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INTRODUCTION

NEW ITEMS INCORPORATED IN 2015 STANDARD SPECIFICATION FOR HIGHWAY CONSTRUCTION

529	CONCRETE-ENCASED DUCT BANK SYSTEM
617	ROOT WADS
622	FISH RESCUE
623	CULVERT EROSION PROTECTION
630	SOIL REINFORCEMENT

CHANGES TO STANDARD DRAWINGS

161-1	Case 1.1 - Cross Culvert: Subgrade Above Original Ground - Trench \leq 1.2m Deep (<i>Revision</i>)
161-2	Case 1.2 - Cross Culvert: Subgrade Above Original Ground - Trench $>$ 1.2m Deep (<i>Revision</i>)
161-3	Case 2.1 - Cross Culvert: Original Ground Above Subgrade - Trench \leq 2.2m Deep (<i>Revision</i>)
161-4	Case 2.2 - Cross Culvert: Original Ground Above Subgrade – Trench $>$ 2.2m Deep (<i>Revision</i>)
161-5	Case 3.1 – Storm Drainage Culvert Longitudinal to the Centreline of Roadway (<i>Revision</i>)
351-4	Deck at Barrier Wall/Curb – Torch Applied Waterproofing Detail (<i>Addition</i>)
510-1	Guide Post Details (<i>Revision</i>)
529-1	Concrete-Encased Duct Bank System (<i>Addition</i>)
617-1	Root Wad Detail in Pool (<i>Addition</i>)
621-1	Temporary Working Pad (<i>Addition</i>)
623-1	End Treatment for Culverts \leq 1500mm ID - Roadway Foreslope 3:1 or Steeper (<i>Addition</i>)
623-2	End Treatment for Culverts \leq 1500mm ID - Roadway Foreslope Flatter Than 3:1 (<i>Addition</i>)

FOREWORD – USE OF NEW BRUNSWICK PROVINCIAL STANDARDS

The following was added to the Foreword:

Requirements of the Notice of Tender are incorporated by reference and shall form part of the Contract as if they had appeared here in their entirety.

GENERAL COMMENTS

renumbering Please note that after additions and revisions were made, many of the subsequent articles may have had to be renumbered. Cross referencing numbers may also have been updated to correspond to changes.

PS Throughout this document Particular Specifications shall be referred to as PS.

PLEASE NOTE: *throughout the document, text in Italic font indicates author's commentary on the changes and revisions made to specifications.*

DIVISION 000- INTRODUCTION

001 – TERMINOLOGY

The following articles were added:

001.6 CROSS-REFERENCES

- .1 Cross-references form an important role in the interpretation of the Standard Specification Items and can be categorized as follows:
 - .1 Inclusive – reference to a portion of another Specification Item, in general to the Materials (xxx.2) or Construction (xxx.4) section, indicating that the cross-referenced section forms part of the work under the Item where the reference is noted. There will be no separate payment for the adherence to or the performance of the requirements of the cross-referenced section of the Item.
 - .2 Separate Item – reference to another Specification Item (Item xxx), indicating that some portion of the work under the Item where the reference is noted is carried out “in accordance with...” or “to the requirements of...” the cross-referenced Item. The cross-reference to the full Item (Item xxx) indicates that the cross-referenced Item is a separate unit payment and appears as such in the “List of Approximate Quantities” of the tender documents.
 - .3 Standard Drawing – reference to the applicable drawing.

002- ABBREVIATIONS

002.1 *The following abbreviations were updated:*

Organizations

DELG Department of Environment and Local Government (New Brunswick)
DTI Department of Transportation and Infrastructure (New Brunswick)

Terms

CHBDC Canadian Highway Bridge Design Code

003 – DEFINITIONS

003.2 *The following definitions were added:*

Daylight – shall refer to the hours between sunrise to sunset. Sunrise and sunset times are available on a daily basis from the Environment Canada Weather website.

Professional Engineer – shall mean a qualified Professional Engineer registered or licensed to practice in the Province of New Brunswick, and as defined by and bound by the APEGNB By-Laws and Code of Ethics.

Public Holiday - shall include the following Days only: New Year’s Day, Good Friday, Canada Day, New Brunswick Day, Labour Day, Remembrance Day, and Christmas Day.

Statutory Holiday – shall include the following Days only: New Year’s Day, Good Friday, Easter Monday, the day fixed by proclamation of the Governor in Council for the celebration of the birthday of the Sovereign, Canada Day, New Brunswick Day, Labour Day, the day fixed by proclamation of the Governor in Council as a general day of thanksgiving, Remembrance Day, Christmas Day, and Boxing Day.

DIVISION 100- GRADING

101- CLEARING

The following article was added:

- 101.4.14 Stockpiling or loading of merchantable timber or waste materials, adjacent to the highway, shall be as approved by the Engineer.

106 – COMMON EXCAVATION

- 106.4.2.2 .3 ~~Where the Contract includes Borrow~~, the Contractors shall conduct operations such that all usable material resulting from common excavation either has been used or shall be used in the Work, prior to the placement of any material under Item 121

The following articles were added to ensure stockpiles are built in such a manner to ensure maximum recovery of the stockpiled materials.

- 106.4.2.2 .4 Common material salvaged by the Contractor for re-use other than as topsoil shall be stockpiled such that the material does not become saturated at a location approved by the Engineer.
- .1 Stockpiling of common material shall be done on a well-drained, level base capable of supporting the entire weight and dimension of the stockpiles and in such a manner as to ensure maximum recovery of the stockpiled materials.
 - .2 Stockpiles shall not be placed near a quarry/pit face, Stripping piles or piles of other materials, nor near property lines, tree lines or drainage ditches such that retrieval of all common material is not possible or practical and access to the stockpile shall be maintained at all times.
 - .3 Stockpiles shall be built in layers not exceeding one metre in thickness and each layer shall be shaped to maintain surface drainage before the next layer is begun. Dumping over the edge of stockpiles shall not be permitted.
 - .4 Work will involve the re-handling of excavated material from stockpiles.

108 – SOLID ROCK EXCAVATION

The following articles were added to detail the requirements for blasting near wells or structures. Figure 108-A Allowable Instantaneous Charge Limits Based on Distance from Blast and Wave Velocity was also added.

108.4.2 Blasting Near Wells or Structures

- .1 The Contractor shall carry out a pre-blast survey in accordance with the requirements of the Insurance Policy submitted per 108.3.2.
- .2 Notwithstanding 108.4.1.8.1, the Owner will, before and during the Work under this Item, be conducting inspections on residential wells within 500 m of area of blasting, including sampling for water quality.
 - .1 Any wells adversely affected by the Work, the Owner will provide water temporarily during the course of the Work, and/or will determine if repair or replacement by the Contractor is required for any wells found to be permanently damaged.

- 108.4.2 .3 The Contractor shall carry out the Work such that vibrations from drilling and blasting are controlled, and do not exceed the requirements of Figure 108-A.

116 – DITCHING

The following article was added for clarification.

- 116.4.2.1 The tendered Quantity includes cleaning ends of driveway culverts and cross culverts as directed by the Engineer.

- 116.4.9 Ditches shall be stabilized against erosion with hay or straw mulch, in accordance with 616.2, 616.3, and 616.4, at the end of each day's ditching.

131 – METAL PIPE – LARGE

This Item was revised to include backfill and backfilling as part of the Item. See full Item for revisions.

136 – SUBDRAIN

- 136.2.2.3 Corrugated polyethylene pipe and appurtenances conforming to ASTM F405 and/or ASTM F667. (*updated to reflect an additional standard*)

140 – CONCRETE PIPE

- 140.2.6.2 Weirs/baffles shall be reinforced and secured to the pipe invert by a method approved by the Engineer and moist cured for a minimum of 72 hours, or until 70% of design strength has been reached.

- .1 When drilled holes and dowels are used to attach weirs/baffles to the invert, the holes shall be drilled to a minimum depth of 75 mm, and the dowels shall be secured with an epoxy or acrylic adhesive such as Epcon A7 or approved equivalent.

141 – CONCRETE PIPE- LARGE

This Item was revised to include backfill and backfilling as part of the Item.

