Corporate Finance Department
Materials Management Division

133-2010 ADDENDUM 2

JUBILEE AVENUE OVERPASS REHABILITATION AND ASSOCIATED ROADWORKS

ISSUED: April 12, 2010
BY: Barry Biswanger
TELEPHONE NO. (204) 477-5381

URGENT

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

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: 133-2010 Bid Submission with 133-2010 Addendum 2 - Bid Submission. The following is a summary of changes incorporated in the replacement Bid Submission:

Replace: Form B: Prices with Form B (R1): Prices attached, both PDF version and excel version.

Replace: Form G2: Irrevocable Standyby Letter of Credit and Undertaking (Bid Security) with Form G2 (R1): Irrevocable Standby Letter of Credit and Undertaking (Bid Security)

PART D – SUPPLEMENTAL CONDITIONS

Revise:	D14.4 to read:	The City intends to award this Contract by April 29, 2010.
Revise	D18.1 to read:	The Contractor shall achieve Substantial Performance by September 12, 2010.
Revise	D19.1 to read:	The Contractor shall achieve Total Performance by September 24, 2010.
Revise	D20.1 to read:	If the Contractor fails to achieve Substantial Performance in accordance with the Contract by the day fixed herein for Substantial Performance, the Contractor shall pay the City Three Thousand dollars ($3,000.00) per Calendar Day for each and every Calendar Day following the day fixed herein for Substantial Performance during which such failure continues.

PART E – SPECIFICATIONS

Revise:	E8.1.1 to read:	Bridge Construction – The entire Jubilee Avenue Overpass, including approach ramps, will be closed to vehicular traffic during the rehabilitation of the overpass structure by City of Winnipeg Traffic Services Department. Riverside Drive will also be closed to through traffic for the duration of the overpass closure by City of Winnipeg Traffic Services Department.

Revise: E12.3.3(c) to read: Splice bars and clamp bars with cap screws broken into them due to the Contractor's removal operation shall be considered to be in good condition. The Contractor has the option to drill out and re-tap the holes or replace with new material at his expense.

Revise: E12.3.3(d) to read: Salvaged barrier posts deemed to be in good condition after they are removed from the ground and cleaned shall be used for reinstallation.

Revise: E12.3.3(e) to read: Should there not be sufficient salvaged material in good condition available on site, the Contractor shall be responsible for picking up the material from the City Bridge Yard located at 849 Ravelston Avenue. Contact Mike Terleski, C.E.T. at 794-8510 to arrange a suitable time and date.

Revise: E12.4.1(b) to read: The layout and location of the barrier posts, railing and rail splices shall be recorded by the Contractor for locations requiring reinstallation. Generally, the barrier rail splice location for top and bottom rails shall be staggered at alternate post locations, 300 mm past the barrier post in the direction of adjacent traffic. If the existing installations do not conform to this layout, The Contract Administrator will provide a revise layout prior to reinstallation. Additional rails, posts, splice bars, and clamp bars required due to the revised layout will be supplied by the City if sufficient salvaged material is not available on site.

Revise: E13.2.2(a) to read: Cement shall be Type HS or HSb, high-sulfate-resistant, hydraulic cement, conforming to the requirements of CSA Standard A23.1-04.

Revise: E13.2.4(b) to read: (b) Coarse Aggregate

(i) The maximum nominal size of coarse aggregate shall be sized to suit the Contractor's mix design. Gradation shall be in accordance with CSA A23.1-04, Table 11, Group 1. The Coarse aggregate shall satisfy the Standard Requirements specified in CSA A23.1, Table 12, "Concrete Exposed to Freezing and Thawing".

(ii) Coarse aggregate shall consist of crushed stone or gravel or a combination thereof, having hard, strong, durable particles free from elongation, dust, shale, earth, vegetable matter or other injurious substances. Coarse aggregate shall be clean and free from alkali, organic, or other deleterious matter, and shall have an absorption not exceeding 2.25%.

(iii) The aggregate retained on the 5 mm sieve shall consist of clean, hard, tough, durable, angular particles with a rough surface texture, and shall be free from organic material, adherent coatings of clay, clay balls, and excess of thin particles or any other extraneous material.

(iv) Coarse aggregate when tested for abrasion in accordance with ASTM C131 shall not have a loss greater than 30%.

(v) Tests of the coarse aggregate shall not exceed the limits for standard for requirement prescribed in CSA A23.1-04, Table 12, for concrete exposed to freezing and thawing.

Revise: E13.2.4(c) to read: (c) Fine Aggregate

(i) Fine aggregate shall meet the grading requirements of CSA A23.1-04, Table 10, Gradation FA1.

(ii) Fine aggregate shall consist of sand, stone, screenings, other inert materials with similar characteristics or a combination thereof, having clean, hard, strong, durable, uncoated grains free form injurious amounts of dust, lumps, shale, alkali, organic matter, loam, or other deleterious substances.

(iii) Test of the fine aggregate shall not exceed the limits for standard requirements prescribed in CSA A23.1-04, Table 12.

Revise: E13.2.5(c) to read: (c) Fly Ash

(iv) Fly ash shall be Type CI or Type F and shall not exceed 25% by mass of cement.

Revise: E13.2.6(e) to read: An aminocarboxylate based migrating corrosion inhibititor admixture shall be used in concrete that will be used as a repair material that will either be in contact with or adjacent to reinforcing steel in existing concrete. Proposed admixtures shall be subject to the approval of the Contract Administrator.

Revise: E13.2.10 to read: Anchor bolts, nuts, and washers shall be in accordance with CSA Standard G40.21 Grade 300W, and shall be hot-dip galvanized full length in accordance with CSA G164 for a minimum net retention of 610 g/m2, for the entire length of the anchor bolts. The threaded portion of the anchor bolts shall be 300 mm long. Anchor bolt supply and installation will be incidental to construction of concrete pile foundation and no separate payment will be made.

Revise: E13.3.1(c) to read: The pole mount sign structure and all related components shall be returned to the City of Winnipeg Public Works Bridge Yard at 849 Ravelson Ave. W., Contact Mr. Mike Terleski, C.E.T. Ph 794-8510, a minimum of 24 hours prior to delivery of material. Contractor to unload and stockpile material in yard.

Revise: E13.3.17(b) to read: The Contractor shall disassemble the horizontal arm from the vertical member of the structure and replace the stainless steel bolts with galvanized A325 steel bolts.

