

**AMENDMENT TO THE
2017 CONSTRUCTION ADMINISTRATION AND INSPECTION
TASK MANUAL (CAITM) Part B**

March 2018

Changes Related to the elimination of quality verification services

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Changes Related to the elimination of quality verification services

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Changes Related to the elimination of quality verification services

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CS 53	GFRP	999S02	E2	C2	59
CS 58	Jacking of Superstructures	999S30	N/A	C2 unless specified otherwise	62
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Changes Related to the elimination of quality verification services

Forms:

- Request to Proceed: PH-CC-701 March 2018
- Notice to Proceed: PH-CC-702 March 2018
- Request to Place Structural Concrete: PH-CC-737 March 2018
- Manufacturer's Certificate Of Conformance: PH-CC-821 March 2018
- Certificate Of Conformance: PH-CC-822 March 2018

Definitions of the Forms are available in SSP 100S17 (Amendment to the MTO General Conditions), as follows:

Certificate of Conformance means a form issued by an Engineer confirming that the specified components of the Work are in conformance with the Contract Documents.

Manufacturer's Certificate of Conformance means a form issued by an Engineer confirming that the fabrication and required testing has been carried out on a component or product in conformance with the Contract Documents.

Notice to Proceed means a form issued by the Contract Administrator notifying the Contractor to proceed to the next operation according to the Contract Documents.

Request to Proceed means a form issued by the Contractor notifying the Contract Administrator that a component or stage of the work has been completed according to the Contract Documents.

GRADING AND DRAINAGE

GD 41 NOISE BARRIER

Use this task in conjunction with CS 1.

Task #	Activity
GD 41.1 M	Receive Working Drawings for the noise barrier system at least 4 weeks prior to the commencement of construction and verify that it meets the Contract requirements and that it has been sealed and signed by an Engineer.
GD 41.2 M	Check all the delivered material to verify that it is being supplied from the approved list that was submitted by the Contractor at the commencement of the Contract.
GD 41.3 M	Check that grading and berm construction is completed conforms with the requirements of the Contract Documents prior to the footing construction.
GD 41.4 M	Check that barrier for tree protection is in place as specified in the Contract Documents, prior to commencement of the Work.
GD 41.5 M	Check that all loose material is removed from the bottom of the postholes or is compacted prior to post installation.
GD 41.6 M	Check that posts are installed to the proper alignment and depth.
GD 41.7 M	Check the alignment and elevation of the anchorage assembly's if applicable.
GD 41.8 M	Check that earth and granular material comply with specification and are compacted to the target density.
GD 41.9 M	Check that tree pruning and removal is carried out correctly and kept to a minimum. Issue approval prior to commencement of any pruning or removal.
GD 41.10 M	Check that concrete material, production and testing conforms with the requirements of the Contract Documents

- GD 41.11 M Receive and check a Request to Proceed from the Contractor after the construction of the noise barrier footings and posts and prior to the installation of the noise barrier panels.**
- GD 41.12 M Check that the installation of the noise barrier footings and posts have been constructed in conformance with the Contract Documents.**
- GD 41.13 M Issue a Notice to Proceed, in a timely manner, after receiving the Request to Proceed and prior to the installation of the noise barrier panels.**
- GD 41.14 Check that installed panels are free of any oils, dirt and debris and are installed in accordance with the requirements of the Contract Documents and are in their proper location in the noise barrier system.
- GD 41.15 Check bottom panels to make sure that no voids are visible underneath the panel. If required make sure that minor grading is carried out so the installation matches the ground profile.
- GD 41.16 M Check that noise barriers on structures are attached according with the requirements of the Contract Documents.**
- GD 41.17 M Check that the noise, or traffic barrier units, or both, are constructed within the tolerances of the lines and grades as specified in the Contract Documents.**
- GD 41.18 Check that all galvanized surfaces are free from any defects and, if required, are repaired according to the requirements of the Contract Documents.
- GD 41.19 Check that all side fences are reconnected in accordance to the requirements of the Contract Documents.
- GD 41.20 Check the testing of the mounting bolts when attached to retaining walls to determine that specified torque has been applied.
- GD 41.21 Check that all drainage requirements have been implemented.
- GD 41.22 M Check that the manufacturer's identification plates contain the proper information and that they are attached to the completed noise barrier system according to the requirements of the Contract Documents.**

GD 41.23 M Check that the noise barrier material is visually uniform in appearance in terms of colour, pattern, and texture from a distance of 15 m from noise barrier system. Noise barrier panels shall visibly match adjacent panels.

GD 41.24 M Receive Certificate of Conformance from the Contractor upon completion of the installation of the noise barrier system.

LEVEL OF INSPECTION – D2

GRADING AND DRAINAGE

GD 44 WICK DRAINS

Task #	Activity
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| GD 44.1 | Check qualifications of specialized subcontractor. |
| GD 44.2 | Check that the wick drain satisfies the physical and mechanical properties specified. |
| GD 44.3 | Check that the Contractor's Engineer demonstrates that the proposed materials, equipment, and installation method produce a satisfactory wick drain installation in accordance with the Contract Documents. |
| GD 44.4 | Check that the Contractor's Engineer installed a minimum of 10 trial wick drains at permanent installation locations. |
| GD 44.5 | Check that the Contractor's Engineer inspects and monitors the trial wick drain installation on a full-time basis. |
| GD 44.6 | The Contract Administrator shall inspect the wick drain trial prior the installation of permanent wick drains by the Contractor, and check that the trial wick drains, equipment, materials, installation method and procedures meet the Contract Requirements and satisfy the physical and mechanical properties specified. |
| GD 44.7 | Check that the following items are submitted prior to construction: <ul style="list-style-type: none">• one metre sample of wick drain• the manufacturer's technical specifications indicating that the materials meet the requirements, and• a certificate for each production lot supplied indicating that the wick drain supplied was produced and tested according to the requirements are submitted prior to construction. |
| GD 44.8 | Receive from the Contractor, at least 3 weeks prior to the installation of wick drains the details of the sequence and method of installation outlining the following: <ul style="list-style-type: none">a) Size, type, weight, maximum pushing force, and configuration of the installation rigd) Dimensions of the mandrel to be usedc) Details of wick drain anchoraged) Detailed description of proposed installation procedurese) Alternative methods for overcoming obstructionsf) Methods for splicing wick drains |

- GD 44.9 The Contract Administrator shall inspect the permanent wick drain installation and check that it meets the Contract Documents.
- GD 44.10 Receive a Certificate of Conformance from the Contractor upon completion of the wick drain installation and prior to the placement of any overlying material.**
- GD 44.11 Check that the Certificate of Conformance is signed, sealed and dated by the Contractor's Engineer.**
- GD 44.12 Check that the wick drain is properly stored and protected from sunlight, dirt, dust, mud, debris and any other detrimental substances.
- GD 44.13 Check if preaugering is required.
- GD 44.14 Check that material supplied by the Contractor is sampled as required and forwarded for testing.**
- GD 44.15 Check layout of drains.
- GD 44.16 Check plumbness of drains.
- GD 44.17 Check cut-off of drains.
- GD 44.18 Check method for drain installation when obstructions are encountered.
- GD 44.19 Check Tip Elevations.
- GD 44.20 Check for artesian flows.
- GD 44.21 The Contract Administrator shall check that the wick drains, satisfy the physical and mechanical properties specified.
- GD 44.22 Check the appropriate equipment is used to install the wick drains.
- GD 44.23 Check that the installation procedure submission requirement is satisfied.
- GD 44.24 Check that trial drains are installed.

LEVEL OF INSPECTION – B2

GRADING AND DRAINAGE

GD 49 PRESTRESSED SOIL AND ROCK ANCHORS

Task # Activity

GD 49.1 M Receive and review the 5 sets of Working Drawings from the Contractor at least 3 weeks prior to the commencement of the work of prestressed rock and soil anchors.

GD 49.2 At least 14 Days prior to commencement of the work, receive and check from the Contractor:

- a) The type, source, and physical and chemical properties of the bentonite or polymer
- b) The source of water
- c) Method of mixing slurry
- d) The water solids ratio and the mass and volumes of the constituent parts, including any chemical admixtures or physical treatment employed to produce slurry with the required physical properties
- e) Details of procedure to be used for monitoring the quality of the slurry
- f) A test report showing the properties of the slurry and certifying that the slurry meets the requirements of API 13A
- g) Method of disposal of the slurry

GD 49.3 At least 14 Days prior to commencement of the work, receive and check from the Contractor a copy of:

- a) Manufacturer's catalogue giving the complete data on the coupler material and installation procedures
- b) Test reports from the manufacturer certifying strength and fatigue requirements

GD 49.4 Receive and check one copy of the mill test certificates, indicating that the steel meets the requirements of the Contract Documents at the time the prestressing steel is delivered to the job site.

GD 49.5 Receive and check the test information from the Contractor, prior to commencement of the work.

GD 49.6 M Inspect the following Work and check that the Contractor's Engineer is inspecting:

- a) Construction of anchor holes**
- b) Anchor installation**
- c) Primary grouting**
- d) Post grouting**
- e) Placement of slurry in free stressing length**
- f) Anchorage installation**

- GD 49.7 Check that testing is carried out as detailed on the Working Drawings and as specified in the Contract Documents.
- GD 49.8 Inspect and witness 100% of the time that the maximum anchor load shall not exceed 80% of the guaranteed minimum ultimate strength of the tendon.
- GD 49.9 Check that stressing does not commence until the grout has reached its 28-Day strength.
- GD 49.10 Check that the Contractor's Engineer witnesses the Pre-production and Production anchor testing.
- GD 49.11 Check that the minimum of 3 lift-off tests are conducted at each site and that the lift-off tests shall not be performed until 48 hours has elapsed after transferring the lock-off load.
- GD 49.12 Check that the method of lif-off testing shall be as detailed on the Working Drawings.
- GD 49.13 Check that the anchor installation is in accordance with the Contract Document requirements.
- GD 49.14 Check that the Certificate of Conformance confirms that the anchors have been supplied confirm that the anchors have been supplied, installed, and stressed in conformance with the Contract Documents requirements.
- GD 49.15 Check that the Certificate of Conformance is signed, dated and sealed by an Engineer.