- 141.2.7 Weirs, baffles and cut-off walls shall be made with the same concrete requirements as the pipe.

- 141.2.8 Backfill material shall be Class "A" per 167.2.

- .1 Backfill material shall be obtained from within the Work Site as approved by the Engineer.
- .2 If sufficient quantities of suitable backfill material are not available within the Work Site, as determined by the Engineer, additional backfill shall be imported by the Contractor in accordance with Item 167 from a source approved by the Engineer.

- 141.3.1.10.1 PIPECAR design input shall be in accordance with the Supplement to Item 141 of the Contract Documents.

The following article was added to include additional pipe designs where design calculations are required to be submitted. 141.3.2.3 All pipe designs that are not listed in the design tables in CAN/CSA A257.

- 141.3.6 The Contractor shall submit, upon request, the proposed source of the supply of the backfill material from within the Work Site.
- 141.3.7 If the source of the supply of the backfill material is located outside the Work Site, the Contractor shall submit the proposed source, in writing, for the approval of the Engineer, at least 14 Days in advance of obtaining backfill material from the proposed source.

The following article was updated to indicate that office space is required even if the project is less than 14 days.

- 141.4.1.7 ~~For projects estimated to be of more than 14 Days duration~~ the manufacturer shall provide regular and practically located office space at the fabrication plant to accommodate the Engineer.
- 141.4.1.7.2 Convenient telephone, internet, facsimile, photocopy, mail and message handling services shall also be provided.

**Table 141-1
Reinforced Concrete Pipe Design and Fabrication Requirements**

Pipe Diameter (mm)	Applicable Standards	Additional Standards / Requirements for Concrete	Duration of Moist Curing
1350 to 2700	CSA A257.2, CSA A257.3	CSA A23.1 and A23.2, exposure class C-1; air content of 5 to 8%.	Until min. concrete strength of 20 MPa is attained.
≥ 3000	CSA-S6 ASTM C1417	CSA A23.1 and A23.2, exposure class C-1; air content of 5 to 8%; calcium nitrite corrosion inhibitor at a rate of 15 L/m ³ .	Until min. concrete strength of 35 MPa is attained.

The following articles were added to be consistent with Item 142.

141.4.3 Forms

- .1 Forms shall be a configuration to ensure compliance with the allowable tolerances.
- .2 Forms shall be clean and free of mortar prior to application of form coating.
- .3 Forms shall be complete and inspected by the Engineer before placing of concrete shall be permitted.
- .4 Permanently exposed sharp edges shall be chamfered with triangular fillets, 19 mm by 19 mm, made of steel, plastic, or clear straight-grained wood placed on the side exposed to concrete.
- .5 The minimum cover over form snap-ties shall be 50 mm and the voids shall be filled to their entire depth with an approved cement grout mix per 141.4.5.

141.4.5 Finishing of Concrete Surfaces

- .1 All surfaces of the precast concrete sections shall receive an "Ordinary Surface Finish" in accordance with the following:
 - .1 All surface voids larger than 12 mm in diameter and cavities, or holes visible upon the removal of the formwork, shall be filled to their entire depth with an approved cement grout mix of cement and fine sand from the same source as used in the concrete and incorporate a latex bonding agent.
 - .2 All objectionable fins, projections, offsets, streaks or other surface imperfections shall be totally removed to the Engineer's satisfaction.

- .3 If the concrete surface does not adequately fulfill the requirements for Ordinary Surface Finish, the Contractor shall, as directed by the Engineer, entirely remove certain designated portions, or all of the concrete, and replace with new concrete.
- .2 Immediately after the removal of forms, any part of the Work which displays defects shall be clearly marked and the Contractor shall notify the Engineer of the location and extent of the defect.
 - .1 The Contractor shall submit a repair procedure for approval.
 - .1 Cement washes of any kind shall not be used.
 - .2 All defects shall be finished smooth, uniformly colour matched and flush with the adjacent surface.
- .3 All ridges occurring at junctions of form panels shall be ground smooth.

To ensure quality concrete in culverts the following articles were added.

- 141.4.6.7 During production, quality control testing and test sampling per 302.4 shall be carried out for every 15 m³ of concrete placed.
- .1 For concrete placements under 15 m³, a minimum of one set of cylinders and air content tests shall be carried out per half Days production.

The following articles were revised.

- 141.4.8.4 When drilled holes and dowels are used to attach weirs/baffles to the invert, the holes shall be drilled to a minimum of 100 mm, and the dowels shall be secured with an epoxy or acrylic adhesive such as Epcon A7 or approved equivalent.
- 141.4.10.3 ~~Excavation and backfilling shall be carried out in accordance with Items 161 and 166, respectively. Supply of backfill shall be from excavation or under Item 167, as identified in the Contract Documents. Excavation shall be carried out in accordance with 161.4 and to the limits as indicated on Standard Drawings 161-1 to 161-5, or in the case of an induced trench as specified in the Contract Documents.~~
- .1 If Overexcavation occurs, the Contractor shall, at his/her own expense, repair and fill the Overexcavation with an approved backfill material, placed in accordance with Item 936, and compacted to 95% of the maximum dry density.
- 141.4.10.7.4 The 25 M dowels shall be inserted and grout them into place with non-shrink grout secured into place using an epoxy or acrylic adhesive such as Epcon A7 or an approved equivalent.
- 141.4.10.10 Pipe sections with weirs or baffles shall be installed with the weir or baffle top horizontal in the transverse direction, with a maximum installed tolerance of 2% vertically over the full horizontal length of the weir.

Articles 141.4.10.13 to 141.4.10.17 were added to include backfill and backfilling as part of the Item.

142 – PRECAST CONCRETE BOX CULVERT

This Item was revised to include backfill and backfilling as part of the Item. See Item for all changes pertaining to backfill and backfilling being included in the Item.

142.2.2.2 Air content shall be 5 – 8%.

The following articles were revised in order to clarify the difference in the interior joint seal and the exterior joint wrap.

142.2.3 ~~Joint waterproofing material shall be Rub'r-Nek and Conwrap, or an Engineer approved equivalent, with primers if recommended and approved by the manufacturer. Interior water tight joint seal shall be Rub'r-Nek, size per joint seal manufacturer's written recommendations, or approved equivalent.~~

142.2.4 Exterior joint wrap shall be 300 mm wide Conwrap, ConSeal CS-212 or approved equivalent, with primers recommended by the manufacturer.

142.2.8.1 When drilled holes and dowels are used to attach weirs/baffles to the invert, the holes shall be drilled to a minimum depth of 100 mm, and the dowels shall be secured with an epoxy or acrylic adhesive such as Epcon A7 or approved equivalent.

The following article was added to ensure the same concrete is being used for weirs, baffles and cut-off walls.

142.2.8.4 Weirs, baffles and cut-off walls shall be made with the same concrete requirements as the Culvert.

142.2.13 Reinforcing supports shall be made of plastic, stainless steel, or galvanized steel with a minimum of 25 mm of cover.

142.2.14 Side form spacers shall be made entirely of plastic or entirely of stainless steel.

BOXCAR design input and output are required as part of the submittals as follows.

142.3.1.14 BOXCAR design input and output, including printouts of outputs for load cases as indicated on the Contract Documents.

.1 BOXCAR design input shall be in accordance with the Supplement to Item 142 of the Contract Documents.

The following revisions were done to clarify the article.

142.4.1.2.1 ~~The reinforcement~~ Reinforcing steel bars or wire mesh shall have a minimum concrete cover of 55 mm ± 10 mm. ~~A minimum concrete cover of 13 mm is required for the ends of longitudinal steel.~~

142.4.1.2.2 At joints, the minimum concrete cover shall be 13 mm for all longitudinal steel from the end of the bell and spigot.

142.4.1.2.3 For circumferential steel, in the bell and spigot, the minimum concrete cover shall be 13 mm and the maximum concrete cover shall be 50 mm.

The following articles were added to be consistent with Item 141.