Revise: E13.3.17(c) to read: Once the new pile foundation has been constructed and has gained sufficient strength, the structure shall be reinstalled on the new foundation at the location indicated on the Drawings. The horizontal arm of the structure shall be reconnected to the vertical member utilizing ASTM A325 galvanized bolts. ASTM A325 bolts to be tightened in accordance with CSA S6-06.

Revise: E13.3.18(a) to read: All workmanship and all materials furnished and supplied under this Specification are subject to close and systematic inspection and testing by the Contract Administrator, including all operations from the selection and projection of materials, through to final acceptance of the Work. The Contractor shall be wholly responsible for the control of all operations incidental thereto notwithstanding any inspection or approval that may have been previously given. The Contract Administrator reserves the right to reject any materials or Works that are not in accordance with the requirements of this Specification.

Revise: E14.5.1(b) to read: Relocation of Precast Frangible Planters

(i) Relocation of 1240 mm x 1240 mm x 900 mm Planter

(ii) Relocation of 1240 mm x 1240 mm x 1350 mm Planter

(iii) Relocation of 1800 mm x 1800 mm x 900 mm Planter

Revise: E17.2(b)(iii) to read: Removal of all existing bearings at the six (6) pier columns;

Revise: E17.2(c) to read: Removing concrete and other items with appropriate equipment satisfactory to the Contract Administrator. No demolition products shall find their way into the watercourse. No demolition products shall find their way onto the sidewalk or roadway below the overpass. Provide saw cuts as shown on the Drawings and where otherwise necessary to limit the extent of demolition. Repair any over demolition and reinforcing damage to the satisfaction of the Contract Administrator. Penetrating oil shall be applied to all components three (3) days prior to removal of aluminum Bridge traffic barrier components.

Revise: E17.3(b)(v) to read: Description of the measures that will be implemented to meet the requirements of D25 – Environmental Protection Plan.

Revise: E17.6.1(c) to read: The Contractor shall provide flagmen, guards, barricades, railings, and necessary warning lights and whenever necessary, warning signs and lights at the excavations, temporary sidewalks, removals, and/or others construction, to secure the safety of workmen and the public. The safety precautions shall comply with all Provincial Statutes applicable to the Work. The Contractor shall provide all other protective measures as may be required by any law in force in Manitoba and the Canada Labour Code.

Revise: E17.6.1(d) to read: Traffic and pedestrian control shall conform to E8 "Traffic Management" and E9 "Pedestrian Protection/Accommodation."

Revise: E20.3.3 to read: Steel Plates and Bars

(a) Steel plates and bars where shown on the Drawings shall conform to the requirements of CSA Specification G40.21-98 Grade 300W and shall be galvanized after fabrication in accordance with CSA G164-M92 for a minimum retention of 610 g/m2.

Revise: E20.3.4 to read: Bolts, Fasteners, Washers and Nuts

(a) Bolts, nuts and washers requires for the bearing installation shall conform to the requirements of ASTM Specification A325. Nuts shall conform to the requirement of ASTM Specification A563, Grade C. Washers shall conform to the requirements of ASTM Specification F436, Type 1. Bolts, fasteners, washers and nuts shall be hot-dip galvanized in accordance with CSA Standard G164-M92 to a minimum retention of 610 g/m2

Revise: E20.3.5(a)(i) to read: Manual shielded metal-arc welding (SMAW):

(i) All electrodes for the manual, shielded metal-arc welding process shall conform to CSA W48. 1-M1991, CSA W48.3-93 classification E480XX or imperial equivalent.

Revise: E20.3.5(a)(ii) to read: Gas, Metal Arc Welding (GMAW):

(i) All electrodes used in the gas, metal arc-welding process shall be composite electrodes conforming to CSA W48.4-95 classification ER480S-X or imperial equivalent.

Revise: E20.5.1 to read: General

(a) All welding within 3 m of any bearing shall be specifically prohibited unless written approval is obtained from the Bearing Design Engineer. Such approval will require specific measures to protect the bearings where so required by the Bearing Design Engineer.

Revise: E20.5.3(f) to read: The top jacket plate shall be bedded by the Contractor on non-shrink grout. It is of extreme importance that the final bedding be free from high or hard spots, voids, etc. The top jacket plate shall be set in position using a flowable non-shrink grout unless otherwise indicated on the Shop Drawings. Installation requirements shall be written on the Shop Drawings. Bearings are to be installed as per the manufacturer's recommendations.

Revise: E20.5.3(g) to read: Concrete areas to be in contact with the grout shall be cleaned of all loose or foreign material that would in any way prevent bond to the concrete surfaces and shall be flushed with water and allowed to dry to a surface dry condition immediately prior to placing the grout.

Revise: E20.5.3(h) to read: The grout shall completely fill the column jacket under the bearing plates.

Revise: E20.5.3(i) to read: No load shall be allowed on grout that has been in place less than 72 hours, unless otherwise permitted by the Contract Administrator.

Revise: E20.5.3(j) to read: All improperly cured or otherwise defective grout shall be removed and replaced by the Contractor at his or her expense.

Revise: E21.4.4 to read: Humectant

(a) Humectant shall be Galvanode Humectant activator solution or equivalent as approved by the Contract Administrator. Humectant shall be a 300 g/L aqueous lithium bromide solution (LiBr) containing 10 ml/L surfactant, or equivalent as approved by the Contract Administrator.

Revise: E21.4.5(c) to read: The concrete repair mortar shall be a shrinkage compensated, fibre reinforced product suitable for application by hand trowelling, or spraying, or form and pour, or pump. The mortar product shall be as approved by the Contract Administrator. Mix in accordance with Manufacturer's Specifications, including additional of aggregate for deep repairs.

Revise: E21.6.6(a) to read: Coatings applied to the zinc and concrete surface must be compatible with the surface applied zinc sheet anode.

Revise: E21.6.7(a) to read: Remove all loose and deteriorate concrete to sound concrete from the surface of the concrete.

Revise: Table E23.1 to read:

TABLE E23.1
REQUIREMENTS FOR HARDENED CONCRETE

Type of Concrete	Location	Nominal Compressive Strength [MPa]	Class of Exposure	Air Content Category	Max Aggregate Size	Special Requirements	Post Residual Cracking Index
Type 1	**Slope Paving Repairs**	**35 @ 28 Days**	**C-1**	**1**	**20 mm**	**-**	**-**
Type 2	**Deck Slab, Traffic Barriers, Median, Approach Slabs, and Reinforced 250 Thick Concrete Pavement.**	**35 @ 28 Days**	**C-1**	**1**	**20 mm**	**Corrosion Inhibitor, Synthetic Fibres**	**0.15**

Revise: E23.4.7(c) to read: Should the Contractor choose to include fly ash in the concrete mix design, the fly ash shall be Class CI or F and the substitution shall not exceed 30% by mass of cement.