LEVEL OF INSPECTION – B2 unless specified otherwise

CONCRETE AND STRUCTURES

CS 2 CONCRETE STRUCTURES

Use this task in conjunction with CS 1

Task #	Activity
CS 2.1 M	Receive the submission for the “Bridge Deck Placement Plan”, when applicable, a minimum of 7 days prior to the commencement of placing concrete in bridge decks. Check that the work plan includes: a) Proposed methods and sequence of placing operations to be used b) Complete details of all equipment to be used during the concrete placement
CS 2.2 M	Receive submission for “Temperature Control Plans” a minimum of 7 days prior to commencement of placing any concrete subject to cold weather, high performance concrete, bridge decks and large concrete components where the smallest dimension is 1.5 m. The plan shall include all the requirements specified in OPSS 904.
CS 2.3M	Receive submission for curing compound prior to the application of the curing compound. Check that the submission includes: a) Literature stating the manufacturers recommended rate of application b) Description of the equipment to be used c) A statement from the manufacturer of the curing compound approving the equipment
CS 2.4M	Check that the “Request to Place Structural Concrete” form is issued, prior to each placing operation and that the form is signed by the Contractor and is acceptable. The form shall be accompanied by all supporting documentation as indicated on the form. Sign and date the form only if it is acceptable.
CS 2.5M	Receive a copy of the manufacturer’s certificate verifying compliance with OPSS 1202 prior to installation of the approach slab seat elastomer or ballast wall elastomer or both.
CS 2.6	Check that bridge deck finishing machine, screed rails and work bridges are as specified in the Contract Documents.
CS 2.7	Check that deck finisher dry run is conducted and cover to reinforcing steel is acceptable.
CS 2.8	Check transferring systems (concrete pumps, belts, runways, etc.).

- CS 2.9 Check that curing materials and, in cold weather, all protection materials have been delivered to the site before any concrete is placed.
- CS 2.10 Check that the thermocouples for temperature and temperature difference control are installed in accordance with the Contractor's plan.
- CS 2.11 M Issue a Notice to Proceed, in a timely manner, and prior to the placement of concrete if the requirements of the Contract Documents are met.**
- CS 2.12 Check that the datalogger temperature records and records of any action taken to maintain control of temperature and temperature difference are submitted at the end of each working day during the temperature monitoring period.
- CS 2.13 Review details of "pre-placement" meeting regularly for compliance.
- CS 2.14 Check that the concrete and concrete testing is in accordance with CS 1.
- CS 2.15 Check that the placing of concrete operations are according to the requirements of the Contract Documents.
- CS 2.16 Check that vibratory equipment is in good operating condition and meets specification requirements.
- CS 2.17 Check for adequate consolidation and proper use of vibrators.
- CS 2.18 Check that finishing of plastic concrete is as specified in the Contract Documents.
- CS 2.19 Check that finished concrete is within tolerances specified in the Contract Documents.
- CS 2.20 Check that specified curing is carried out. For HPC, check structure decks, approach slabs, curbs and sidewalks, to check that fog mist is applied continuously from the time concrete is deposited in the deck until it is covered with burlap. Check that burlap is prevented from freezing during cold weather.
- CS 2.21 Check that control of temperature and temperature difference requirements are carried out as specified in the Contract Documents, where applicable.
- CS 2.22 Take random readings of thermocouples installed in bridge deck and substructure and compare to the datalogger temperature records submitted by the Contractor, to verify thermocouple function and readings.

- CS 2.23 M** Check that the removal of formwork and falsework is according to OPSS 919 and as specified in the Contract Documents.
- CS 2.24 M** Check that all construction joints are as specified in the Contract Documents.
- CS 2.25 M** Check that the surface finish meets the requirements of the Contract Documents.
- CS 2.26 M** Check that the early loading of structural concrete requirements are met prior to application of full design loads.
- CS 2.23 M** Carry out the covermeter survey on the top surface of decks (including medians and sidewalks) and front face of concrete barrier/parapet walls. Results are to be submitted to the Quality Assurance Section electronically within 4 days of completing the survey.
- CS 2.28** Check that cracks are identified, documented and a proposal for remedial action submitted for review and acceptance.
- CS 2.29** Give or deny permission to waterproof following completion of a bridge deck repair based on verification that the repair has been completed satisfactorily and the deck has dried for 3 days.
- CS 2.30** Accept components with formed and unformed surfaces based on verification that the cracks in the completed work were treated as required by the specification.
- CS 2.31 M** Obtain and submit to Regional Structural Office Final Clearance/Restriction measurements.

Vertical Clearances – Gathering minimum clearance measurements along each edge of lane, in metres to 2 decimal places.

Horizontal Clearances – Clearance to be measured at right angles to the centre line of the travelled portion of the highway or edge of lane.

LEVEL OF INSPECTION – A1

– B1/E2 during curing operation and after the initial set

CONCRETE AND STRUCTURES

CS 12 STRUCTURE REHABILITATION – CONCRETE REMOVALS

Task # Activity

- CS 12.1 Inspection of concrete removal work in progress shall address the following:
- (i) Check that concrete removal is being done correctly and as specified in the Contract Documents, including location and depth of removals.
 - (ii) Check that the hammer size and stroke length meet specification requirements for all hammers more specifically for chipping hammers. Verify that the hammers being used match the manufacturer's published specifications for weight and piston stroke.
 - (iii) Check the size and weight of hammers, verify that specified hammers have not been modified to increase or decrease stroke length or provide additional power/energy and verify weight of equipment does not exceed the limit specified.
 - (iv) Check that staging of removal and strength of adjacent new concrete is according to Contract Documents.
 - (v) Check that the existing reinforcing steel, post-tensioned cables, adjacent concrete, hardware and components to remain in place are not damaged during concrete removal.
 - (vi) Check that existing concrete to remain in place has not been contaminated.
 - (vii) Check that environmental protection enclosures or containment systems are in place and functioning.
- CS 12.2 Obtain from the Contractor an identification of equipment and manufacturer's published specification for concrete removals.
- CS 12.3 M Obtain Working Drawings for "Concrete Removal – Structural Component" and "Concrete Removal – Complete Deck" at least 1 week prior to the commencement of the concrete removals and verify that it meets the Contract requirements and that it has been sealed and signed by the Design Engineer and Design Check Engineer.**
- CS 12.4 M Check that for the execution of concrete removal, such as the installation of temporary support; and installation of temporary protection for traffic, pedestrian, are properly inspected by the Contractor's Engineer.**
- CS 12.6 M Receive and check a Request to Proceed from the Contractor, upon completion of the Working Drawings and prior to the concrete removal operation.**

CS 12.7 M Issue in a timely manner and prior to the concrete removal operation a Notice to Proceed to the Contractor.

- CS 12.8 Obtain notification from the Contractor, twenty-four (24) hours prior to the commencement of the scarifying operation.
- CS 12.9 Upon receipt of written notification from the Contractor to carry out all applicable concrete survey(s), check that all Work requirements identified in the Contract Documents have been completed by the Contractor prior to commencing concrete surveys.
- CS 12.10 Notify the Quality Assurance Section and the Regional Structural Section as soon as the Contractor submits notification to commence with the concrete surveys.
- CS 12.11 Carry out a covermeter survey (if applicable) for all asphalt covered decks after the first pass of the scarifying equipment where concrete removals from the top surface of the deck are specified. Grid points shall be the same as the ones on the corrosion potential survey, where specified. Plot readings on a separate drawing other than the concrete removal survey drawing.
- CS 12.12 Carry out, in accordance with the contract requirement, the following concrete removal surveys as part of determining and demarcating the actual location and extent of removals:
- (viii) Visual and Delamination Survey – Identify areas of scaling, honeycombing and delaminated concrete.
 - (ix) Corrosion Potential Survey (Half-Cell) (if applicable) – where concrete is to be removed based on corrosion potential criteria when specified in the Contract Documents. Grid points shall be the same as the ones for the original bridge deck condition survey.
- CS 12.13 Carry out concrete removal survey(s) for the soffit when Type B or localized full depth removals in the deck are specified in the Contract Documents.
- CS 12.14 Determine full depth localized removal areas in the deck by performing the following:
- (x) Complete the concrete removal surveys on both the top surface of the deck and the soffit.
 - (xi) Superimpose both the concrete removal surveys on the original bridge deck condition survey.