- 142.4.1.6 The manufacturer shall provide regular and practically located office space at the fabrication plant to accommodate the Engineer.
- .1 The office space shall be clean and furnished with a suitable office desk and chair, adequate lighting, and ventilation and heating to provide a room temperature of approximately 20°C.
 - .2 Convenient telephone, internet, facsimile, photocopy, mail and message handling services shall also be provided.

Articles were revised as follows.

- 142.4.3.5 The minimum cover over form snap-ties shall be 50 mm and the voids shall be filled to their entire depth with an approved cement grout mix per 142.4.6.
- 142.4.7.3 With the end section in place, the Contractor shall drill 30 mm diameter holes using the prefabricated holes as guides to a nominal depth of 150 mm into the top of the wall. Immediately following placement of the end section, 25 mm diameter holes shall be drilled through the prefabricated inserts to a nominal depth of 150 mm into the cut-off wall.
- 142.4.7.4 The 25 M dowels shall be inserted and secured grouted into place using the non-shrink grout an epoxy or acrylic adhesive such as Epcon A7 or an approved equivalent.
- 142.4.7.8 Placement shall proceed upgrade with the female end upgrade. Culvert sections shall be joined in a straight line using industry methods, with the bell end up grade. Each Culvert section shall be set into place and positioned together as recommended by the manufacturer of the lifting device.
- 142.4.7.11 Joint seal and exterior wrap waterproofing material and appurtenances shall be installed in accordance with the manufacturer's specifications.
- .1 Joint seal shall be placed around the entire joint.

167 – BACKFILL FOR STRUCTURES

The following article was deleted as haulage is not paid separately.

- 167.6.2 ~~Haulage for backfill, as approved by the Engineer, shall be paid for in accordance with Item 801.~~

DIVISION 200- PAVEMENT STRUCTURE

208 – COLD MILLING – ASPHALT CONCRETE

Article 208.4.3 was revised to specify that the equipment shall have a ski at least 7.6m long or approved equivalent.

The article 208.4.3.4 was added to indicate that there shall be no transverse slope control used.

259 – BITUMINOUS TACK COAT

To ensure that the surface to be treated with bituminous tack coat is swept clean immediately prior to the application, the following article was revised.

259.4.5 Bituminous tack coat shall be applied only when the surface to be treated is dry, and swept clean over the full width of surfaces to be treated.

- .1 Immediately prior to the application of the bituminous tack coat, the surface to be treated shall be swept clean.

260 – ASPHALT CONCRETE – METHOD SPECIFICATION

Entire Item was revised to reflect current standards. The following outlines some of the changes, see Item for all changes.

- Warm mix asphalt standards were added to the Item
- RAP was removed from the Item
- Requirements for the approval of design mix formula and aggregate source approval

261 – ASPHALT CONCRETE- END RESULT SPECIFICATION (ERS)

The changes made to this Item are based off the Item 261 - 2013 Supplement to the 2011 Standard Specifications.

The requirement for the Number of Gyration was removed from **Table 261-1 Superpave Asphalt Concrete Mix Requirements**.

The following article was deleted.

261.2.1.5.3 ~~RAP shall be free of contamination and shall be processed within 14 Days of the introduction into the cold feed at the plant, in such a manner that all particles pass the 50 mm sieve when tested in accordance with ASTM C136, unless other otherwise approved by the Engineer.~~

Cecabase RT 2N1 was added to **Table 261-2** as an approved anti-stripping admixture.

Cecabase RT 2N1 and Rediset LQ were added as approved warm mix technologies.

Article 261.2.2.2.4.1 was revised to indicate that the Contractor shall submit the JMF prior to beginning production. Any adjustments to the JMF shall be submitted to the Engineer prior to the start of lot production, as per the changes to article 261.2.2.2.5.1.

The following article was added for paving in echelon with vibratory rollers.

261.4.2.4.1.1.1 Paving in echelon on the driving lanes shall require the use of two vibratory breakdown rollers.

The following article was revised.

261.4.3.8.1 Material placed in driveways and aprons shall only not be included as part of a Lot when paved concurrently with the main lanes.

The requirement for asphalt rolling pattern was added as follows.

261.4.4.4.1 For each asphalt concrete mix type the Contractor shall establish a rolling pattern using a nuclear gauge or equivalent. Upon completion of the rolling pattern the Contractor shall immediately submit a copy to the Engineer.

For smoothness testing the following article was added.

261.4.5.6.2.4.1.1 Smoothness testing will be carried out as soon as possible upon completion of the paving operation.

*The following note was added to **Table 261-7 Acceptance/Rejection Requirements by Lot**.*

NOTES 3) For Contracts with ≤ 3 million ESAL, a rejected Lot will be paid at 50% of the Contractors Unit Price.

*The following note was added to **Table 261-10 Unit Price Adjustment for Gradation (UPAg)**:*

(c) For Work Category 2 and Work Category 3, when the 75 µm sieve size exceeds 6.5% for the selected sample, the remaining samples shall be tested for percent passing the 75 µm sieve size. If the average for all samples exceeds 6.5% refer to Note 1b.

262 – PARTIAL DEPTH RECYCLING

Article 262.2.7.1.6 was revised to allow for Portland cement to be incorporated into the mix if certain properties cannot be met. The maximum amount allowable shall be 0.5% per 262.2.7.1.6.1. If Portland cement is approved, it shall be paid per 262.6.6.

*The strength requirements in **Table 262-2** were updated as follows.*

Test	Minimum Requirement (kPa)
ITS (Soaked) / <u>MTO LS-297</u>	<u>100</u> 50
ITS (Dry) / <u>MTO LS-297</u>	<u>225</u> 300
TSR	50

The following changes were made under the Quality Assurance section.

262.4.7.3 For Alternative A, prior to the planned overlay of the recycled cold bituminous mixture, the Contractor shall obtain two 150mm x 150mm slab samples per kilometre at random locations as directed by the Engineer.

- .1 ~~The slab samples will be tested for moisture content. One sample to test for moisture content, and the other to test for thickness and compaction~~

262.4.7.5 Prior to the planned overlay of the recycled cold bituminous mixture, the Owner shall perform a visual compaction assessment of the surface to be overlaid. Compaction of the recycled cold bituminous mixture shall be determined by testing the slabs obtained per 262.4.7.3. and 262.4.7.4. The compaction of each slab shall be determined by comparing the Bulk Relative Density to the Theoretical Maximum Relative Density.

- .1 ~~The recycled cold bituminous mixture shall be compacted smooth and showing minimal deflection, cracking or shoving under the weight of a loaded tandem truck. Compaction requirements are met when the mean compaction is greater than or equal to 83% of the Theoretical Maximum Relative Density.~~

Revisions were made to the Basis of Payment as follows:

- 262.6.4 For each occurrence that partial depth recycling is not performed per 262.4.4.2, the Contractor shall pay the Owner a penalty of \$1000 for each Day until partial depth recycling commences; and \$1000 for each Day that partial depth recycling is not continuous (stopped on any Day for more than 40% of the Contractor's normal work hours), until partial depth recycling resumes. recycled cold bituminous mixture has not commenced within the period prescribed in 262.4.4.2, the Contractor shall be subject to a penalty of \$1000 for each Day following that period, excluding Sundays and statutory holidays, until the recycling begins.
- 262.6.5 For each occurrence that paving is not performed per 262.4.4.2.1, the Contractor shall pay the Owner a penalty of \$1000 for each Day until paving commences; and \$1000 for each Day that paving is not continuous (stopped on any Day for more than 40% of the Contractor's normal work hours), until paving resumes.

263 – FULL DEPTH RECYCLING

Article 263.2.5.8 was revised to allow for Portland cement to be incorporated into the mix if certain properties cannot be met. The maximum amount allowable shall be 1% per 263.2.5.8.1. If Portland cement is approved, it shall be paid per 263.6.6.

*The strength requirements in **Table 263-2** were updated as follows.*

Test / Method	Minimum Requirement (kPa)
ITS (Soaked) / MTO LS-297	100 50
ITS (Dry) / MTO LS-297	225 300
TSR	50

The following revisions were made with respect to the grader/paver used.