Revise: E23.4.10 to read: Synthetic Fibres

(a) The synthetic fibres shall consist of 100% virgin polypropylene or 100 % virgin polyolefin as accepted by the Contract Administrator. The dosage shall be designed by the Contractor to meet the requirements for post-cracking residual strength index (Ri) and fibre dispersion in accordance to the CHBDC CSA-S6-06, Fibre-Reinforced Structures, Clause 16.6 except the post-cracking residual strength index (Ri) shall be determined in accordance with ASTM C1609.

Revise: E23.4.29(b) to read: The dowels shall be galvanized in accordance with CSA Standard G164-M92, to a minimum net retention of 610 g/m2.

Revise: E23.4.31 to read: Benchmark Plugs

(a) Benchmark plugs shall be supplied by the City. Installation by the Contractor shall be considered incidental to these Works. Installation locations shall be determined by the Contract Administrator.

Revise: E23.6.2(f) to read: Form accessories to be partially or wholly embedded in the concrete, such as ties and hangers, shall be commercially manufactured types. The portion remaining within the concrete shall leave no metal within 50 mm of the surface when the concrete is exposed to view. Spreader cones on ties shall not exceed 30 mm in diameter. All fittings for metal ties shall be of such design that, upon their removal, the cavities which are left will be of the smallest possible size. Torch cutting of steel hangers and ties will not be permitted. Formwork hangers for exterior surfaces of decks and curbs shall be an acceptable break-back type with surface cone, or removable threaded type. Cavities shall be filled with cement mortar and the surface left sound, smooth, even and uniform in colour.

Revise: E23.6.6(c) to read: The Contractor shall coordinate the installation of aluminum traffic bridge posts and rails as described in the E28, “Aluminum Traffic Barrier Rail Posts”.

Revise: E24.1(a)(iii) to read: Galvanized steel reinforcing bars for approach slabs and for traffic barriers and median on the approach slab; and

Revise: E24.1(a)(iv) to read: (iv) Galvanized steel reinforcing bars for sleeper slab (at expansion joints in concrete pavements) for (250 mm thick) reinforced concrete pavements, for the traffic barriers on the reinforced concrete pavement along the MSE wall, and for the overhead sign structure pile foundation.

Revise: E24.3.2 to read: Galvanized Reinforcing Steel

(a) Shop Applied

(i) The galvanizing shall be shop applied and strictly in accordance with ASTM A767M-05 to a retention equal to a Class II level (610 gm/rn2), except as otherwise specified herein.

(ii) Preclean reinforcing steel using acceptable methods to produce an acceptable surface for quality hot-dip galvanizing.

(iii) Handle all articles to be galvanized in such a manner as to avoid any mechanical damage and to minimize distortion.

(iv) The surface finish shall be continuous, adherent, as smooth and evenly distributed as possible, and free from any defect detrimental to the stated end use of the coated article.

(v) Coating adhesion shall withstand normal handling consistent with the nature and thickness of the coating and normal use of the article.

(vi) Sheared ends of bars shall be coated with a zinc-rich formulation before rusting occurs and before shipment to the job site.

Revise: E24.3.5(e) to read: Bar accessories are not included in the Drawings and shall include bar chairs, spacers, clips, wire ties, wire (16 gauge minimum), or other similar devices and are to be acceptable to the Contract Administrator. Bar accessories for GFRP, Galvanized, and stainless steel reinforcing bars shall be of the types suitable for each type of reinforcement and acceptable to the Contract Administrator. The supplying and installation of bar accessories shall be deemed to be incidental to the supplying and placing of reinforcing steel.

Add: E24.3.6: Galvanizing Touch-Up and Field-Applied Galvanizing

(a) Field-applied galvanizing, to touch-up damaged hot-dip galvanizing, metalizing, or filed welds, shall be done with self-fluxing, low temperature, zinc-based alloy

rods in accordance with ASTM A780-01 (2006) for "Repair of Damaged Hot-Dip Galvanized Coatings."

(b) Approved products are:

(i) Galvalloy as manufactured by Metalloy Products Company, P.O. Box No. 3093, Terminal Annex, Los Angeles, California; and

(ii) Welco Gal-Viz Galvanizing Alloy, as manufactured by Thermocote Welco, Highway 161 York Road, Kings Mountain, north Carolina. Locally, both products are available from Welder Supplies Limited, 25 McPhillips Street, Winnipeg.

Revise: E24.4.1(a) to read: Galvanized reinforcement shall be bent to the proper shape in a plant that has suitable devices for bending as recommended in the Reinforcing Steel Institute of Canada (RSIC) Manual at Standard Practice. Heating shall not be used as an aid in bending.

Revise: E24.4.2(b) to read: (b) Preparation of Galvanized Reinforcing Steel

(i) The Fabricator shall consult with the Contract Administrator and hot-dip Galvanizer regarding potential handling problems during the galvanizing process which may require modification of design prior to proceeding with fabrication.

(ii) Remove all welding slag, splatter, anti-splatter compounds, and burrs prior to delivery for galvanizing.

(iii) Avoid unsuitable marking paints. Consult with the galvanizer about removal of grease, oil, paint, and other deleterious material prior to fabrication.

(iv) Remove by blast cleaning or other methods surface contaminants and coatings which would not be removable by the normal chemical cleaning process in the galvanizing operation.

(v) Hooks or bends should be smooth and not sharp. When bars are bent cold prior to galvanizing, they shall be fabricated to a bend diameter equal to or greater than indicated in the following table:

Table E24.1
Minimum Finished Bend Diameters

Bar No.	Bend Diameters (mm)
10M	60
15M	90
20M	100
25M	150
30M	200
35M	250

Revise: E24.4.3(b) to read: (b) Placing Galvanized Reinforcement

(i) Bars shall be tied at all intersections, except where spacing is less than 250 mm in each direction, when alternate intersections shall be tied. Welding or tack welding or reinforcing steel will not be allowed. Unless otherwise shown on the Drawings, the minimum distance between bars shall be 40 mm.