- CS 12.15 Determining areas of removal on structures where the existing concrete overlay will not be completely removed by performing the following:
- (xii) Complete the concrete removal survey(s) on the top surface of the overlay.
 - (xiii) Complete a second delamination survey on the top surface of the original deck within the removal area, after the concrete has been removed.
 - (xiv) Demarcate removal areas where the concrete is delaminated in the second survey.
- CS 12.16 Superimpose all concrete removal surveys on original bridge deck condition surveys. Clearly identify all delaminations and actively corroding areas in different colours.
- CS 12.17 M Immediately after completion of surveys, deliver coloured copies of the covermeter survey and the concrete removal survey(s), along with revised estimated quantities, to the Regional Structural Section for review and approval.**
- CS 12.18 M After permission to remove concrete and/or further direction has been received from the Regional Structural Section; the Contract Administrator shall square off and clearly identify all removal areas with spray paint.**
- CS 12.19 Demarcate all areas of exposed reinforcing steel prior to scarifying operation. For scarifying greater than 10 mm, demarcate areas of low cover.
- CS 12.20 Check portion of the structure to be scarified and depth of scarifying are according to the Contract Documents.
- CS 12.21 Check portion of curb face, barrier wall or parapet wall which will be covered by an overlay is roughened according to the Contract Documents.
- CS 12.22 M After concrete removals are completed, check within the demarcated areas and along the perimeter for soundness of concrete and delamination to determine if additional removals are required.**
- CS 12.23 Notify the Quality Assurance and Regional Structural sections if the concrete is delaminated beyond 2 mm of the first layer of reinforcing steel; or if the Contractor has removed concrete more than the specified depth.
- CS 12.24 Check reinforcing steel to remain in place for bar loss and heavy rust. Notify the Regional Structural Section if bar loss is greater than 20% or heavy rust exists in any location.

- CS 12.25 Check that the Contractor does not damage the top flange of steel girders. If damage does take place, all relevant details, including size and location of the damage shall be documented and reported to the Regional Structural Section within forty-eight (48) hours.
- CS 12.26 For full depth removal with full depth sawcut construction joint, check that the sawcut surfaces are roughened.
- CS 12.27 Measure concrete removal volume to determine quantities.
- CS 12.28 Check that dust and debris from exposed Work, and from construction operations such as concrete cutting/grinding, abrasive blast cleaning of concrete and steel, does not cause a nuisance to pedestrian and vehicular traffic within the ROW, adjacent residential/commercial/institutional properties, and is not entering a watercourse or Environmentally Significant Area.
- CS 12.29 M When the safe execution of concrete removal operation requires Work such as the use of temporary supports or temporary protection for traffic, pedestrians and property, immediately after installation:**
- Receive a Certificate of Conformance from the Contractor. Check that the Certificate of Conformance meets the requirements of the Contract Documents.**
- CS 12.30 M For the concrete removal for the complete deck:**
- Receive and check a Request to Proceed for the complete deck and each structural component, from the Contractor upon completion of the designated concrete removal.**
- CS 12.31 M The engineer specialist, when specified in the CA Agreement, is to check that the Work meets the requirements of the Contract Documents.**
- CS 12.32 M Issue a Notice to Proceed to the Contractor, in a timely manner, following completion of concrete removals and prior to the placement of concrete.**

LEVEL OF INSPECTION – A1/A2

CONCRETE AND STRUCTURES

CS 21 STRUCTURE EXCAVATION

Task # Activity

CS 21.1 M Verify that the preconstruction survey of property and structures that may be affected by the Work is submitted.

CS 21.2 M Verify that the protection schemes are constructed in accordance with the requirements of the Contract Documents.

CS 21.3 M Complete the inspections at the milestones specified in the Contract Documents.

CS 21.4 Check that the erosion and sediment control schemes (and coffer dams if required) are in place and functioning prior to structure excavation such that the watercourse is isolated from the Work area. Determine if additional erosion control measures or additional locations may be required. Confirm that any other relevant environmental constraints have been addressed.

CS 21.5 Check that advanced unwatering is conducted as required to prevent soil sloughing, basal heave and boiling.

CS 21.6 Check that unwatering is not causing the erosion of the soil at the outlet and other environmental concerns (e.g. muddy water discharge). Check that the Contractor has the standby equipment (pumps, hoses, sediment bags, etc.) on site as required in the environmental submission. Check that the unwatering/flow passage system is in accordance with the requirements of the Contract Documents and any accepted Contractor's proposals, and that the system is not causing sedimentation of the watercourse downstream of the Work site.

CS 21.7 M Receive and check a Request to Proceed from the Contractor at the completion of the excavation for the foundation and prior to the commencement of the dewatering of the excavation for the structure, when required, and at the completion of the excavation for the foundation.

CS 21.8 M Check that the dewatering of the excavation for the structure meets the requirements of the Contract Documents.

- CS 21.9 M Issue, in a timely manner, a Notice to Proceed to the next operation to the Contractor after the completion of the excavation for the foundation.**
- CS 21.10 M Check the geometry of temporary slopes to facilitate excavation. Check that all footing excavations conform to size, shape, line, elevations and grades as specified in the Contract Documents.**
- CS 21.11 Check that loosened material, soft material, boulders and other deleterious material at the foundation base are removed and replaced with suitable compacted material or mass concrete. Check that any stockpiling of excavated material is done in an area that is isolated from any watercourses such that entry of sediment to watercourses is prevented.
- CS 21.12 Record the depth, length, width, type of material used, and how it was placed, when the Contractor uses a working slab.
- CS 21.13 Check that any adjacent utility/structure is not affected or undermined by the footing excavation.
- CS 21.14 Check that the founding soil is protected and preserved.
- CS 21.15 Check that excavation for frost tapers are carried out according to specifications.
- CS 21.16 Check that any staged construction (excavation, backfilling sequence restrictions) is conducted.
- CS 21.17 M Receive and check a Request to Proceed from the Contractor upon completion of the excavation for backfill and frost tapers and prior to the commencement of backfilling of the excavation.**
- CS 21.18 M Check that the excavation for backfill and frost tapers meets the requirements of the Contract Documents.**
- CS 21.19 M Issue, in a timely manner, to the Contractor a Notice to Proceed following completion of the excavation for backfill and frost tapers and prior to the commencement of the backfilling of the excavation.**

LEVEL OF INSPECTION – D2

CONCRETE AND STRUCTURES

CS 22 COFFERDAMS, SHEET PILING, TIE BACKS, AND ROADWAY PROTECTION

Task #	Activity
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| CS 22.1 | Check length and condition of all materials delivered to the site. |
| CS 22.2 | Check that a pre-construction site condition survey has been carried out as required. |
| CS 22.3 | Check that the Contractor's scheme is as specified in the contract or accepted proposal. |
| CS 22.4 M | Check and make sure that the Working Drawings provided and verify the submissions bear the seal and signature of a Design Engineer and a Design-checking Engineer. |
| CS 22.5 | Check that the information specified to be shown on the construction drawings has been included. |
| CS 22.6 | Check that Working Drawings meet the Contract Document requirements. |
| CS 22.7 | Check that the Contractor's scheme is as specified in the Contract Documents for length. |
| CS 22.8 | Check that all elements of the unwatering/flow passage system (e.g. coffer dams) are properly staged/installed to prevent any discharge of sediment to the watercourse. |
| CS 22.9 | Check the alignment, depth and layout of the protection scheme. |
| CS 22.10 | Check that any vibratory equipment to facilitate the installation does not disturb native soil or exiting utilities/structures. |
| CS 22.11 | Check that anchor testing equipment and procedure is as specified in the Contract Documents. |
| CS 22.12 | Check that the Contractor monitors the completed scheme for movement. |

- CS 22.13 M** Check the following work and check that the Contractor's Engineer is inspecting the:
- a) Installation of the protection system, including excavation to dredge line
 - b) Removal of the protection system

For excavation depths less than or equal to 3m.

- CS 22.14 M** Check the following work and check that the Contractor's Engineer is inspecting the:
- a) Layout and extent of protection system
 - b) Piling
 - c) Installation of protection system, including excavation to dredge line
 - d) Removal of protection system

For excavation depths exceeding 3m.

- CS 22.15 M** Inspect that the installation of protection system, including excavation of dredge line, and removal of protection system for excavation depths less than or equal to 3 metres, and check that it meets the Contract Documents.

Check that the Contractor's Engineer is inspecting that the protection system was installed, monitored, and removed according to the requirements of the Contract Documents.

Excavation Depths Less Than or Equal to Three Metres

- CS 22.16 M** Receive a Certificate of Conformance from the Contractor upon completion of the installation of the protection system.
- CS 22.17 M** Check that the Certificate of Conformance is signed and sealed by the Contractor's Engineer and that it meets the requirements of the Contract Documents.
- CS 22.18 M** Receive a Certificate of Conformance from the Contractor upon completion of the removal of the protection system.
- CS 22.19 M** Check that the Certificate of Conformance is signed and sealed by the Contractor's Engineer and that it meets the requirements of the Contract Documents.

Excavation Depths Exceeding Three Metres

- CS 22.20 M** Receive a Certificate of Conformance from the Contractor upon completion of the installation of materials.
- CS 22.21 M** Check that the Certificate of Conformance is signed and sealed by the Contractor's Engineer and that it meets the requirements of the Contract Documents.
- CS 22.22 M** Receive the Certificate of Conformance from the Contractor upon completion of the removal of the protection system.
- CS 22.23 M** Check that the Certificate of Conformance is signed and sealed by the Contractor's Engineer and that it meets the requirements of the Contract Documents.
- CS 22.24 Check that soil loss is not occurring during installation behind the shoring during excavation.
- CS 22.25 Check that the corrosion protection has been provided as specified.
- CS 22.26 Check that a record of each anchor hole excavation is submitted.
- CS 22.27 Check that the quality of grout is being tested as specified.
- CS 22.28 Check that the roadway protection/excavation sequence is properly executed.
- CS 22.29 Verify Removal requirements for Temporary Roadway Protection.
- CS 22.30 Contact the Foundations section to develop awareness of shoring and for consultation.
- CS 22.31 Consult with Foundations section on concrete requirements for temporary shoring.