- 263.4.2.5.1 The grader used to shape the pulverized material must be equipped with automatic slope control. Contractor shall use either a grader or paver for placement of the expanded asphalt mix.
- 263.4.2.5.2 The Contractor shall use a paver for placement of the expanded asphalt mix. grader shall be equipped with automatic slope controls.
- 263.4.2.5.3.2.2 The paver shall be equipped with automatic screed controls for the control of longitudinal grade and transverse slope.

The following changes were made under the Quality Assurance section.

- 263.4.7.3 Prior to the planned overlay of the expanded asphalt surface, the Owner shall perform a visual compaction assessment of the surface to be overlaid. Compaction measurements shall be taken by the Engineer at a minimum frequency of 5 per lane km.
- .1 The expanded asphalt surface shall be compacted smooth and showing minimal deflection, cracking or shoving under the weight of a loaded tandem truck. Compaction is achieved when the mean compaction is greater than 83% of the average in-place expanded asphalt mix Theoretical Maximum Relative Density, as determined from samples taken at a frequency of one per km.
 - .2 The density of the in-place expanded asphalt mix shall be measured by a nuclear gauge in the direct transmission mode with the probe inserted 100 mm into the finished mat.

The following was added to the Basis of Payment.

- 263.6.5 For each occurrence that paving is not performed per 263.4.5.5, the Contractor shall pay the Owner a penalty of \$1000 for each Day until paving commences; and \$1000 for each Day that paving is not continuous (stopped on any Day for more than 40% of the Contractor's normal work hours), until paving resumes.

265 – CHIP SEAL

- 265.4.2.1.1 Grader shall be equipped with automatic slope control.
- 265.4.3.2.1 ~~Fine grading and compaction of the Aggregate Base per 205.4 before the first application of a double seal.~~ The road shall be compacted and shaped with a grader to meet an acceptable crown and super elevation, and shall commence 1 Day prior to chip sealing, as directed by the Engineer.

267 – PULVERIZING

- 267.4.1.1 Work under this Item shall also include excavating and moving of pulverized material in the transitions to match into the existing conditions, as directed by the Engineer.
- 267.4.6 The re-graded surface material shall be compacted in accordance with Item 936 to a minimum of 95% of the maximum dry density as established by a test strip.
- 267.4.7 ~~Final shaping of the pulverized surface shall be in accordance with Item 941 and shall not vary by more than 30 mm from the grades provided by the Engineer.~~ The Contractor shall shape the road with a grader to meet an acceptable crown and super elevation.
- 267.4.8 Grader shall be equipped with automatic slope control.

DIVISION 300- STRUCTURES

301 – PORTLAND CEMENT CONCRETE

Additional curing requirements were added to the Item. Curing shall be in accordance with CSA A23.1 and additional requirements stated in the Item.

Concrete shall meet the requirements of CSA A23.1 Exposure Class C-1.

Additional requirements were added under article 301.4.6 Placement, such as all concrete shall be placed in a space free of standing water, dirt and debris, and form ties shall be such that they can be entirely removed of cut back 25mm below surface. See Item for all changes.

The following requirements were added for testing of the concrete.

301.4.8.1 The Contractor is responsible for supplying concrete which shall have, at the point of final discharge, the characteristics specified in the Contract Documents.

301.4.8.2 The Owner shall carry out Quality Assurance Testing.

302 – CONCRETE IN STRUCTURES

Changes were made to state that design mix proportion shall be stamped and signed by the Professional Engineer who reviewed the concrete mix.

The following articles were added.

302.4.4.8.1.2 When the Contractor carries out the surveying under Item 941, longitudinal girders, transverse floor beams and stringers shall be profiled by the Contractor.

- .1 The Contractor shall submit the profiles to the Engineer a minimum of 7 Days in advance of the placement of any falsework, formwork or other additional loads on the Superstructure.

The following revisions were made regarding tremie concrete.

302.4.5.1.1 Tremie pipes shall be kept filled with concrete while depositing and shall have a maximum spacing of 3.0 m. All pipes shall be used in continuous rotation to maintain concrete level.

- .1 A concrete pump ~~shall not be permitted as a means of tremie concrete placement~~ may be used to charge tremie pipes as part of an approved tremie placement plan.

302.4.5.1.4.1.1 For a plan area greater than 100 square metres, concrete shall be supplied and placed at a rate of not less than 50 cubic metres per hour, unless otherwise approved in writing by the Engineer.

For bridge decks, bull floats or magnesium trowels shall be used to remove defects per 302.4.7.5.4.1.

For steel girder bridges the following article was added.

302.4.7.5.6.4.1 For steel girder Bridges, screed rails shall be supported on the top girder flange; or the Contractor shall submit an analysis, stamped and signed by a Professional Engineer acceptable to the Owner, demonstrating there will be no excessive deformations or permanent loads imparted to the girders, for approval by the Engineer.

The following revision was made under curing and protection of concrete.

302.4.8.3.1 The curing period for concrete shall be for a minimum of 7 Days from the completion of concrete placement and until 70% of the minimum specified compressive strength is attained (90% for concrete placed between November 1st and May 1st).

Additional articles were added for cold weather requirements.

302.4.9.1 General

- .1 For the purpose of this specification cold weather curing and protection shall be in effect between November 1st and May 1st shall be considered to be when ambient temperature is at or below 5 °C, or in the Engineer's opinion, is likely to fall below 5 °C within the next 24 hours.
- .1 Cold weather curing and protection shall be required outside of these dates if the ambient temperature is at or below 5 °C, or in the Engineer's opinion, is likely to fall below 5 °C within the next 24 hour period.
- .2 The Contractor shall ensure that all boilers used for heating, materials, and housing, shall meet the inspection requirements and operating conditions of all applicable Provincial Acts and Regulations.
- .3 Curing and protection shall continue for 7 days and until 90% of the minimum specified compressive strength is obtained on field cured cylinders.
- .4 During periods of freezing temperatures the protection shall continue for 12 hours after cessation of moist curing and then be gradually withdrawn in accordance with 302.4.9.7.
- .5 Contractor shall plan his/her Work such that after completion of curing, a minimum of 28 Days is allowed prior to being subjected to application of de-icing chemicals.

Additional requirements were added stating that hardened air void testing shall be performed as per ASTM C457. The following articles were added.

- 302.4.12.6 .3 All tests must be performed as per ASTM C457. Regardless of water to cementing material ratios, the hardened air void system shall meet the following:
 - .1 The average of all tests shall have a spacing factor not exceeding 0.230 mm, with no single test greater than 0.260 mm.
 - .4 In the event the hardened air void system does not meet these requirements, production of concrete shall cease until it can be shown that these requirements can be met on a consistent basis.
 - .1 Subsequent testing to achieve a satisfactory hardened air void system shall be carried out by the Contractor at his own expense.
 - .5 Concrete cast with a noncompliant hardened air void system shall be evaluated by the Engineer and may be subject to removal and replacement at the Contractor's own expense.

Additional requirements for permeability testing were added, as specified in the following articles.

302.4.12.7 Permeability Testing Frequency

- .1 A minimum of two cylinders shall be taken for permeability testing from each placement and shall be cured for a minimum of 56 Days per CSA A23.1.
 - .1 The cylinders shall be prepared for testing immediately after the 56 days of curing.

- .1 Where sample preparation or testing falls on a weekend, testing shall be conducted at an age not to exceed 60 Days.
 - .1 The age of cure and the age at test date shall be reported.
- .2 The permeability testing shall be carried out by the Owner.
 - .1 Results are to be provided to the Contractor within 3 Days of the test being completed.
 - .2 The average must fall within the pay range established in Table 302-6, with no single result greater than 200 Coulombs above the pay range.
 - .1 A single result greater than 200 Coulombs above the pay range will result in the payment being reduced to the next lower level.
- .3 For concrete mix designs containing a calcium nitrite corrosion inhibitor the Contractor shall establish the relationship between concrete, of similar mix proportions, with and without the corrosion inhibitor using an approved testing plan. The difference between the results will be subtracted from tests containing corrosion inhibitor for calculation of payment adjustments.
- .4 In the event that testing results in a reduction in payment, referee testing may be requested and conducted by the Contractor.
 - .1 A minimum of two cores shall be taken from the component in question and shall be tested within 7 Days of the original test date.
 - .2 If referee testing indicates the original test results are not representative then the referee testing will prevail.