Revise: E24.4.4(a) to read: (a) Galvanized Reinforcement

(i) For lapping Galvanized bars at the joints and intersection, an ample supply of annealed wire at least 1.5 mm in diameter shall be provided. Proper cutting pliers shall be used and the bending and typing of the wires done as neatly as possible. Twisted ends of the tie wire shall be bent away from forms and surfaces so that they do not project into the concrete cover over the reinforcement.

Revise: E24.4.5(b) to read: (b) Galvanized Reinforcement

(i) For lapped splices, the bars shall be placed in contact and wired together in such a manner as to maintain a clearance of not less than the required minimum clear distance to other bars, and the required minimum distance to the surface of the concrete. In general, suitable lap lengths shall be supplied as detailed on the Drawings. If this information is not detailed on the Drawings, a minimum of 35 bar diameters lap length shall be provided.

Add: E24.4.6: Field Applied touch-Up Galvanizing

(a) Any areas of damaged galvanizing reinforcing steel shall receive field-applied touch-up galvanizing, in accordance with ASTM A780-01 (2006)

Revise: E24.5.2 to read: Reinforcing Steel, Galvanized Reinforcing Steel, and Stainless Steel Reinforcing Bars

(a) Supplying and Placing Reinforcing Steel Bars will be measured on a mass basis. The mass to be paid for shall be the total number of kilograms of reinforcing steel supplied and placed in accordance with this Specification, as accepted by the Contract Administrator, as computed from the reviewed shop drawings, excluding the mass of bar accessories.

(b) Supplying and Placing Reinforcing Steel shall be paid for at the Contract Unit Price per kilogram for the "Items of Work" listed here below, measured as specified herein, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

(i) Items of Work:

(a) Galvanized Reinforcing Steel

(b) Stainless Steel Reinforcing Bars

Revise: E26.2.1 to read: Precast Concrete Panels and Cast-In-Place Cap

(a) Cast from 35 MPa (minimum) concrete (CSA A23.1 exposure Class C-1)

(b) Reinforced with galvanized steel reinforcing in accordance with E24 “Concrete Reinforcement”.

Revise: E27.3(b) to read: Anchor bolts for aluminum balanced traffic barrier rail end sections are to be supplied and installed in accordance with Section E28, “Aluminum Traffic Barrier Rail Posts”, incidental to this Specification.

Revise: E29.2.1(c) to read: Expansion Joint Armour: Hot Rolled L-Shape – CSA G20.21 Grade 300W.

Revise: E29.3.1(d) to read: Ensure that exposed welds are continuous for the length of each joint.

Revise: E29.3.1(c) to read: Hot-dip galvanize in accordance with CSA-G164 to retention of 610 grams per square meter.

Revise: E30 to read: **E30 Supply and Install Detectable Warning Surface Tiles**

E30.1 Description

(a) This specification covers the supply and installation of detectable warning surface tiles in sidewalk ramps and multi-use path ramps.

E30.2 Specifications and Drawings

(a) Referenced Standard Construction Specifications and Standard Details

(i) CW 3235 - Renewal of Existing Miscellaneous Concrete Slabs

(ii) CW 3240 - Renewal of Existing Curbs

(iii) CW 3310 - Portland Cement Concrete Pavement Works

(iv) CW 3325 - Portland Cement Concrete Sidewalk

(v) SD-229C - Curb Ramp for Concrete Pavement

(vi) SD-229D - Curb Ramp for Asphalt Overlay

(b) Attached; SDE Drawings and Installation Manual

(i) SDE-229A - Curb Ramp Layout for Intersections

(ii) SDE-229AA - Detectable Warning Surface in Curb Ramps for Intersections

(iii) SDE-229AB - Curb Ramp Layout for Offset Intersections

(iv) SDE-229BB - Detectable Warning Surface in Curb Ramps for Medians

(v) SDE-229E - Curb Ramp Depressed Curb

(vi) Manufacturer's Installation Manual – Armor-Tile Cast in Place Inline Dome Detectable/Tactile Warning Surface Tile.

E30.3 Materials

(a) Acceptable Detectable Warning Surface Tile product is:

(i) 2'x 4' (610 x 1220mm) Armor-Tile Cast in Place (yellow).

Available from:

Engineered Plastics Inc.
1400 Cornwall Road Unit 6
Oakville, Ontario L6J 7W5

Attention: Manny Burgio
Ph: 800-682-2525
Fax: 800-769-4463

or

Alsip's Building Products
1 Cole Avenue
Winnipeg, Manitoba

Attention: Jason Alsip
Ph. 204-667-3330

(b) Detectable warning surface tiles shall be Highway Yellow (USA) or Safety Yellow (Canada).

(c) Detectable warning surface tiles shall be cast in place type.

(d) Truncated domes on detectable warning surface tiles shall be in accordance with ADA Accessibility Guidelines (ADAAG).

E30.4 Construction Methods

E30.4.1 General

(a) Construct curb ramps, sidewalk ramps and multi-use path in accordance with referenced Standard Construction Specifications, Standard Details, and SDE drawings (attached).

(b) Construct the lip of the depressed curb in accordance with SDE – 229E.

(c) Construct sidewalk ramp grades in accordance with SD-229C and SD-229D.

(d) Install the detectable warning surface tile in accordance with the amended Manufacturer's Installation Manual (attached). Drill additional 6mm air vent holes in ribs under the tile as required and use vibration to help seat the tile, to facilitate the installation process.

(e) Trim the corner of the tile at radii in accordance with SDE-229A, SDE-229AA and SDE-228AB

(f) Install and orient the detectable warning surface tiles as shown on the referenced drawings or as directed by the Contract Administrator.

E30.4.2 Medians and Refuge Islands:

(a) Where the distance from back of curb to back of curb is 1.32m or greater, install one detectable warning surface tile 50mm from the back of each curb.

(b) Where the distance from back of curb to back of curb is less than 1.32m, leaving 50mm between the back of curb and the tile, cut the tile(s) to fill the remaining area between the curbs.

E30.4.3 Multi-use Paths

(a) Construct a curb ramp with a depressed curb to the full width of the multi-use path in accordance with SDE-229E.

(b) Construct a concrete ramp the width of the multi-use path and a minimum of 1.50m deep from back of curb in accordance with SD-229C and SD-229D.

(c) Install two (2) tiles in each concrete ramp, one (1) on each side for each direction. Place the short edge of each tile 150mm from the edge of the concrete ramp, with both tiles in line with each other transversely across the concrete ramp. The tile(s) nearest the curb must be 50mm from back of curb similar to tile placement in SDE-229A.