LEVEL OF INSPECTION – A1/A2

CONCRETE AND STRUCTURES

CS 24 PILING

Use this task in conjunction with CS 1

Task #	Activity (By Contract Administrator)
CS 24.1	Check that erosion and sediment control schemes are in place and functioning. If the control measures are not functioning or are insufficient, the Contractor must be requested to review and take action.
CS 24.2 M	Record and verify the pile type, length, condition of the pile splices and driving shoes and length to cut off. Verify the straightness of the piles.
CS 24.3	Check that all the delivered material is supplied from the approved list, and handled and stored so as to prevent damage to the piles.
CS 24.4 M	Collect all mill certificates (test results should be from Canadian testing facilities). Check that the mill certificates satisfy the Contract Document requirements, specifically for imported steel.
CS 24.5 M	Prior to commencing the high-strain dynamic testing, check and confirm that all equipment used has been calibrated and calibration certificates have been submitted as per ASTM D 4945.
CS 24.6 M	Check that the foundations engineer specialist is conducting the High-Strain Dynamic Testing or Dynamic Formula (as specified in the CA Agreement) to determine the ultimate resistance.
CS 24.7 M	Check that the preliminary reports containing the results of the High Strain Dynamic Testing or Dynamic Formula (as specified in the CA Agreement) are submitted on the same day of the testing.
CS 24.8 M	Check that the final report containing the results of the High Strain Dynamic Testing or Dynamic Formula (as specified in the CA Agreement) is submitted within 10 Days of the field testing.
CS 24.9	Check that Preliminary and Final reports are signed and sealed by two Engineers of the testing company, one of whom shall be identified as MTO's designated contact and one of whom shall have the required experience in high-strain dynamic testing and hold the required certificate of PDCA Proficiency Test.

- CS 24.10 M** Receive and check a Request to Proceed from the Contractor after the design ultimate resistance is achieved but prior to the next operation.
- CS 24.11 M** Issue a Notice to Proceed to the next operation to the Contractor if the work meets the requirements of the Contract Documents.
- CS 24.12 M** Check that the Contractor's welder is certified. Check that the welding sampling and testing is carried out by a welding specialist and that the welding is completed in accordance to the requirements of the Contract Documents.
- Check that welding of splicing conforms to the specified requirements of the Contract Documents, and that pile splices are carried out properly.
- CS 24.13** Check that the end treatments are correctly applied (i.e. shoes, Oslo Points, Bearing Points, collars, etc.).
- CS 24.14 M** Check that the pile installation sequence conforms with submission requirements stated in the Contract Documents, and that the pile layout conforms to the requirements of the Contract Documents.
- CS 24.15** Check that the noise control restrictions have been complied with.
- CS 24.16** Check that vertical and batter alignment of the piles meets the specified requirements of the Contract Documents.
- CS 24.17 M** Receive and check a Request to Proceed from the Contractor after the design ultimate resistance is achieved.
- CS 24.18 M** Determine the representative welding sample of no less than 30% of the welds for conformance to the requirements of CSA W59 in the Contract Documents.
- Visually inspect the welds.
- CS 24.19 M** Choose the ultrasonic or radiographic testing on the entire length of selected splice welds based on the following selection criteria:
- a) For pile groups other than at integral abutments, 10% of the splice welds, rounded to the next highest number, but no fewer than two.
 - b) For pile groups at integral abutments, 10% of the splice welds, rounded to the next highest number, but no fewer than two of when the welds are below 6 m of the pile cut-off elevation.

c) For pile groups at integral abutments, all splice welds within 6 m of the pile cut-off elevation.

CS 24.20 M Check that the piles are installed to the specified tolerances.

CS 24.21 Check that piles are not driven adjacent to fresh concrete as specified in the Pile Driving Restrictions and Requirements in the Piling Special Provision.

CS 24.22 Check that caissons, footings, and piles are placed in the correct location in accordance to the Layout clause 7.02.07 of the MTO General Conditions.

Task # Activity (By Foundations Engineer Specialist)

CS 24.23 M The Foundations Engineer Specialist shall check that pile driving equipment conforms to the specified Contract Document requirements.

The Foundations Engineer Specialist shall monitor the hammer performance.

CS 24.24 M The Foundations Engineer Specialist shall review the Wave Equation Analysis to meet the requirements of the Contract Documents.

CS 24.25 M The Foundations Engineer Specialist shall check that the pile driving operation is according to the requirements of the Contract Documents.

CS 24.26 M The Foundations Engineer Specialist shall determine and establish ultimate resistance and measure and record the set for individual pile acceptance.

CS 24.27 M The Foundations Engineer Specialist shall obtain the set and rebound measurements.

CS 24.28 M The Foundations Engineer Specialist shall determine the reference set used to determine ultimate resistance, measure and record the set for individual pile acceptance.

CS 24.29 M The Foundations Engineer Specialist shall determine the achievement of measured ultimate resistance and the design ultimate resistance.

- CS 24.30 M Upon completion of determining the ultimate resistance and measured ultimate resistance, issue, in a timely manner, a Notice to Proceed upon direction of Foundations Engineer Specialist.**
- CS 24.31 The Foundations Engineer Specialist shall check that pile set and refusal criteria are satisfied. The Foundations Engineer Specialist shall check that the actual tip elevation corresponds to design founding stratum.
- CS 24.32 The Foundations Engineer Specialist shall check that the piles are cut off as specified.
- CS 24.33 The Foundations Engineer Specialist shall check that re-tapping/re-driving requirements are being satisfied.
- CS 24.34 The Foundations Engineer Specialist shall check the Contractor's pile driving records.
- CS 24.35 M The Foundations Engineer Specialist shall verify that the piles are not overdriven or damaged during installation.**
- CS 24.36 M The Foundations Engineer Specialist shall inspect the bearing area of the caisson pile prior to placing concrete.**
- CS 24.37 For piles driven to refusal, The Foundations Engineer Specialist shall check that the appropriate Dynamic Formula is used in accordance with the Contract Documents.
- CS 24.38 M When driving piles to a set, contact the MTO Foundations section immediately if ultimate axial resistance of a pile is not achieved. Check that the Contractor doesn't drive a pile beyond design tip elevation without consultation with the MTO Foundations section.**
- CS 24.39 When re-tapping piles, The Foundations Engineer Specialist shall check that the piles are re-tapped at the previous set.
- CS 24.40 M The Foundations Engineer Specialist shall check that the deep foundation work has been carried out according to the requirements of the Contract Documents.**

LEVEL OF INSPECTION – A1/A2

CONCRETE AND STRUCTURES

CS 25 CAISSON FOUNDATIONS

Use this task in conjunction with CS 1

Task #	Activity
CS 25.1	Check the type, length and condition of caisson liners.
CS 25.2 M	Check that the Contractor's welders certifications conform with the requirements of the Contract Documents.
CS 25.3 M	Foundations Engineer Specialist shall inspect 100% of the time the excavation, steel reinforcement installation, and placing of concrete operations, load tests, operations for caisson piles work.
CS 25.4 M	Check that the installation equipment is as specified in the Contract Documents.
CS 25.5	Check that erosion and sediment control schemes are in place and functioning. Determine if additional erosion control measures may be required.
CS 25.6	Check that the caissons are drilled to the correct design tip elevation.
CS 25.7	Check that penetration and cut off are in accordance with design data.
CS 25.8	Check that sidewall and basal stability is maintained during the caisson foundation installation.
CS 25.9 M	Check that caissons are cleaned out prior to placing reinforcing steel and concrete.
CS 25.10	Check that the Contractor's material containment location conforms with the Contract Documents. Check that containment locations are placed away from watercourses and that erosion and sediment control measures are in place and functioning around them.
CS 25.11	Check that slurry properties are being tested and verified and conform with the Contract Documents.
CS 25.12	Check that reinforcement steel is being properly placed and conforms with the requirements of the Contract Documents.

- CS 25.13 Check that vertical and batter alignment of the caissons are as specified in the Contract Documents.
- CS 25.14 Check that rock socketed caissons are installed to the appropriate tip elevation and geometry.
- CS 25.15 Check that any temporary slurry does not negatively impact shaft resistance design requirements. Temporary slurry needs to be adequately flushed.
- CS 25.16 Check that caissons, footings, and piles are placed in the correct location in accordance to the Layout clause 7.02.07 of the MTO General Conditions.
- CS 25.17 M Receive and check a Request to Proceed from the Contractor after excavation and prior to the placement of concrete.**
- CS 25.18 M The Foundations Engineer Specialist shall inspect the bearing area of the caisson pile prior to placing concrete.**
- CS 25.19 M The Foundations Engineer Specialist shall issue, in a timely manner, a Notice to Proceed to the Contractor prior to the next operation.**
- CS 25.20 Check that concrete is placed within the specified time period following cleaning and inspection of caisson base.

LEVEL OF INSPECTION – A2

CONCRETE AND STRUCTURES

CS 26 STRUCTURE BACKFILLING

Task # Activity

CS 26.1 M Check that the erosion and sediment control schemes are in place and functioning. Determine if additional erosion control measures or additional locations may be required.

CS 26.2 M Check that the structure excavation limits are verified and recorded prior to the commencement of the backfilling operations.

CS 26.3 M Check that the concrete has reached the required percentage of the design strength prior to the backfilling operations.

CS 26.4 M Check that the subdrains are placed as specified in the Contract Documents.

CS 26.5 Check that the proper procedures are used for weep holes and perforated pipe installation.

CS 26.6 M Complete inspections at the milestones specified in the Contract Documents.

CS 26.7 M Submit the milestone inspection report.