Table 302-5 and 302-6 were revised as follows.

**Table 302-5
Price adjustment for Control of Strength**

For Concrete in Structures A, B, C and D				
Strength	50 MPa+	45-49 MPa	40-44 MPa	Less than 40MPa- To be reviewed by Engineer
Payment per cubic metre component	100%	95% <u>-\$50</u>	90% <u>-\$100</u>	Removal or 75% <u>-\$200</u> (per 302.4.12.7.4)

**Table 302-6
Price Adjustment for Resistance to Chloride Ion Penetration**

For Exposure Class C-XL in CSA A23.1					
<u>Coulombs after corrosion inhibitor correction (ASTM C1202)</u>	0-500	500-1000	1000-1500	1500-2000	> 2000
Payment per cubic metre for component (% of Unit Price)	\$25 110%	\$0 105%	-\$25 100%	-\$50 95%	-\$200 75%

302.6.6 Where concrete does not meet the requirements for strength or hardened air voids, but is allowed to remain in place, there will be no positive payment adjustments for any of the properties.

304 – REINFORCING STEEL

304.2.3 All reinforcing steel shall be new billet steel conforming to current CAN/CSA G30.18, "Billet Carbon Steel Bars for Concrete Reinforcement", Grade 400W, with the following additional requirements:

- .1 ~~For Grade W bars, the minimum elongation at rupture in a 200 mm gauge length shall be 12% for No. 25 bars and smaller, and 10% for No. 30 bars and larger.~~
- .2 ~~For Grade W bars, the pin diameter for the 180° bend tests shall be 4 bar diameters for No. 25 bars and smaller, 6 bar diameters for No. 30 and No. 35 bars, and 8 bar diameters for No. 45 and No. 55 bars.~~
- .3 Reinforcing steel shall be in the form of deformed round bars unless otherwise noted in the Contract Documents.
- .4 ~~Reinforcing steel shall be free of physical defects.~~
- .5 ~~Spiral bars in pier shafts shall be Grade W bars.~~

304.2.4 Reinforcing steel shall be bent to proper shape in a plant having suitable devices for bending reinforcing steel as recommended in The Reinforcing Steel Institute of Canada, (RSIC), Manual of Standard Practice, unless otherwise noted in Contract Documents.

- .1 Heating shall not be used as an aid in bending steel, unless specifically authorized by the Engineer.
- .2 Reinforcing steel shall be free of physical defects.
- .3 No field bending of reinforcing will be allowed unless authorized by the Engineer.

304.2.9 Tie wire used to tie stainless steel, Fiber Reinforced Polymer (FRP) or other corrosion resistant reinforcing bars shall be Type 316LN or Type 316L stainless steel wire, 1.2 or 1.6 mm in diameter.

The following article was updated to reflect a change in the RSIC standard practice manual.

304.4.1.2 The Work shall be in accordance with CSA A23.1, and ~~Concrete Reinforcing Steel Institute (CRSI), Placing Reinforcing Steel Recommended Practices~~ Reinforcing Steel Institute of Canada (RSIC), Manual of Standard Practice.

305 – TENSION SPLICES

The following article was revised for clarification.

305.1.1 This Item consists of the splicing of reinforcing steel bars 25M and larger.

311 – STEEL H PILES

The following article was added under pile installation, regarding the first pile driven.

311.4.2.4.1 This pile shall be used to determine pile length and minimize splices and material waste.

321 – STEEL SHEET PILE COFFERDAMS

The following article was added for clarification.

321.3.1.1.1 The sheet piling sections and corner details shown on the drawings are based on one commercially available product selected to determine the minimum size of the footing and to determine the specified volume of the tremie concrete in accordance with 302.5.5.

331- PRECAST PRESTRESSED CONCRETE BEAMS

Many revisions were done under Curing of Concrete as stated below.

331.4.2 Curing of Concrete

- .1 When the ambient temperature in the plant does not fall below 5 °C and where the manufacturing facilities are protected from the wind and direct rays from the sun, curing and protection may be performed in accordance with CSA A23.1 and A23.4 and per 302.4.
- .2 ~~Heat treatment may be used to~~ Accelerated strength development may be attained by accelerated curing or heated concrete as defined in CSA A23.4.
- .3 When heated concrete method is used for accelerated strength development:
 - .1 Heated concrete shall have a maximum plastic concrete temperature of 33 °C.
 - .2 The maximum temperature of the hardened concrete shall not exceed 60 °C.
 - .3 The maximum cooling rate of the concrete shall not exceed 15 °C per hour.
- .4 When accelerated curing method is used for accelerated strength development: ~~Heat treatment shall be carried out in accordance with CSA A23.4 and the following:~~
 - .1 The accelerated curing shall not begin before the initial set.
 - .2 The accelerated curing shall provide excess moisture for proper hydration of the cement.
 - .3 In no instance shall the steam, radiant heat or forced air be directly applied to the concrete, forms or test cylinders.
 - .4 ~~Where accelerated curing is used,~~ The beams shall be maintained on the casting bed in an approved enclosure, designed to ensure full circulation of thoroughly saturated air and/or steam around the beams with a minimum loss of moisture and heat.
 - .5 During the initial curing period (typically 4 to 5 hours after completion of casting) the temperature within the enclosure shall be maintained at approximately 20 °C.
 - .6 For the next stage of curing, the temperature within the enclosure shall be raised at a rate not to exceed 15 °C per hour to a minimum of 40 °C and a maximum of 60 °C.
 - .7 This temperature shall be maintained until the required strength for the transfer of prestress is reached.
- ~~.4 In the case of the application of steam, radiant heat or forced air for accelerated curing;~~
 - ~~.1 The accelerated curing shall not begin before the initial set;~~

- ~~.2 The accelerated curing shall provide excess moisture for proper hydration of the cement; and~~
- ~~.3 In no instance shall the steam, radiant heat or forced air be directly applied to the concrete, forms or test cylinders.~~
- .5 The exposed surfaces of the concrete shall have an excess of moisture during the entire curing period.
 - .1 If water is applied for this purpose, then this water temperature shall not vary from the concrete temperature by more than 10 °C nor shall this temperature exceed 60 °C.
- ~~.6 After the required strength for transfer of stress has been reached, the temperature shall be lowered at a rate not exceeding 15 °C per hour.~~
- .6 Stress transfer shall take place when the concrete temperature is between above 30 °C. and 40 °C but all beams must be kept moist until transfer, in accordance with CSA A23.4, clause 27.6.1.
 - .1 Maximum temperature differential between the girder and the surrounding environment shall be 20 °C.
 - .2 Additional measures may be required to prevent thermal shock. This may include insulated tarps, with or without an additional heating source, draped over the girders and stressing cables.
- .7 After transfer of stress the temperature shall be lowered at a maximum rate of 15 °C per hour until the beam is at the ambient air temperature.
 - .1 The beams shall not be exposed to temperatures below freezing until they have undergone two Days of drying in warm temperatures after the transfer of stress.
- .8 The Contractor/manufacturer shall provide a continuous record of curing temperatures for the entire curing period by means of approved accurate automatic recording devices, spaced one per beam to record the temperature throughout the length of the curing enclosure(s).
 - .1 The maximum permissible temperature variation within the enclosure shall not exceed 5 °C.
 - .2 Shop, girder and enclosure temperature records shall be submitted to the Engineer on a daily basis during production.
- .9 Forms shall not be removed until the concrete has obtained the specified release strength.

The following articles were revised to indicate that beams shall be handled and erected by two or more cranes.

331.4.9.1.5 Beams shall be handled/erected by two or more cranes.

331.4.9.1.7 Where beams are proposed to be handled/erected by a single crane, the Contractor shall submit the

STRUCTURES

DIVISION 300

335 – STEEL SUPERSTRUCTURE

The following Item was rewritten. The coatings sections were removed from this Item. See Item for full details.