(d) Saw cut the middle of the concrete slab, perpendicular to the curb and to a depth of D/4. Cut additional sawcuts as directed by the Contract Administrator.

E30.5 Measurement and Payment

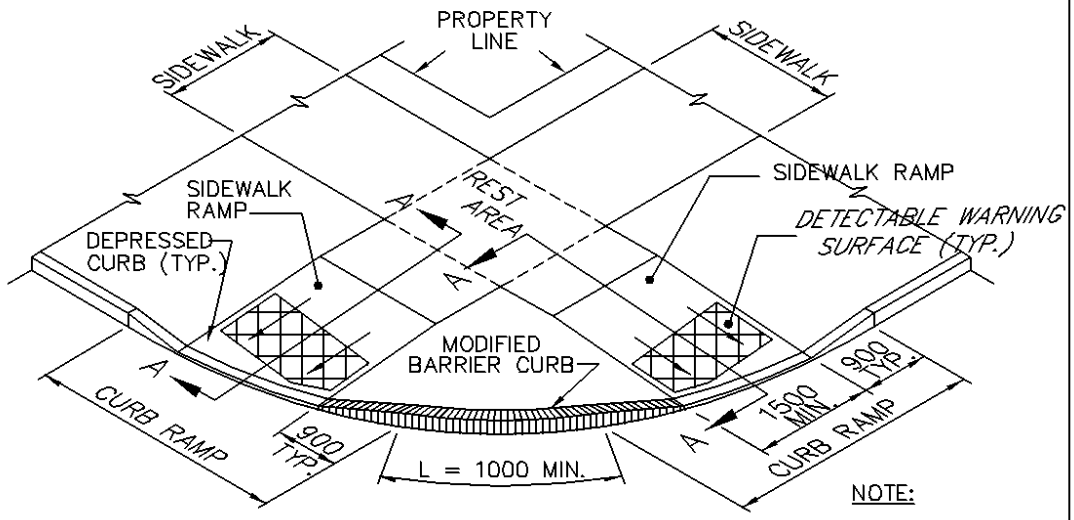
E30.5.1 Supply and installation of detectable warning surface tiles will be measured on a unit basis and paid for at the Contract Unit Price for “Detectable Warning Surface Tiles”. The number of units to be paid for will be the total number of full or trimmed tiles supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

(a) The area under the detectable warning surface tile is part of the concrete sidewalk ramp and will be paid in accordance with CW 3235 and CW 3325.

(b) The concrete sidewalk ramp and the concrete ramp for multi-use paths will be paid as 100mm sidewalk in accordance with CW 3235 or CW 3325.

(c) Curb ramp will be paid in accordance with CW 3240 or CW 3310.

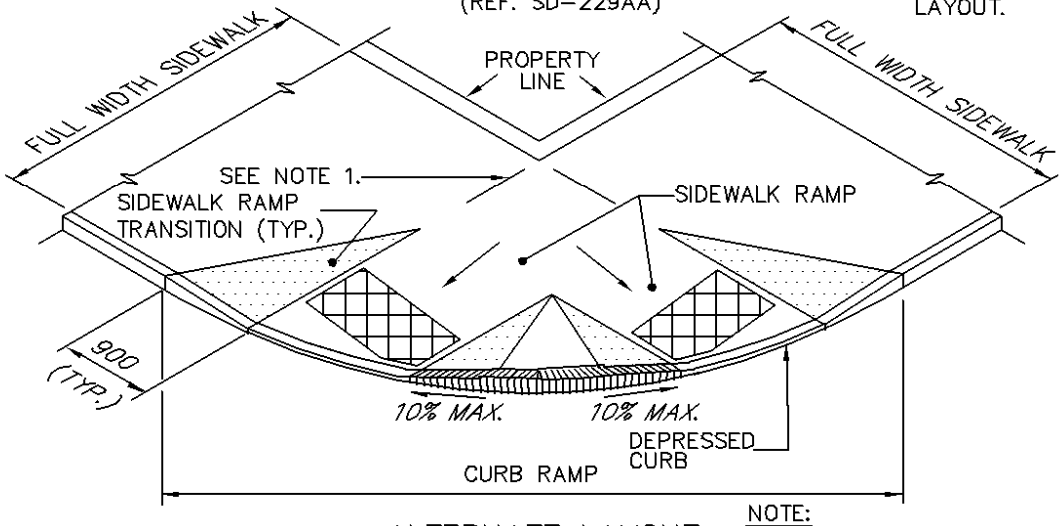
E30.6 Drawings and Installation Manual



STANDARD LAYOUT
(REF. SD-229AA)

NOTE:

IF L<1000 USE ALTERNATE LAYOUT.



ALTERNATE LAYOUT
(REF. SD-229AA)

NOTE:

1. DEPRESSED CURB RAMP TO LINE UP WITH BACK OF SIDEWALK.
2. FOR SECTION A-A SEE SD-229C & SD-229D
3. SEE SDE-229AA, SDE-229BB & SDE-229E FOR DETECTABLE WARNING SURFACES.