CS 26.8 M Check that backfill is placed as specified in the Contract Documents, and that all backfill materials are free of waste.

CS 26.9 M Check that the appropriate compaction procedures, equipment and sequence are used in restricted and all other areas, as specified in the Contract Documents. Check that the appropriate compaction testing is being conducted in the manner and frequency as specified in the CAITM task GD 13B and in the Contract Documents.

CS 26.10 M Receive and check a Request to Proceed from the Contractor upon completion of the excavation for backfill and frost tapers and prior to the commencement of backfilling of excavation.

CS 26.11 M Issue, in a timely manner, a Notice to Proceed to the Contractor after completion of the excavation and prior to the commencement of backfilling of excavation.

LEVEL OF INSPECTION – C2

CONCRETE AND STRUCTURES

CS 27 FORMWORK

Task #	Activity
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CS 27.1 M	Receive, at least 1 day prior to commencement of installation, and check that the formwork Working Drawings meet the requirements of the Contract Documents, and are onsite and being followed during formwork construction. Check the installed formwork against the Working Drawings prior to the placement of reinforcing steel.
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CS 27.2 M	Obtain the falsework foundation design report, where applicable, and verify that it meets the requirements of the Contract Documents and that it has the seal and signature of an the design engineer and design-check engineer.
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CS 27.3	Check that dimensions of forms are as specified in the Contract Documents.
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CS 27.4	Check that the form release oil is applied to the forms before the installation of reinforcing steel.
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CS 27.5 M	Check that all metal internal form ties that will be left in place have a minimum concrete cover of 20mm.
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CS 27.6 M	Receive the Contractor's Certificate of Conformance upon completion of the construction of formwork for which Working Drawings are submitted and prior to the placement of concrete. Check that the Certificate of Conformance is signed and sealed by an Engineer and meets the requirements of the Contract Documents.
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CS 27.7	During the concrete placement, check forms (several times) for alignment and possible deformation.
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CS 27.8 M	Check that the required concrete strength has been reached prior to removing the formwork.
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LEVEL OF INSPECTION – D2

CONCRETE AND STRUCTURES

CS 28 FALSEWORK

Task # Activity

- CS 28.1 M Receive and check that falsework Working Drawings meet the requirements of the Contract Documents, are on site, and being followed during falsework construction. Check installed falsework against the Drawings prior to placement of loads.**
- CS 28.2 M Check that a copy of the Working Drawings for the falsework are on site prior placement of mudsills.**
- CS 28.3 M Check that the falsework Work was inspected and meets the requirements of the Contract Documents.**
- CS 28.4 Check that the founding soil is prepared in conformance with the Contract Documents.
- CS 28.5 Check that any foundation bearing pad is properly placed and compacted.
- CS 28.6 M Receive the Contractor's Certificate of Conformance upon completion of the construction of falsework for which Working Drawings are submitted and prior to the placement of concrete. Check that the Certificate of Conformance is signed and sealed by an Engineer and meets the requirements of the Contract Documents.**
- CS 28.7 During the concrete placement, monitor falsework (several times) for deflection and settlement.
- CS 28.8 M Check that the required concrete strength has been reached prior to removing the falsework.**

LEVEL OF INSPECTION – D2

CONCRETE AND STRUCTURES

CS 29 INSTALLATION OF BEARINGS

Task #	Activity
CS 29.1 M	Check that the Adjustment of Bearing Contract Drawings are supplied and reviewed in accordance with the time requirements of the Contract Documents.
CS 29.2	Check that all the delivered material is being supplied from the approved list and properly stored.
CS 29.3	For elastomeric bearings: a) Check and record the size, name of manufacturer, part number and date of manufacture; and, b) Check that the bearing is not on the list of defective bearings put out by the Concrete Section.
CS 29.4	When specified, randomly select bearing(s) and then have the Contractor ship the sample bearing(s) for testing as specified in the Contract Documents.
CS 29.5 M	Check that the surface and bedding of bearing seats are within tolerances and meet the requirements of the applicable specifications.
CS 29.6 M	Verify and confirm, at a continuous inspection frequency, that each bearing is installed at the correct location, elevation, and is properly aligned as specified in the Contract Documents.
CS 29.7 M	Check that the bearings are the correct size and type.
CS 29.8 M	Verify and confirm at a continuous inspection frequency, that the bearings installed on the substructure meet the requirements of the Contract Documents, prior to any loading on the bearings.
CS 29.9	Check for removal of any shipping device or restraints from bearings as specified in the Contract, and/or Working Drawings.
CS 29.10 M	Upon completion of the structure, visually inspect the bearings to determine that they have full and uniform bearing at top and bottom, and that bearing components are not out of position.
CS 29.11	Check the timing and procedure for jacking and re-alignment of bearings.

CS 29.12 M Check that the Work meets the requirements of the Contract Documents.

The CAITM task options 29.13 M and 29.14 M are specific to the Contract and will be specified in the project-specific CA Agreement and Contract Documents.

Option 1: Refers to Option 1 of the Installation of Bearings specification (new bridge construction, bridge replacement, or superstructure replacement).

CS 29.13 M Receive and check a Request to Proceed from the Contractor upon completion of the installation of the bearings on the substructure and prior to any loadings on the bearings.

CS 29.14 M Issue a Notice to Proceed, in a timely manner, and prior to any loading on the bearing

CS 29.15 M Receive and check a Request to Proceed from the Contractor after loading of the bearings and any specified jacking, but prior to opening to traffic.

CS 29.16 M Issue a Notice to Proceed, in a timely manner, and prior to the opening of the bridge to traffic.

OR

Option 2: Refers to Option 2 of the Installation of Bearings specification (bridge rehabilitation where bridge is jacked, bearings replaced, and the bridge is un-jacked)

CS 29.13 M Receive and check a Request to Proceed from the Contractor upon completion of the bearing installation, after loading the bearing and any specified jacking but prior to opening to traffic.

CS 29.14 M Issue a Notice to Proceed to the Contractor, in a timely manner, and prior to the opening of the bridge to traffic.

LEVEL OF INSPECTION – A2

CONCRETE AND STRUCTURES

CS 30 FABRICATION AND INSTALLATION OF STRUCTURAL STEEL

Task # Activity

CS 30.1 M Receive and check that the shop details, mill test certificates and welding procedures are in conformance with the Contract Documents prior to commencement of fabrication. Check that the shop details and welding procedures are on site and being followed at the manufacturing plant during fabrication.

CS 30.2 M Receive and check test reports for fasteners.

CS 30.3 M Receive and check that the Contractor's straightening procedure including testing requirements is in conformance with the Contract Documents. Be present during the straightening of the element.

CS 30.4 M Receive and check that the details of the heat cambering procedure are in conformance with the Contract Documents.

CS 30.5 M Receive and check that that the detailed procedure for the heat curving of rolled beams and welded girders operation is in conformance with the Contract Documents.

CS 30.6 M Receive and check the inspection reports, make sure that the fabricated girders conform to the requirements of the Contract Documents, and that all the deficiencies have been repaired accordingly.

CS 30.7 M Receive from the Contractor a Manufacturer's Certificate of Conformance, upon completion of the fabrication of the structural steel, and prior to shipping from the plant.

Check that the Manufacturer's Certificate of Conformance meets the requirements of the Contract Documents.

CS 30.8 M Receive and check a Request to Proceed from the Contractor before the delivery of the structural steel to the site.

CS 30.9 M Check that the submissions by the Contractor, including the Manufacturer's Certificate of Conformance and Request to Proceed conform to the requirements of the Contract Documents.

When specified in the CA Agreement, check that the structural steel is fabricated according to the requirements of the Contract Documents prior to delivery to the site.

CS 30.10 M Issue a Notice to Proceed to the Contractor, in a timely manner, and prior to delivering the structural steel to the site.

CS 30.11 M Receive 3 sets of diagrams, procedure drawings, and calculations at least 7 Days prior to the commencement of installation of the girders. Check that these diagrams, procedures and calculations meet the requirements of the Contract Documents. Check that they are on site and are being followed during the installation of the girders.

CS 30.12 M Check that each tacker, welder or welding operator have proper identification cards. Check Certification of Independent Testing Organization and Non-Destructive Testing Technician meet the Contract requirements.

CS 30.13 M Check that structural steel has been coated and meets the requirements of the Contract Documents and that any defects have been repair to the requirements of OPSS 911.

CS 30.14 M Check that beams have not been damaged and are set plumb to the specified alignment and seated properly. Check that oversized slotted holes are not used unless permitted by the Contract Documents. Bearing stiffeners shall be centered over the bearings (at construction temperature of 15°C), and shall be vertical after dead load is applied to the girders. Bolts shall be properly tightened.

CS 30.15 M Check that the work was inspected and tested and meets the requirements of the Contract Documents.

CS 30.16 M Receive and check a Request to Proceed from the Contractor after the installation of the structural steel.

CS 30.17 M Issue to the Contractor a Notice to Proceed, in a timely manner, after installation of the structural steel and prior to the next operation.