342 – BRIDGE POT BEARINGS

*The total load for the ultimate limit state for **Table 342-4 Average Contact Pressure for TFE Elements** was revised from 70MPa to 65MPa.*

344 – FINGER JOINT ASSEMBLIES

Carbo Zinc 11 and Dimecote 9 were added as approved coatings under the Materials section.

344.2.7 *revised article as follows:* Structural steel in finger plate assemblies shall meet the requirements of CAN/CSA G40.21M Grade 350WT Category 3 or with a certified Charpy V-notch impact energy of 27 joules when tested at minus ~~20~~ 30°C.

345 – STEEL BALLASTWALL ANGLE

Carbo Zinc 11 and Dimecote 9 were added as approved coatings under the Materials section.

351 – WATERPROOFING

A new Standard Drawing was added for torch applied waterproofing for bridge decks, Standard Drawing 351-4.

365 – ENGINEERED FILL

The gradation limits for Engineered Fill were revised and shall conform to the grading limits of 31.5 mm crushed rock base or 31.5 mm crushed gravel base per 201.2. Table 365-1 was removed from the Item.

DIVISION 400- MUNICIPAL

401 – STORM SEWER PIPE

The following articles were added under excavation.

- 401.4.2.4.2 The Pavement shall be excavated separately.
- 401.4.2.5 All other materials shall be excavated by material type and stockpiled separately. Selected stockpiled material shall be reused to backfill the excavation to Subgrade, as directed by the Engineer.
- 401.4.6.4 *article revised as follows:* Stockpiled material not reused per 401.4.2.5 and excavated material not suitable for backfill, as determined by the Engineer, shall become the property of the Contractor and shall be disposed of outside the Work Site.

404 – PRECAST CATCH BASIN

Shop drawings shall be submitted in accordance with Item 956 and the following new articles.

- 404.3.2 The Contractor shall submit, in accordance with Item 956, shop drawings for each precast catch basins, containing but not limited to, the following information:
- .1 Station of catch basin, DTI Contract number and description;
 - .2 General layout showing catch basin and appurtenances;
 - .3 Length and weight (mass) of individual sections;
 - .4 Joint details;
 - .5 Location of reinforcing steel (including additional reinforcement around large openings);
 - .6 Concrete design strength, age of test and shipping strength.

The following article was added.

- 404.4.2 The Contractor shall be responsible for the design and construction of all temporary shoring, bracing and underpinning necessary to complete the Work.

416 – CURB AND GUTTER

The following article was added.

- 416.4.4.1 The Contractor shall neatly cut the existing Pavement in a straight line so that the Work does not disturb the surface beyond the limits of excavation.

DIVISION 500 - TRAFFIC CONTROL DEVICES

510 – GUIDE POSTS

Article 510.2.7 was revised to indicate that preservation and wood products shall be supplied in accordance with CAN/CSA 080.

512 – GUIDE RAIL

The following article was added to clarify which markings are required on each section of guide rail in accordance with AASHTO M180.

- 512.2.4.1 Each section of guide rail, in accordance with AASHTO M180, requires markings as follows:
- Name or brand of manufacturer;
 - Identification symbols or code for heat;
 - Number and coating lot;
 - AASHTO Spec #; and
 - Class and Type.

515 – ENERGY-ABSORBING GUIDE RAIL TERMINAL

The following article was removed as there are other types of post that are acceptable.

~~515.2.5 Posts shall be a steel “breakaway” type designed for the EAGRT to be supplied on the Contract.~~

The following article was removed.

~~515.4.4 The impact end of each EAGRT may be offset up to 600 mm away from the line of the guide rail installation if the line is not on a horizontal curve, as determined by the Engineer.~~

520 – CAST-IN-PLACE CONCRETE BARRIER

This Item was revised to indicate that delineators shall be available from the Owner from stock. Delineators shall be installed on the median barrier every 15 m on tangents and every 7.5 m on curves.

This Item was revised to indicate that concrete shall be supplied in accordance with CSA A23.1, class of exposure C-XL.

529 – CONCRETE-ENCASED DUCT BANK SYSTEM

New Item incorporated in the 2015 edition.

554 – OVERHEAD SIGN STRUCTURE FOUNDATION

554.1.1 *revised as follows:* This Item consists of the excavation, shoring, construction and backfilling of a reinforced concrete foundation for an overhead sign Structure.

555 – OVERHEAD SIGN STRUCTURE

The following articles were added.

555.4 .4 Inspection and Testing

- .1 A visual inspection shall be carried out before erection to ensure there are no cracked welds as a result of the transportation of the overhead sign Structure to the Work Site.
 - .1 The inspection shall be carried out by an independent inspector certified in accordance with CAN/CSA W178.2.
 - .2 The inspector's report shall be submitted to the Engineer before erection of the Structure.
 - .3 Faulty welds shall be corrected as specified in CAN/CSA W59.2, clause 5.12.
 - .4 Corrected welds shall be re-inspected.

555.4.5 .4 A minimum of 20 m² of sign panel (or equivalent weight in sand filled bags which must be securely attached until the sign panels are installed) shall be installed upon the Structure on the same day it is erected.

571 – PAVEMENT MARKINGS

Table 571-1 Modifications to CGSB 1.206-M-89, Chrome yellow (as PBCrO₄) was deleted from the table. The following note was added to the table: Lead Content (if present) not to exceed 600 mg/kg.

Table 571-2 Chemical Properties of Waterborne Traffic Paint, Medium Chrome Yellow (g/L) (Lead chromate content – min 87%) was deleted from the table. The following note was added to the table: 3) Lead Content (if present) not to exceed 600 mg/kg.

The note in **Table 571-3 Physical Properties of Waterborne Traffic Paint** was revised as follows: Non-tracking time for Regular Water Based striping paint based on 375 µm (15 mils) wet film thickness applied on dry pavement having temperature > 10 °C, under humidity conditions ≥ 80%.

The following articles were revised.

571.4.2.3.2 Equipment shall be capable of painting the longitudinal lines outlining cross-hatched islands at a width of 100 mm or 200 mm, and cross-hatching bars at a width of 450 mm and "Stop" bars at a width of ~~400~~ 600 mm.

571.4.2.3.3 Equipment shall be capable of painting arrows and similar markings, using templates with dimensions as per the Manual of Uniform Traffic Control Devices for Canada, Part C1 supplied by the Owner.

Cross-hatching line shall be 450 mm wide per 571.4.6.5, and stop bars shall be 600 mm wide per 571.4.6.6.

571.4.6.7.2 *revised as follows:* Overlay glass beads shall be applied at a rate of 0.7 kg/L of paint for Oil Based paint and 0.8 kg/L of paint for Water Based paint.

Testing costs from the appeal shall be borne by the Owner if test results are satisfactory and by the Contractor if test results fail per 571.4.7.4.2.

DIVISION 600- ENVIRONMENTAL

604 – JUTE MATS

The following article was revised for clarification.

604.4.3 Jute mats shall be installed along the full length of all CE ditches and all topsoiled ditches the prepared ditches the same day as removal of on which erosion structures are removed, after final shaping of the ditches, and prior to hydroseeding.

608 – RANDOM RIPRAP

The following article was revised for clarification.

608.2.4 Random riprap shall consist of clean, hard, sound, durable rock, having a density of not less than 2.6 t/m³ and angular surfaces such that the rocks interlock when placed.

614- HYDROSEEDING

The following articles were deleted.

~~614.2.9 Only processed straw mulch shall be used for Hydroseeding BM.~~

~~614.2.9.1 Processed form of straw mulch being shredded straw.~~

Table revised as follows:

**Table 614-3
Application Rates for Hydroseed**

Type of Material	"B" (kg/ha)	"BM" (kg/ha)
Seed	125	200
Fertilizer	375	375
Hydraulic Mulch: All	500	500
Binder (tackifer): <u>Application rate per manufacturer's specifications.</u>		
Mulch: Hay/straw bales/rolls/ <u>processed straw</u>	Per 616.4	Straw only per 616.4
Note: Application rate per manufacturer's specifications.		

The following article was revised to eliminate misinterpretations of the areas to be reseeded.