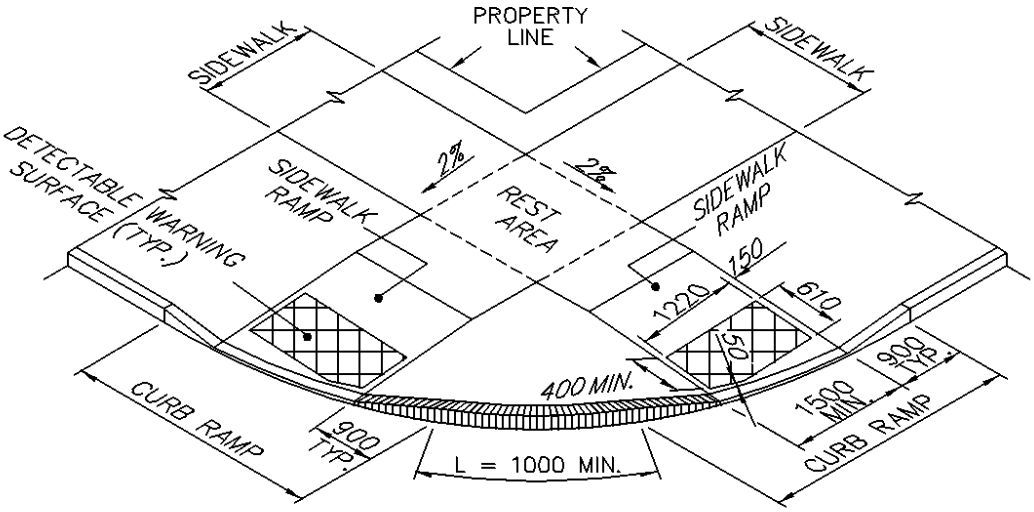
DIMENSIONS ARE IN MILLIMETRES

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

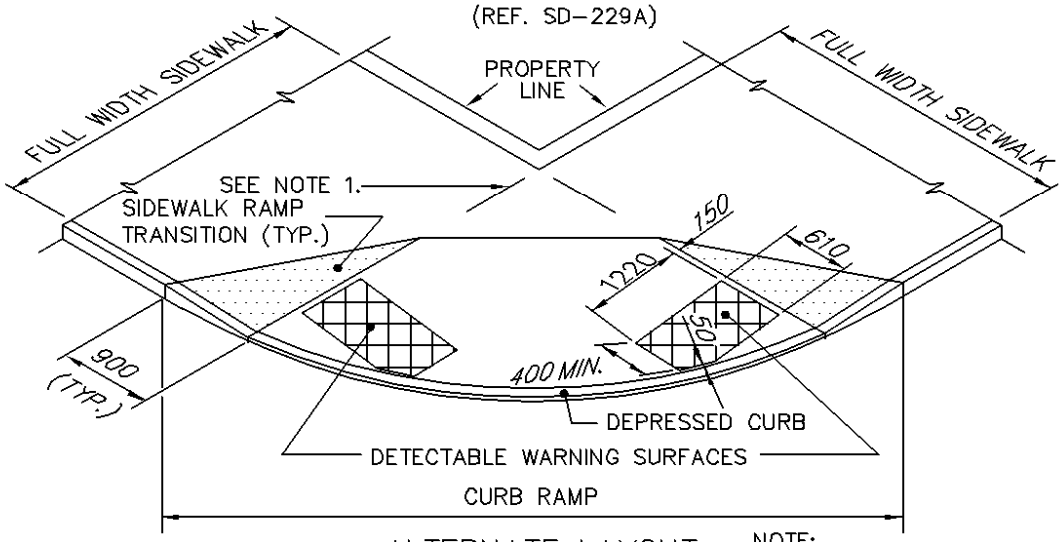
Reference Spec. No.
CW 3235, CW 3310, CW 3325
E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE

CURB RAMP LAYOUT FOR INTERSECTIONS

Designed By: B.P.	Drawn By: T.G.A..	Scale : N.T.S.
Checked By: F.W.C.	Date: 10-02-18	Drawing No. SDE-229A
Approved:		



STANDARD LAYOUT
(REF. SD-229A)



ALTERNATE LAYOUT
(REF. SD-229A)

NOTE:

1. DEPRESSED CURB RAMP TO LINE UP WITH BACK OF SIDEWALK.
2. FOR A 1.83m WIDE SIDEWALK USE A DETECTABLE WARNING SURFACE MEASURING 610 X 1520

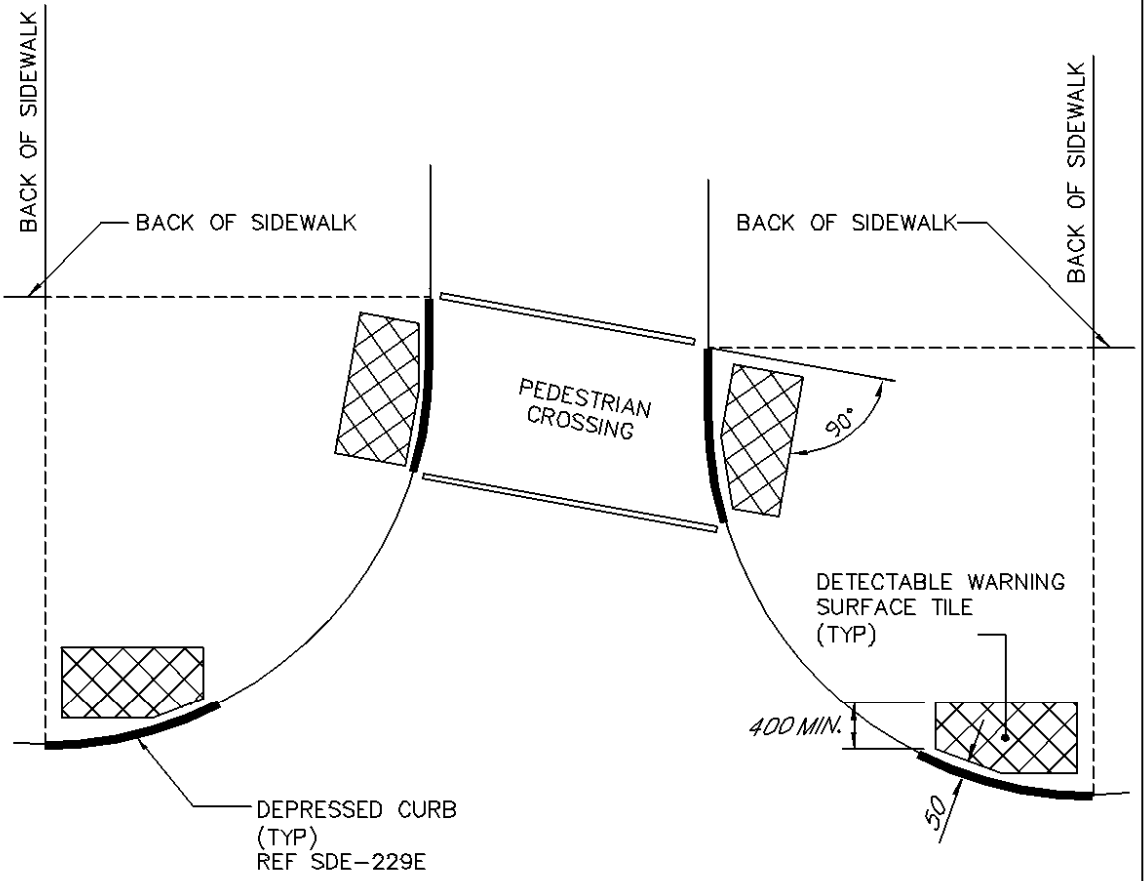
DIMENSIONS ARE IN MILLIMETRES

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

Reference Spec. No.
CW 3235, CW 3310, CW 3325
E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE

DETECTABLE WARNING SURFACE IN CURB RAMPS FOR INTERSECTIONS

Designed By: B.P.	Drawn By: T.G.A.	Scale : N.T.S.
Checked By: F.W.C.	Date: 10-02-18	Drawing No. SDE-229AA
Approved:		



NOTES:

1. LOCATE GRATINGS, ACCESS COVERS AND OTHER APPURTENANCES OUTSIDE OF CURB RAMPS, DEPRESSED CURBS, CLEAR SPACE LANDINGS AND GUTTERS AS DIRECTED BY THE CONTRACT ADMINISTRATOR.
2. LOCATE END OF DEPRESSED CURB IN LINE WITH PROJECTED BACK OF SIDEWALK.

