures such as sawcutting or pneumatic breaking, as approved by the Contract Administrator, to ensure that sections of bedding under adjacent traffic lanes required to remain in service are not removed, until use of the adjacent lane is no longer required.
- E18.4.3 Dispose of the removed bedding in accordance with Section 3.4 of CW 1130.

## **E18.5 MEASUREMENT AND PAYMENT**

#### E18.6 Removal of Existing Street Car Track Bedding

- E18.6.1 Removal of Existing Street Car Track Bedding shall be measured on a cubic metre basis. The number of cubic metres paid for shall be the total number of cubic metres of street car track bedding removed, in accordance with this Specification, as accepted and measured by the Contract Administrator.