614.4.7.3.1 Areas of poor or no growth ~~which exceed five percent (measured cumulatively) of the area hydroseeded~~ shall be reseeded as determined by the Engineer.

617 – ROOT WADS

New Item incorporated in the 2015 edition.

621- TEMPORARY WATER CONTROL WORKS

There have been many revisions to this Item, please refer to Item for full details. Some of the changes include:

- *This Item applies to Culverts with a nominal ID greater than 1200 mm, unless otherwise indicated.*
- *Materials for temporary working pads shall be supplied in accordance with Standard Drawing 621-1.*

- *The design of each TWCW plan shall include the flow capacity, the proposed method, description and drawings of the TWCW designed to accommodate or exceed the minimum specified flow capacity.*
- *The following information is provided on the drawings for each watercourse crossing:*
 - *Drainage Area*
 - *Time of Concentration*
 - *Runoff Coefficient*
 - *Design Flow (Q100)*
 - *Minimum Specified Flow Capacity.*
- *Penalty will not apply during periods of flow exceeding the flow capacity provided the TWCW plan was followed. The Contractor shall submit documentation that verifies that the flow exceeded the flow capacity.*

622 – FISH RESCUE

New Item incorporated in the 2015 edition.

623 – CULVERT EROSION PROTECTION

New Item incorporated in the 2015 edition.

630 – SOIL REINFORCEMENT

New Item incorporated in the 2015 edition.

DIVISION 800- PAYMENTS & ADJUSTMENTS

810 – FIXED RATES

A fixed rate of \$300.00 per tonne was added to **Table 801-1 Fixed Rates** for Portland Cement under Items 262 and 263. The quantity for this item is for the addition of Portland cement as a stabilizer and payment will be made at the fixed rate only if added in the design mix formula and incorporated into the reclaimed/recycled material.

The fixed rate for Steel H Pile Splices was revised to \$800.00 per splice in **Table 810-1 Fixed Rates**.

812 – EXTRA WORK

The following article was revised to address standby time.

812.3.7.4 ~~If delays occur that are directly attributable to the Extra Work, standby time shall be paid at half the applicable rental rate for the Equipment carrying out the Extra Work brought onto the Work Site specifically for Extra Work.~~

- .1 Standby time shall not be paid for Equipment that was on the Work Site at the time the Extra Work was ordered.

The following article was added in order to clarify how fuel is reimbursed for equipment rented from a rental agency.

812.3.8.2.3.2 The Contractor shall provide proof of the amount of fuel, for Equipment utilized solely on Extra Work, in order to be reimbursed.

825 – MOBILIZATION

The following article was revised.

825.6.2 The total of this Item will be paid on the first Progress Estimate, provided that the value of the Work completed in the Work Area on Items other than this Item is greater than five percent of the Total Contract bid or greater than \$250,000.

DIVISION 900- STANDARD CONDITIONS

931 – SCALES AND WEIGHING PROCEDURES

A section on loader scales was added to the Item.

931.3 LOADER SCALES POLICY

- .1 The following policy shall apply to the Contractor's loader scales used on the Contract.
- .2 Measurement Canada is the only company that may inspect and certify loader scales.
- .3 Measurement Canada will perform periodic marketplace monitoring inspections to ensure that Contractors are abiding by the provisions of the Weights and Measures Act and Regulations.
- .4 Loader scales will be acceptable for weighing of raw materials used in road construction, such as materials under Item 121, 167, 201, 203, 204, and 608.
- .5 Loader scales will not be acceptable for weighing manufactured road materials including asphalt concrete, concrete, and any other material consisting of binder combined with aggregates.
- .6 Loader scales will not be acceptable for weighing winter sand or salt.
- .7 Loader scales will not be acceptable for weighing topsoil, ornamental rocks and gravels, or any other material primarily used for landscaping purposes.
- .8 Loader scales that do not comply with the equipment restrictions on the certificate of inspection will not be accepted for use on the Owner's Work.
- .9 The Contractor shall be responsible for the mechanical condition and proper operation of the loader scales to correctly weigh, within designated tolerances, materials used on the Contract, whether the scales are owned by his/her company, subcontractor, a supplier, or other.
- .10 The Contractor, at his/her own expense, shall ensure that Measurement Canada has inspected and certified the loader scales.

The truck platform scales policy was revised to reflect current practices from Measurement Canada.

931.4.4 Measurement Canada will perform periodic marketplace monitoring inspections to ensure that Contractors are abiding by the provisions of the Weights and Measures Act and Regulations.

- .1 As a result of a routine inspection, if a Measurement Canada Inspector determines that a Contractor's scale is non-compliant, a notice of non-compliance will be issued and the Contractor will be required to have their device repaired.
 - .1 A report of the alteration or repair shall be sent to the nearest Measurement Canada office within 7 Days.
 - .2 If the Contractor's scale is placed under seizure, repairs must be completed and the scale released from seizure by Measurement Canada prior to the scale being put back into services. Once the scale has been brought back into compliance, Measurement Canada may schedule a re-inspection.
- ~~.4 The test weights at the Saint John MC office are for use by MC personnel only and will not be made available for use by the Contractor or a Private Scale Company.~~

**SUMMARY OF REVISIONS FOR JANUARY, 2015
STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION
DEPARTMENT of TRANSPORTATION and INFRASTRUCTURE**



STANDARD CONDITIONS

DIVISION 900

- ~~.1 The term "Private Scale Company" shall mean any of the companies listed in Table 931-1 having standard test weights meeting the requirements of 931.5.~~
- ~~.5 MC will do control (random) checks of contractors' scales throughout the year.~~
- ~~.1 If, for measurement errors, the scales have been rejected by an MC inspector at a control check (random or unscheduled inspection), the Contractor shall make the necessary adjustments or repairs and request MC to reinspect the scales to permit them to be used again.~~
- ~~.1 Upon request by the Contractor to MC to inspect scales rejected by MC on a control check, the MC inspector will advise the Contractor of her/his availability to do the reinspection. If the MC inspector is not available the Contractor shall arrange reinspection by a Private Scale Company. In either case, the reinspection will be at The Contractor's expense.~~
- 931.4.5 Upon the request of the Engineer, the Contractor shall engage a Private Scale Company to do random checks in order to verify calibration of certain scales.
 - .1 The term "Private Scale Company" shall mean any of the companies listed in Table 931-1 having standard test weights meeting the requirements of 931.6.
- 931.4.7 The Contractor shall ensure that a Private Scale Company has verified that the scales have been properly installed and calibrated inspected by a Private Scale Company as per 931.4.7.1 931.3.8.1 and have affixed thereon a test sticker bearing the Private Scale Company's name or logo, the date of testing inspection, the technician's signature, and any pertinent remarks.

The following was updated under Private Scale Companies.

- 931.8.1 Table 931-1 lists the Private Scale Companies which have test standard weights which Measurement Canada have certified for calibrating and checking contractors' truck platform scales. The listed accredited Private Scale Companies are authorized to perform testing pursuant to the Weights and Measures Act.

**Table 931-1
Accredited Private Scale Companies**

Advatek Systems Inc.	Moncton, NB	506-857-0909
<u>Aggregate Equipment (Atlantic) Limited</u>	Truro, NS	902-896-8943
All Weigh Systems (2002) Inc.	Fredericton, NB	800-563-9344
Fleetway Inc.	Saint John, NB	506-648-2226
Mettler-Toledo Inc.	Canada	800-663-5456
Weigh-Tronix Canada	Atlantic Canada	800-565-7889
	Fredericton, NB	506-454-4010
	Quebec, QC	888-496-9019
<u>Note: * identifies accredited Private Scale Companies that may perform initial inspection</u>		

932 – PRIVATE TRUCKS

The following articles were added to update the requirements for Private Trucks.