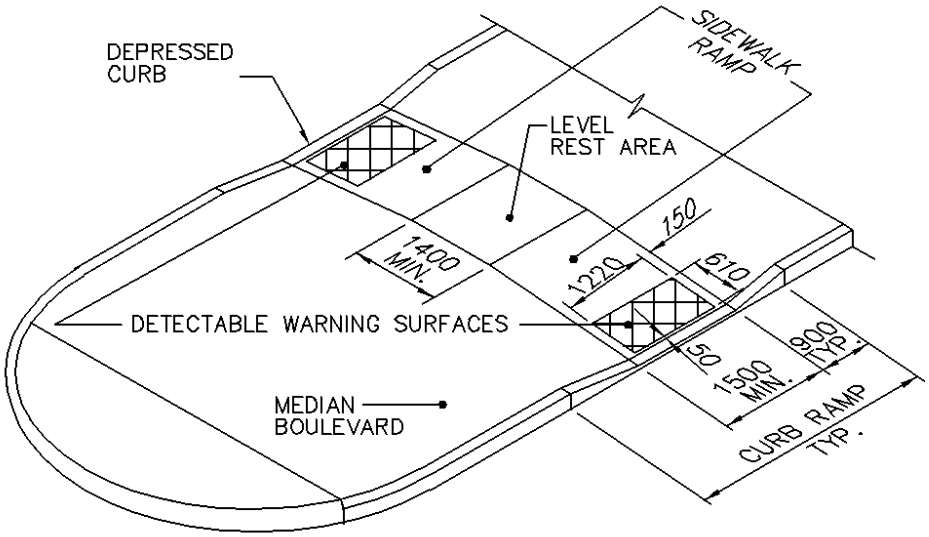
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

Reference Spec. No.
CW 3235, CW 3310, CW 3325
E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE

DIMENSIONS ARE IN MILLIMETRES

CURB RAMP LAYOUT
FOR OFFSET INTERSECTIONS

Designed By:	Drawn By:	Scale :
B.P.	T.G.A.	N.T.S.
Checked By:	Date:	Drawing No.
F.W.C.	10-02-18	SDE-229AB
Approved:		



MEDIAN SIDEWALK CROSSING
(REF. SD-229B)

NOTE:
1. FOR NARROW MEDIANS AND REFUGE ISLANDS < 1.32m IN WIDTH, PLACE DETECTABLE WARNING SURFACE FULL WIDTH, MAINTAINING 50mm SPACING FROM BACK OF CURB.

2. DETECTABLE WARNING SURFACE SHALL NOT BE PLACED AT PRIVATE APPROACHES OR ALLEYS.

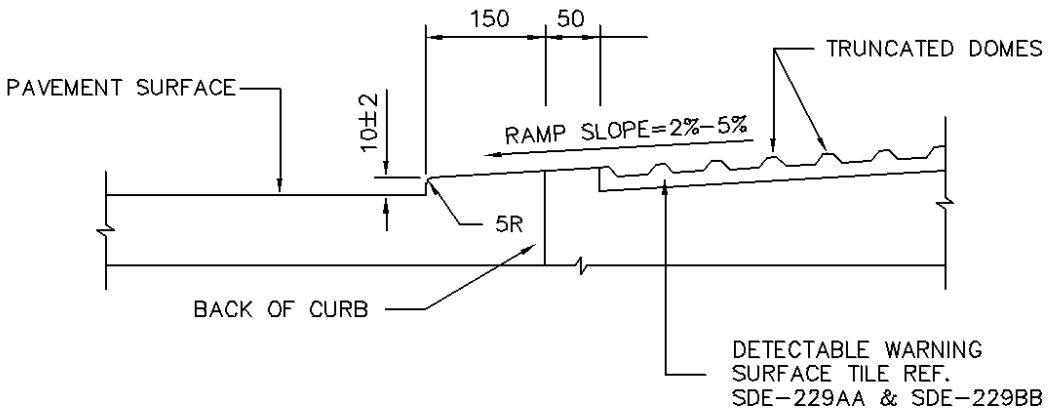
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

Reference Spec. No.
CW 3235, CW 3310, CW 3325
E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE

DIMENSIONS ARE IN MILLIMETRES

DETECTABLE WARNING SURFACE IN CURB RAMPS FOR MEDIANS

Designed By:	Drawn By:	Scale :
B.P.	T.G.A.	N.T.S.
Checked By: F.W.C.	Date: 10-12-18	Drawing No.
Approved:		SDE-229BB



DEPRESSED CURB

NOTES:

1) SIDEWALK RAMP SURFACE SHALL BE GIVEN A PARALLEL TEXTURED BROOM FINISH.
2) INSTALL DETECTABLE WARNING SURFACE SO THAT THE TOP OF THE TRUNCATED DOMES ARE FLUSH WITH THE SURFACE FO THE ADJACENT SIDEWALK.

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

Reference Spec. No.
CW 3235, CW 3310, CW 3325
E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE

DIMENSIONS ARE IN MILLIMETRES

CURB RAMP
DEPRESSED CURB

Designed By: B.P.	Drawn By: T.G.A.	Scale : N.T.S.
Checked By: F.W.C.	Date: 10-02-18	Drawing No. SDE-229E
Approved:		

Manufacturer's Installation Manual
Armor-Tile Cast In Place
Inline Dome Detectable/Tactile Warning Surface Tile

A. During Cast In Place Detectable/Tactile Warning Surface Tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.

B. The specifications of the structural embedment flange system and related materials shall be in strict accordance with the contract documents and the guidelines set by their respective manufacturers. Not recommended for asphalt applications.