LEVEL OF INSPECTION – A2

CONCRETE AND STRUCTURES

CS 31 REINFORCING STEEL PLACEMENT

Task # Activity

- CS 31.1 M Receive 3 sets of steel reinforcement and steel reinforcement schedule Working Drawings, mill test certificates, welding details, and mechanical connections details at least 7 Days prior to the commencement of placing the steel reinforcement.**
- CS 31.2 M Check that the reinforcing steel schedule, Working Drawings, mill test certificates, mechanical connector details, and welding details, if any, meet the requirements of the Contract Documents.**
- CS 31.3 Check for proper site storage, protection, and handling.**
- CS 31.4 M Check that the mill certificates confirm that the reinforcing steel is supplied from one of the specific mills listed on the Designated Sources of the Materials List.**
- CS 31.5 M Check all the reinforcement tags on bar bundles to verify that the correct grade, type and size of steel has been supplied, from one of the fabricators listed on the Designated Source List (both mills and fabricators are shown on the same list). The Bill of Lading for the steel will also show the name and location of the fabricator.**
- CS 31.6 M Check that the size, grade and type of steel shown on the mill certificates, is the same as shown on the tags, and both are consistent with the material supplied.**
- CS 31.7 M Obtain samples of pre-stressing steel, reinforcing steel bars, stainless steel reinforcing bars and mechanical connectors when applicable and the supporting documentation meets the requirements of the Contract Documents and deliver them to the appropriate laboratory.**
- CS 31.8 M Determine the sampling and time location for steel welded wire reinforcement.**

- CS 31.9 M** Check that the installation of the mechanical connectors, if any, meet the requirements of the Contract Documents. Check that the correct grade/type and size of steel has been placed. Be present during the assembly of the sample connections.
- CS 31.10 M** Check that the associated hardware is acceptable and installed according to the Contract Documents.
- CS 31.11 M** Check that the steel reinforcement is installed according to the Contract Documents throughout the installation process.
- CS 31.12 M** Receive and check a Request to Proceed from the Contractor upon completion of the installation of the steel reinforcement and, if any, mechanical connectors.
- CS 31.13 M** Check that the correct grade/type and size of steel has been placed in accordance to the Contract Documents, and issue written notification of acceptance prior to the placement of concrete.
- CS 31.14 M** Check that the installation of the steel reinforcement and, if any, mechanical connectors have been installed in accordance to the Contract Documents. Photo documentation is required.
- CS 31.15 M** Issue, in a timely manner, a Notice to Proceed prior to the next operation.

LEVEL OF INSPECTION – C2

CONCRETE AND STRUCTURES

CS 32 POST-STRESSING SYSTEMS

Task #	Activity
CS 32.1	Check type, size and condition of pre-stressing materials delivered to the site.
CS 32.2	Check for proper site storage of pre-stressing materials.
CS 32.3	Receive the Contractor's notification that the post-tensioning steel is available for sampling, at least 1 week in advance of the stressing operation.
CS 32.4	Check that the material supplied by the Contractor is sampled and tested as required.
CS 32.5	Check the installation of pre-stressing sheaths, support cables, and anchorages.
CS 32.6	Check that the installation of the post-tensioning system, including all anchorages, anchorage zone reinforcement, and grout tube meets the requirements of the Contract Documents.
CS 32.7	Check the elevation and alignment of the cable sheaths.
CS 32.8	Check that the cable sheaths are secured firmly in place.
CS 32.9	Check that the grout vent hoses are installed at all the proper locations.
CS 32.10 M	Receive and check a Request to Proceed from the Contractor after installing the post-tensioning system and prior to the next operation.
CS 32.11 M	Issue a Notice to Proceed, in a timely manner, after installation of the post-tensioning system and prior to the next operation.
CS 32.12 M	Check that the placement, stressing, and grouting of the post-tensioning system meets the Contract Documents requirements.
CS 32.13 M	Receive and check that the Certificate of Conformance is signed sealed and meets the requirements of the Contract Documents upon completion of cutting tendons and after grouting.

LEVEL OF INSPECTION – B2

CONCRETE AND STRUCTURES

CS 33 POST-TENSIONING STRESSING OPERATION

Task # Activity

CS 33.1 M Receive and check that the stressing Working Drawings conforms with the requirements of the Contract Documents, and are on site being followed during the stressing operations.

CS 33.2 Check that the correct calibration tests have been carried out, on all pressure gauges, by an approved authority in the last 6 months.

CS 33.3 M Check that void hold-downs are released prior to stressing.

CS 33.4 M Check that concrete is up to specified strength prior to stressing.

CS 33.5 Check that the cables are stressed in proper sequence.

CS 33.6 Check that the cables are marked and measured and that elongation, gauge pressure and slip are recorded.

CS 33.7 M Receive and check a Request to Proceed from the Contractor after tensioning and prior to cutting of the tendons and grouting.

CS 33.8 M Witness and check that the stressing operation meets the Contract Document and stressing detail requirements.

CS 33.9 M Receive and check the results of the pre-stressing steel friction test when the Contractor's Engineer calls for a friction test on one or more tendons to check the theoretical value of friction used in the design and elongation calculation.

CS 33.10 M Issue a Notice to Proceed, in a timely manner, after tensioning to allow grouting and cutting of the tendons.

CS 33.11 M Check that grouting is carried out as soon as possible and that any post-tensioning ducts are not left un-grouted for more than 7 Days from the date of the Notice to Proceed, or more than 14 Days from the time of completion of stressing.

CS 33.12 M Check and be present, prior to the grouting operation, during the trial batch of the grout to be mixed and tested according to the Contract Documents.

CS 33.13 M Check that the grout tests are performed at least once a day and inform the Contractor if more trials are required.

CS 33.14 M Be present; check the grouting operation, bleeding expansion and viscosity tests are performed according to the requirements of the Contract Documents.

CS 33.15 M Check the cutting the tendons operations conforms to the requirements of the Contract Documents.

CS 33.16 M Check that the Work has been carried out in conformance with the Contract Documents.

CS 33.17 M Receive and check the Certificate of Conformance issued by the Contractor upon completion of cutting tendons and after grouting.

LEVEL OF INSPECTION – A2

CONCRETE AND STRUCTURES

CS 36 PRECAST AND PRESTRESSED CONCRETE ELEMENT

Task # Activity

CS 36.1 M Check that submissions by the Contractor meet the requirements of the Contract Documents. Check that the Working Drawings and supporting documents are submitted and contain the information listed in the Contract Documents.

CS 36.2 Check that the concrete mix design submission contains the information required by the Contract Documents. Obtain Form A portion of the concrete mix design along with any supporting documentation at least 7 Days prior to placement of concrete and review it to determine that it meets the contract requirements. Check that all materials are from approved lists and meet the requirements of the Contract Documents.

For Contracts including the new mandatory Greenhouse Gas Reduction Initiative Special Provision, check that the Contractor has provided the specified level of reduction (10% or 20%) and the means by which the Contractor will achieve the specified level of GHG reduction (that is, through the use of supplementary cementing materials, or Portland-limestone cement, or limestone filler, or a combination of...etc.) on the Concrete Mix Design forms. Check that the Regional Quality Assurance Section has received Form B portion of the concrete mix design from the concrete supplier prior to placement of concrete.

CS 36.3 Check that the precast and pre-stressed elements are fabricated at a precast plant certified according to the requirements of the Contract Documents. If concrete will be supplied by a ready-mixed concrete supplier check that documentation has been submitted verifying that the plant is certified by Concrete Ontario.

CS 36.4 Check that the concrete temperature control plan is submitted one week prior to the commencement of the fabrication of the precast element.

CS 36.5 Review and provide a written response of acceptability within 10 Business Days for any design proposals that are submitted.

CS 36.6 Check that the Contractor provides written notification a minimum of 7 Days prior to commencement of precast element fabrication.

- CS 36.7 Check the temperature dataloggers prior to use on the contract, to verify thermocouple function, readings and that they shall provide unalterable records during the recording period. Provide written notification to the Contractor that the temperature monitoring and recording system is deemed acceptable to the MTO. Verify that the thermocouple wires are placed according to Contract requirements.
- CS 36.8 Identify which precast elements make up each Lot (as defined in the Contract Documents).
- CS 36.9 M Check that the pre-stressed / precast element is fabricated according to the Contract Documents prior to delivery to the site**
- CS 36.10 If a repair proposal is required:
a) Receive prior to shipment the Contractor's proposal for repair or remediation for situations as specified in the Contract Documents.
b) Review that the repair proposal is signed and sealed by an Engineer and includes the minimum information as specified in the Contract Documents.
b) Consult with MTO as necessary.
c) Provide a written response to the Contractor indicating whether the Engineer's assessment is deemed acceptable and if deemed unacceptable, the precast and pre-stressed elements shall be rejected and replaced by the Contractor.
- CS 36.11 After all the precast elements in the Lot have been fabricated, randomly select one member from each Lot for acceptance testing, and randomly select a location for core removal within that precast element. Advise the Contractor which element is to be cored and the coring location.
- CS 36.12 Obtain from the Contractor the planned time and site of coring (job site or precast plant) for each Lot. (Note: One precast element type in each lot is to be cored at an age of 4-14 days, to remove 6 cores, for air void system, rapid chloride permeability and compressive strength testing respectively. Coring may take place at the job site or at the precast plant, wherever the precast element is 4 to 14 days of age).
- CS 36.13 M Arrange to be present for the removal of cores when core removal is to take place on site. When coring is conducted at the precast plant, arrange to be present or have a representative present for the coring.**
- CS 36.14 Upon removal of the core samples, verify that cores are properly labelled and placed in the security bags provided by the MTO. Immediately take possession of the cores and deliver them to the designated laboratory for testing by the MTO.