932.4.4 The Contractor shall ensure that operators of “Private Trucks” have met the following requirements:

- .1 Operator has successfully completed the following safety training:
 - Occupational Health and Safety (OHS) Awareness;
 - Workplace Hazardous Material Information System (WHMIS) training; and
 - Work Area Traffic Control Manual (WATCM) Awareness.
- .1 OHS and WHMIS training courses shall be provided by the New Brunswick Construction Safety Association (NBCSA); Safety Services New Brunswick (SSNB); or a member of the Association of Safety and Health Consultants and Trainers (ASHCAT).
- .2 WATCM awareness training is available on the NBDTI website.
- .2 Operator has met the required driver’s licence for the type of “Truck” being used to haul material.
- .3 Operator has carried out a pre-trip inspection each day that the “Truck” is used.

933 – HEAVY EQUIPMENT

The following article was added to ensure that detailed calculations are completed to ensure that there will be no damage to the culvert if heavy equipment hauls over the culvert with less than 3 metres of fill.

933.3.6 The approval of the Engineer is required prior to Heavy Equipment hauling over Culverts with less than 3 m of fill.

- .1 The Contractor shall submit detailed calculations stamped and signed by a Professional Engineer, in support of such request at least 7 Days before hauling is due to commence.

946 – WORK PROGRESSION

Many changes were done to Item 946 which are listed below.

946.1.2 Erodible material includes any material that has the potential to release sediment. ~~typically include cohesive and organic soils handled under Item 106, 107 or 121; mudstone or similar types of rock handled under Item 107, 108 or 121; and topsoil handled under Item 106, 107 or 613.~~

946.2.1 For the purposes of this Item, a Work Area is an area of the Work Site which has been grubbed or otherwise unstabilized on a given Day, it is date specific. ~~having limits that, notwithstanding 946.3.3, are based on the premise of completing and stabilizing erosion prone cuts and fills therein no later than 30 days after beginning them. Work Areas may vary in size, as follows:~~

946.2.2 The extent of each Work Area (station limits, estimated quantities and duration of cut/fill Work therein) shall be submitted in writing before Work under Item 102, 106, 107, 108 or 121 begins, ~~or shall be as indicated on the approved initial and subsequent Work schedules.~~

SUMMARY OF REVISIONS FOR JANUARY, 2015
STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION
DEPARTMENT of TRANSPORTATION and INFRASTRUCTURE



STANDARD CONDITIONS

DIVISION 900

- 946.2.4 The 30-Day period shall begin the day that grubbing, stripping, cut, fill construction begins, or ~~one week from commencement of grubbing, whichever is sooner.~~
- 946.3.3 Work Areas that cannot be completed within the 30-day period because cut/fill quantities are too large (per 946.2.1.2), ~~or because of prolonged wet weather~~, shall have all erodible materials mulched under Item 616 as directed by the Engineer.
- 946.3.4 Stabilization is not required on the top surface of a fill or on the floor of a cut, ~~or on the part of a cut the Contractor indicates shall be excavated within one week after the 30th day~~ however the Contractor shall address the release of suspended solids through the installation of applicable erosion control measures.
- 946.4 UNCOMPLETED WORK AREAS
- .1 Work Areas that have been under continuous ~~and diligent~~ construction but are not completed by the end of the 30-Day period shall be stabilized per 946.3.3. Work shall continue ~~diligently~~ on the cuts and fills, ~~which and~~ shall be stabilized ~~each successive 30-day period~~ as directed by the Engineer per Item 616, until final shaping and hydroseeding are completed.
- .2 ~~Grubbed and stripped~~ Work Areas that have not been under continuous ~~and/or diligent~~ construction, or that have been abandoned with cuts/fills uncompleted, ~~and which present the potential for fines to be washed into a watercourse~~, shall be mulched per 616.2 and 616.4 at the Contractor's expense by the end of the 30-Day period or by the 7th Day after abandonment, whichever is sooner.
- .1 Abandonment shall mean ceasing construction on the cuts and fills in a Work Area without valid cause. Valid cause would include ~~prolonged wet weather~~, unworkable site conditions due to precipitation, or an order by the Engineer or officials from DFO, DELG DENV or other regulatory agency to cease Work for reasons not attributable to the Contractor's actions or failure to act.
- .3 Work Areas that are not completed at the time of winter shutdown shall be mulched under Item 616, ~~except that any exposed areas the Contractor failed to mulch under a previous 30-day period~~ any Work Areas the Contractor failed to mulch under 946.4.2 shall be mulched per 616.2 and 616.4 at the Contractor's expense.
- 946.5 OTHER
- .1 Erosion-prone embankments constructed within ~~50~~ 30 m of natural watercourses shall be stabilized in accordance with Item 948 and as elsewhere specified in the Contract Documents.
- .2 Erosion-prone cuts shall be excavated such that runoff is directed to one or ~~two~~ more exit points and controlled by Sediment Control Fence and/or Erosion Control Structures per Item 602 and Item 605, respectively or as otherwise directed by the Engineer.
- .3 Areas that have been acceptably shaped but are damaged by precipitation, runoff or slope failure before hydroseeding has been done, shall be acceptably repaired and reshaped at the Contractor's expense and then hydroseeded under Item 614.
- .4 Areas that have been acceptably shaped and hydroseeded, but are subsequently damaged by precipitation, runoff or slope failure, shall be repaired, reshaped under the provisions of Item 812 and hydroseeded under Item 614.

- 946.5 .5 If stabilization of erodible materials has not been performed by the 30th Day as described in this Item, the Contractor shall pay to the Owner a penalty of ~~\$500.00~~ \$1000.00 for each Day (except Sundays and statutory holidays) that the required Work remains unstabilized ~~uncompleted, beginning on the third day following the end of the 30-Day period or the 10th Day after abandonment, whichever is sooner.~~
- .6 The "Item 946 Work Progression Tracking Report" is considered as official documentation of work progression.
- .7 Rock cuts shall be subject to the Work Area and 30-Day requirements of 946.2 unless the Engineer agrees that some of the in situ rock and/or blasted but unexcavated rock may be left in place for use at a later date. The stabilization requirements of 946.3 do not apply unless the rock cut foreslopes and ditches are to be topsoiled or are deemed to be an erodible material under 946.1.2 or otherwise release sediment.
- .1 Rock fills shall be subject to the Work Area and 30-Day requirements of 946.2, including stabilization if the slopes are to be topsoiled or are deemed to be an erodible material under 946.1.2 or otherwise release sediment.

947 – DISPOSAL AREA

The following article was revised to ensure that slopes are constructed stable.

- 947.1.10 Disposal areas shall be constructed such that the slopes are stable and left in a neat and finished appearance, and shall be hydroseeded, mulched or otherwise stabilized against erosion, obtaining guidance from the described work progression details as noted in Item 946 and to the satisfaction of the Engineer. Windrows of earth or debris on either side of the entrance shall be either removed or shaped to a uniform and level condition.

948 – ENVIRONMENTAL REQUIREMENTS

The following article was revised to ensure that fuel and other hazardous materials are not stored close to a watercourse, wetland or groundwater source.

- 948.8.3 Fuel and other hazardous materials shall not be stored within 100 m of a watercourse, wetland or groundwater source (private well), ~~as identified in the field by the Engineer.~~

953 – AUDITED SAFETY PROGRAM

Bidders must now submit their Certificate of Recognition from the New Brunswick Construction Safety Association as part of their tender. Articles were revised as follows.

953.2 DETAILS

- .1 ~~Within 12 Days after tenders for the Contract are opened, and prior to award of the Contract, the Contractor shall submit~~ The Bidder shall submit, as part of their tender, a Certificate of Recognition (COR) issued under the Certificate of Recognition Program by the New Brunswick Construction Safety Association (NBCSA), or approved alternative.
- .1 Tenders without certification at tender opening will be rejected.

958 – FORMWORK

958.4 CORROSION PREVENTION

- .1 Tie wires, form ties, bolts, hardware and other embedded metal items shall extend to within less than the specified cover minus 10 mm from the concrete surface.
- .2 Form ties shall be of such a type that they can be entirely removed or cut back 50 mm or more below the finished surface of the concrete leaving no metal within 50 mm of the surface.

958.5 .3 If hanger removal leaves a hole of 13 mm or more it shall be cleaned and patched utilizing concrete mortar consistent with the parent concrete and containing latex.

- .1 Holes less than 13 mm may be filled with an Engineer approved sealant, such as Vulkem 116.