C. The physical characteristics of the concrete shall be consistent with the contract specifications ~~while maintaining a slump range of 4 - 7 to permit solid placement of the Cast In Place Detectable/Tactile Warning Surface Tile system.~~. An overly wet mix will cause the tile to float. Under these conditions, suitable weights such as 2 concrete blocks or sandbags (25 lb) shall be placed on each tile.

D. Prior to placement of the Cast In Place Detectable/Tactile Warning Surface Tile system, the contract drawings shall be reviewed.

E. The concrete pouring and finishing operations require typical mason's tools, however, a 4' long level with electronic slope readout, 25 lb. weights, and a large non-marring rubber mallet are specific to the installation of the Cast In Place Detectable/Tactile Warning Surface Tile system. A vibrating mechanism such as that manufactured by Vibco can be employed, if desired. The vibrating unit should be fixed to a soft base such as wood, at least 1 foot square.

F. The factory-installed plastic sheeting must remain in place during the entire installation process to prevent the splashing of concrete onto the finished surface of the tile.

G. When preparing to set the tile, it is important that NO concrete be removed in the area to accept the tile. It is imperative that the installation technique eliminates any air voids under the tile. Holes in the tile perimeter allow air to escape during the installation process. Concrete will flow through the large holes in each embedment flange on the underside of the tile. This will lock the tile solidly into the cured concrete.

H. The concrete shall be poured and finished true and smooth to the required dimensions and slope prior to the tile placement. Immediately after finishing concrete, the electronic level should be used to check that the required slope is achieved. The tile shall be placed in accordance with the contract drawings. The Cast In Place Detectable/Tactile Warning Surface Tiles shall be tamped (or vibrated) into the fresh concrete to ensure that the field level of the tile is flush to the adjacent concrete surface. The embedment process should not be accomplished by stepping on the tile as this may cause uneven setting which can result in air voids under the tile surface. ~~The contract drawings indicate that the tile field level (base of truncated dome) is flush to adjacent surfaces to permit proper water drainage and eliminate tripping hazards between adjacent finishes.~~

I. In cold weather climates it is recommended that the Cast In Place Detectable/Tactile Warning Surface Tiles be set deeper such that the top of domes are level to the adjacent concrete on the top and sides of ramp and that the base of domes to allow water drainage. This installation will reduce the possibility of damage due to snow clearing operations.

J. Immediately after placement, the tile elevation is to be checked to adjacent concrete. The elevation and slope should be set consistent with contract drawings to permit water drainage to curb as the design dictates.

K. While concrete is workable, a 3/8" radius edging tool shall be used to create a finished edge of concrete, then a steel trowel shall be used to finish the concrete around the tile's perimeter, flush to the field level of the tile.

L. During and after the tile installation and the concrete curing stage, it is imperative that there is no walking, leaning or external force placed on the tile that may rock the tile causing a void between the underside of tile and concrete.

M. Following tile placement, review installation tolerances to contract drawings and adjust tile before the concrete sets. Two suitable weights of 25 lb each shall be placed on each tile as necessary to ensure solid contact of the underside of tile to concrete.

N. Following the concrete curing stage, protective plastic wrap is to be removed from the tile surface by cutting the plastic with a sharp knife, tight to the concrete/tile interface. If concrete bled under the plastic, a soft brass wire brush will clean the residue without damage to the tile surface.

O. If desired, individual tiles can be bolted together using ¼ inch or equivalent hardware. This can help to ensure that adjacent tiles are flush to each other during the installation process. Tape or caulking can be placed on the underside of the bolted butt joint to ensure that concrete does not rise up between the tiles during installation. Any protective plastic wrap which was peeled back to facilitate bolting or cutting, should be replaced and taped to ensure that the tile surface remains free of concrete during the installation process.

P. Tiles can be cut to custom sizes, or to make a radius, using a continuous rim diamond blade in a circular saw or mini-grinder. Use of a straightedge to guide the cut is advisable where appropriate.

~~Q. Any sound-amplifying plates on the underside of the tile, which are dislodged during handling or cutting, should be replaced and secured with construction adhesive. The air gap created between these plates and the bottom of the tile is important in preserving the detectability properties of the Armor-Tile system as required in various jurisdictions.~~

Revise: Table E31.1 to read:

TABLE E31.1 REQUIREMENTS FOR HARDENED CONCRETE							
Type of Concrete	**Location**	**Nominal Compressive Strength [MPa]**	**Class of Exposure**	**Air Content Category**	**Max Aggregate Size**	**Special Requirements**	**Post Residual Cracking Index**
Type 3	High Performance Concrete (HPC) Overlay	50 @ 56 Days	C-XL	1	14 mm	Crushed Granite Aggregate; Synthetic Fibres; maximum Shrinkage Strain of 450 microstrains @ 56 Days; Set Retarders permitted	0.15

Revise: E31.4.6(c) to read: Should the Contractor shoose to include fly ash in the concrete mix design, the fly ash shall be Class CI or F and the substitution shall not exceed 30% by mass of cement.

DRAWINGS

Replace: 133-2010_Drawing_B124-10-02-R0 with 133-2010_Addendum_2_Drawing_B124-10-02-R1

133-2010_Drawing_B124-10-07-R0 with 133-2010_Addendum_2_Drawing_B124-10-07-R1

133-2010_Drawing_B124-10-08-R0 with 133-2010_Addendum_2_Drawing_B124-10-08-R1

133-2010_Drawing_B124-10-09-R0 with 133-2010_Addendum_2_Drawing_B124-10-09-R1

133-2010_Drawing_B124-10-16-R0 with 133-2010_Addendum_2_Drawing_B124-10-16-R1

133-2010_Drawing_B124-10-20-R0 with 133-2010_Addendum_2_Drawing_B124-10-20-R1

133-2010_Drawing_B124-10-25-R0 with 133-2010_Addendum_2_Drawing_B124-10-25-R1

133-2010_Drawing_B124-10-26-R0 with 133-2010_Addendum_2_Drawing_B124-10-26-R1

133-2010_Drawing_B124-10-27-R0 with 133-2010_Addendum_2_Drawing_B124-10-27-R1

133-2010_Drawing_B124-10-28-R0 with 133-2010_Addendum_2_Drawing_B124-10-28-R1

133-2010_Drawing_B124-10-40-R0 with 133-2010_Addendum_2_Drawing_B124-10-40-R1

133-2010_Drawing_B124-10-47-R0 with 133-2010_Addendum_2_Drawing_B124-10-47-R1