- CS 36.15 Obtain and review acceptance test results for compressive strength, air void system and rapid chloride permeability.
- CS 36.16 Check that written notification of delivery of precast and pre-stressed elements is provided 3 Business Days prior to delivery.
- CS 36.17 M Receive the Contractor's Manufacturer's Certificate of Conformance, and precast report for each shipment of pre-stressed / precast elements at least 5 Business Days prior to shipping from the pre-casting plant.**
- CS 36.18 M Receive and check a Request to Proceed from the Contractor, before the delivery of the pre-stressed / precast element to the site.**
- CS 36.19 M Check that the submissions by the Contractor, including the Manufacturer's Certificate of Conformance, Pre-cast report and Request to Proceed meet the requirements of the Contract Documents.**
- When specified in the CA Agreement, check that the pre-stressed / precast element is fabricated according to the Contract Documents, prior to delivery to the site.**
- CS 36.20 M Issue a Notice to Proceed, in a timely manner, and prior to delivering the pre-stressed / precast element to the site.**
- CS 36.21 M Check that written notification of installation of precast and pre-stressed elements is provided 3 Business Days prior to commencement of the field installation operations. Check that the Workings Drawings meet the requirements of the Contract Documents are on site and are being followed during installation of the precast and pre-stressed elements.**
- CS 36.22 Randomly select a minimum of two precast and pre-stressed elements from each lot delivered to the site for verification of concrete cover measurements. If the concrete cover measurements of any of the precast and pre-stressed elements measured does not meet the tolerances of the Contract Documents, inform MTO immediately.
- CS 36.23 Verify dimensional tolerances according to the requirements specified in the Contract Documents.

- CS 36.24 If referee testing of compressive strength, air void system, or rapid chloride permeability is invoked, witness the removal of the core(s) for referee testing from the same precast element from which the disputed acceptance core was obtained. Check that the referee core is properly labelled. Take possession of the core and deliver it to the referee laboratory designated by MTO.
- CS 36.25 M Check that defects and deficiencies repairable by standard methods are repaired according to the Contract Documents.**
- CS 36.26 M Check that precast and pre-stressed elements with defects and deficiencies causing rejection according to the Contract Documents, are not included in the Work.**
- CS 36.27 M Check that the girders meet the requirements of the Contract Documents.**
- CS 36.28 M Check that the installation of the girders meet the requirements of the Contract Documents.**
- CS 36.29 M Check that the members are temporarily braced immediately after installation.**
- CS 36.30 M Receive and check a Request to Proceed from the Contractor after the installation of the pre-stressed/pre-cast element.**
- CS 36.31 M Issue, in a timely manner, a Notice to Proceed prior to the next operation if the requirements of the Contract Documents are met.**

LEVEL OF INSPECTION – A2

CONCRETE AND STRUCTURES

CS 37 INSTALLATION OF EXPANSION JOINTS

Use this task in conjunction with CS 1

Task # Activity

CS 37.1 M Within 30 Days of the Contract award, receive the name and address of the manufacturer of the deck joint assembly.

CS 37.2 M Receive and review, prior to commencement of fabrication of the deck joint assembly, 1 hardcopy set and 1 electronic PDF copy of deck joint assembly Working Drawings, shall be submitted to the Contract Administrator for information purposes only

Check that a sealed and signed copy of these drawings shall be kept at the manufacturing plant during the joint assembly fabrication and at the site prior to and during installation of the deck joint assembly.

CS 37.3 M Receive and check, prior to the commencement of fabrication of the deck joint assembly, a drawing showing the actual joint dimensions at the existing deck joint assembly locations.

CS 37.4 M Receive, 1 week prior to the commencement of epoxy injection of the deck joint assembly in cold weather, a description of the method to be used to control the concrete temperature. Request samples of insulation, as deemed necessary.

The description shall contain the following information:

- a) Weather conditions for which the description applies**
- b) Type of insulation, metric R value, and number of layers to be used**
- c) Description of housing and heating.**
- d) Method of protection employed to effectively maintain the concrete temperature above 5 °C in the expansion joint block-out during the injection and continuously for a period of 48 hours after epoxy injection**

CS 37.5 M Receive the Contractor's Manufacturer's Certificate of Conformance, upon completion of fabrication and prior to shipping of the expansion joint.

CS 37.6 M Receive and check a Request to Proceed from the Contractor before the delivery of the expansion joint to the site.

CS 37.7 M Check that the submissions by the Contractor, including the Manufacturer's Certificate of Conformance, and Request to Proceed meet the requirements of the Contract Documents.

When specified in the CA Agreement, check that the expansion joint is fabricated according to the Contract Documents, prior to delivery to the site.

CS 37.8 M Issue a Notice to Proceed to the Contractor, in a timely manner, and prior to the delivery of the expansion joint from the plant to the site.

CS 37.9 Check that no damage occurs during handling.

CS 37.10 M Check all delivered material to verify that it is being supplied from the approved list that was submitted by the Contractor at the commencement of the Contract. Check that the material supplied by the Contractor is sampled as required. Check for proper storage of the joints.

CS 37.11 M Check that field splices in steel components are located and welded in accordance with shop drawings and are performed by a certified welder.

CS 37.12 Check that the dimensions of the block-out to receive the joint assembly conform with the requirements of the Contract Documents.

CS 37.13 Check that the block-out area to receive the joint is abrasive blast cleaned, without damaging the epoxy coated steel.

CS 37.14 Check that all debris in the block-out has been removed.

CS 37.15 M Check that the proper gap or "j" dimension of the unit has been established prior to placing concrete, and check that the constant gap is achieved throughout the total length.

CS 37.16 M Check that all existing concrete surfaces are coated with a cement paste prior to placing concrete.

CS 37.17 M Check that the concrete is placed and cured according to the Contract Documents.

CS 37.18 M Witness the Contractor cut the extra 1 metre length of preformed seal for sampling.

CS 37.19 M Obtain, cure and deliver samples of air void system and rapid chloride permeability according to the Contract Documents.

CS 37.20 M Check that clamping angles or channels are removed as specified in the Contract Documents.

CS 37.21 Check that holes left from removal of clamping angles or channels are cleaned and grouted with approved epoxy.

CS 37.22 Check for concrete blockages in the expansion joint opening.

CS 37.23 Check that seal is properly installed with no damage, wrinkles or splices.

CS 37.24 Check that sliding plates on sidewalk, curbs and median have been installed properly with regards to the direction of traffic.

CS 37.25 Check that formwork including styrofoam has been removed below expansion joint assembly between deck and ballast wall.

CS 37.26 Check for cracks in the concrete adjacent to the expansion joint.

CS 37.27 Check that end dam concrete has been cured for a minimum of seven (7) days and has reached 25 MPa prior to epoxy injection.

CS 37.28 M Check that traffic is not allowed on the deck joint assembly until the epoxy injection has been completed and cured and clamping bars are installed for Type A expansion joints.

CS 37.29 Check that the injection method conforms with the Contract Documents and injected by the supplier of the expansion joint system, or an agent approved by the supplier.

CS 37.30 M Sound the steel armour for voids. If voids are detected, check that proper procedures are taken to fill the voids.

CS 37.31 M Check that a water test has been carried out.

CS 37.32 Check that all waste material (Styrofoam) is disposed of in accordance with the Contract Documents.

CS 37.33 M Receive and check a Request to Proceed from the Contractor after the installation of the expansion joint.

CS 37.34 M Check that the work meets the Contract Documents requirements.

CS 37.35 M Issue, in a timely manner, a Notice to Proceed to the Contractor and prior to the next operation.

LEVEL OF INSPECTION – A2

CONCRETE AND STRUCTURES

- CS 38 TEMPORARY MODULAR BRIDGES**
- Task # Activity**
- CS 38.1M Receive and check that the Working Drawings, procedures and certifications meet the requirements of the Contract Documents.**
- CS 38.2 M Check that the modular bridge superintendent has experience and has successfully performed these duties on at least 3 similar bridges.**
- CS 38.3 Check that erosion and sediment control schemes are in place and functioning prior to start of modular bridge installation. Determine if additional erosion control measures may be required.
- CS 38.4 Check that all environmental constraints have been complied with (fisheries approvals, Work on the banks, etc.) prior to installation.
- CS 38.5 M Visually check that the foundations meet the Contract Documents requirements.**
- CS 38.5 Check that the layout and elevations of the launching and construction rollers have been approved. Check that founding elements, cribs, and footings conform with the requirements of the Contract Documents.
- CS 38.6 M Check that all bracing bolts, chord bolts and transom clamps remain fully tightened.**
- CS 38.7 Check that base plates and bearings are free of debris.
- CS 38.8 Inspect base plates and cribs for settlement.
- CS 38.9 Visually check timber for soundness and specified requirements.
- CS 38.10 Check that material control meets the Contract Document requirements.
- CS 39.11 Check that the modular bridge has been constructed in conformance with the requirements of the Contract Documents.**
- CS 38.12 M Check that the Temporary Modular Bridge work meets the requirements of the Contract Documents.**
- CS 38.13 M Receive the Contractor's Certificate of Conformance upon the completion of the construction of the modular bridge structure and check that it is signed and sealed by the Contractor's Engineer and that it meets the requirements of the Contract Documents.**

LEVEL OF INSPECTION – E2
– A2 During Installation

CONCRETE AND STRUCTURES

CS 40 METAL TRAFFIC BARRIER AND METAL RAILINGS FOR STRUCTURES

Task #	Activity
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CS 40.1	Receive and check that the Working Drawings, mill test certificates and welding procedures are in conformance with the Contract Documents prior to commencement of fabrication of the railings or traffic barrier.
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CS 40.2 M	Receive the Contractor's Manufacturer's Certificate of Conformance for each individual shipment upon completion of fabrication of the railing and metal traffic barrier and prior to shipping from the plant.
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CS 40.3 M	Receive and check a Request to Proceed from the Contractor, before the delivery of the railing & metal traffic barrier shipment to the site.
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CS 40.4 M	Check that the submissions by the Contractor, including the Manufacturer's Certificate of Conformance and Request to Proceed conform with the requirements of the Contract Documents prior to delivery from the plant to the site.
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When specified in the CA Agreement, carry out a plant inspection and check that the railings or traffic metal barrier are fabricated according to the requirements of the Contract Documents prior to the delivery from the plant to the site.

CS 40.5	Check that the fabrication of the railing and/or traffic barrier conform with the requirements of the Contract Documents.
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CS 40.6 M	Issue a Notice to Proceed, in a timely manner, and prior to the railing or traffic barrier shipment being delivered to the site.
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CS 40.7 M	Check the type, size, length and condition of materials (including protective coatings) delivered to the site. Check that all the delivered material is being supplied from the approved list and stored properly.
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CS 40.8 M	Check that the installation conforms with the requirements of the Contract Documents.
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CS 40.9	Check the condition of completed posts and rails. Check that damaged areas, including defects in the coating system, are repaired to meet the requirements of the Contract Documents.
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CS 40.10 M	Check that the railings and traffic barrier work and installation meet the requirements of the Contract Documents.
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LEVEL OF INSPECTION – D2

CONCRETE AND STRUCTURES

CS 41 OVERHEAD SIGN SUPPORT STRUCTURES

Use this task in conjunction with CS 1

Task #	Activity
CS 41.1	Receive and check that the Working Drawings, mill test certificates and welding procedures meet the requirements of the Contract Documents prior to commencement of fabrication of overhead sign support structures.
CS 41.2	Check that a copy of the Working Drawings is available and being followed at the manufacturing facility during fabrication.
CS 41.3	Receive and check that the Contractor's inspection reports meet the requirements of the Contract Documents and that all deficiencies have been addressed.
CS 41.4	Check that erosion and sediment control measures are in place and functioning prior to the start of footing construction, and are maintained until the overhead sign has been installed, inspected, and all deficiencies have been addressed. Determine if additional erosion control measures may be required.
CS 41.5 M	Verify that when other authorities are involved in the approval of the design and construction of a highway structure, that the submission is made at least 5 weeks prior to the commencement of work and one additional copy of the required submission is provided to each authority.
CS 41.6 M	Receive and check that the delivery schedule of overhead sign support structures and their components to the galvanizing or painting facility or both, and to the site, not less than 7 days before shipping begins.
CS 41.7 M	Receive and check that the proposed method of rock excavation is received at least 14 days prior to the commencement of excavation when rock is present within the depth of the footing.
CS 41.8 M	Check that all proposals are submitted at 14 days prior to commencement of the work for review and acceptance and that the proposal bears the seal and signature of a design Engineer and a design-check Engineer.

- CS 41.9 M Receive and check mill test certificates to make sure that they are according to the Contract Documents.**
- CS 41.10 M Receive and check the names of the inspection company and the inspectors, proof of certification a minimum of 7 days prior to the commencement of fabrication of overhead sign support structures.**
- CS 41.11 M Verify that the footing has been constructed according to the requirements of the Contract Documents including requirements for the location, top of footing elevation, anchorage layout, and surface finishing for the Work.**
- CS 41.12 Check footings with regards to “as constructed” elevations and type, plumbness of footing, alignment between two founding elements and the distance between the two founding elements (C/C footings).**
- CS 41.13 M Receive and check that the delivery schedule of overhead sign support structures and their components to the galvanizing or painting facility or both, and to the site, not less than 7 days before shipping begins.**
- CS 41.14 M Receive and check that the proposed method of rock excavation is received at least 14 days prior to the commencement of excavation when rock is present within the depth of the footing.**
- CS 41.15 M Check that all proposals are submitted at 14 days prior to commencement of the work for review and acceptance and that the proposal bears the seal and signature of a design Engineer and a design-check Engineer.**
- CS 41.16 M Receive and check mill test certificates to make sure that they are according to the Contract Documents.**
- CS 41.17 M Receive and check the names of the inspection company and the inspectors, proof of certification a minimum of 7 days prior to the commencement of fabrication of overhead sign support structures have a site identification marking conforming to Contract Documents.**
- CS 41.18 M Receive from the Contractor a Manufacturer’s Certificate of Conformance, upon completion of the fabrication of the overhead sign support structure, and prior to shipping from the plant.**
- CS 41.19 M Receive and check a Request to Proceed from the Contractor before the delivery of the overhead sign support structure to the site.**

CS 41.20 M Check that the submissions by the Contractor, including the Manufacturer's Certificate of Conformance, and Request to Proceed meet the requirements of the Contract Documents.

When specified in the CA Agreement, check that the overhead sign support structure is fabricated according to the Contract Documents, prior to delivery to the site.

CS 41.21 M Issue a Notice to Proceed, in a timely manner, and prior to delivering the overhead sign support structure to the site.

CS 41.22 M Check all delivered elements to verify that they conform to the Contract Documents and check that the sign support structures have a site identification marking according to the Contract Documents. Verify that any damage to the elements or coatings caused during delivery have been repaired in accordance with the Contract Documents.

CS 41.23 M Check full bearing of all base plates, and that the fasteners have been tightened in accordance with the Contract Documents.

CS 41.24 M Check that the columns have been installed plumb and in the proper orientation.

CS 41.25 M Check that the installation of the overhead sign support structure is in accordance with the Contract Documents. Verify that the correct sign message is mounted on the support, facing the proper direction, and the required number of sign clamps have been installed.

CS 41.26 Check for cracking of erected sign structure.

CS 41.27 Check that exposed anchorage threads do not exceed 3 diameters.

CS 41.28 Receive and check the Contractor's Inspection reports and make sure that they bear the seal and signature of an Engineer.

CS 41.29 M Check that all repairs of sign support structures and submissions are carried out according to the Contract Documents.

CS 41.30 M Obtain and submit to Regional Structural Office Final Clearance/Restriction measurements.
Vertical Clearances – Gathering minimum clearance measurements along each edge of lane, in metres to 2 decimal places.
Horizontal Clearances – Clearance to be measured at right angles to the centre line of the travelled portion of the highway or edge of lane.

LEVEL OF INSPECTION – D2

CONCRETE AND STRUCTURES

CS 42 RETAINED SOIL SYSTEMS

Task # Activity

CS 42.1 M Receive the 3 sets of Working Drawings and check that they meet the requirements of the Contract Documents. Check that all submissions bear the seal and signature of the Design Engineer and the Design Check Engineer.

CS 42.2 M Check that the Contractor has selected a Retained Soil System (RSS) designated as A (Accepted) or DE (Demonstration) on the DSM List that meets the specified contract requirements.

CS 42.3 M Check that the Contractor has a copy of the Working Drawings sealed by the Design Engineer and Design Check Engineer on site at all times.

CS 42.4 M Check that the Working Drawings include at least the following:

- (i) All design, fabrication and construction drawings and specifications for the RSS**
- (ii) Details of all excavation, unwatering, drainage and backfilling required to construct the RSS, including type and source of associated backfill**
- (iii) Details at joints and connections to other structures where shown in the contract drawings**
- (iv) Details of all protection systems**
- (v) Statement of bearing resistance required by the RSS foundation, and the bearing resistance provided in accordance with the CHBDC**
- (vi) Statement of satisfactory internal and external stability**
- (vii) All design, fabrication and construction drawings and specifications for traffic barriers and base, and finishing caps, where applicable**
- (viii) Details of how all relevant Operational Constraints and Environmental Constraints, as specified elsewhere in the contract, will be adhered to**
- (ix) A copy of the Approved Product Drawings covering material and construction details.**

CS 42.5 M Forward 1 set of the Working Drawings to the Pavements and Foundations Section, Ministry of Transportation, Downsview.

- CS 42.6 Check that all loose, softened, deleterious material at the founding elevation of the RSS is removed.
- CS 42.7 M Verify that the foundation preparation is carried out in accordance with the Contract Drawings and Documents.**
- CS 42.8 M Receive the name of the RSS superintendent responsible for each RSS. Check that during construction of an RSS, the RSS superintendent shall not change without written permission from the Contract Administrator.**
- CS 42.9 M Receive, and check the Manufacturer's Certificate of Conformance and Precast Report for each shipment of the elements, at least 5 Business Days prior to shipping from the pre-casting plant. Check that the Precast Report contains the following information:**
- a) List of elements in the shipment, including their ID number, lot number, and description.
 - b) Temperature records for formwork and steel at the time of concrete placement.
 - c) Temperature control records, including location of thermocouple wires and graphical plots verifying that neither the maximum temperature limit or maximum allowable temperature difference have been exceeded.
 - d) Record of inspection of moist curing.
 - e) Summary of material test results for plastic concrete: air content, slump, and concrete temperature.
 - f) Documentation confirming that all repairable defects have been identified, evaluated, and repaired as detailed in the Repair of Defects and Deficiencies Repairable by Standard Methods clause.
- CS 42.10 M Receive and check a Request to Proceed from the Contractor before the delivery of each shipment of elements to the site.**
- CS 42.11 M Check that the submissions by the Contractor, including the Manufacturer's Certificate of Conformance, Precast Report, and Request to Proceed meet the requirements of the Contract Documents.**
- When specified in the CA Agreement, check that the RSS precast element is fabricated according to the Contract Documents, prior to delivery to the site.**
- CS 42.12 M Issue, in a timely manner, to the Contractor a Notice to Proceed prior to the elements being delivered to the site.**

CS 42.13 M Verify that the backfill type is as indicated on the Working Drawings and that the Contractor is placing the backfill in accordance with the manufacturers' recommendations, Working Drawings and Contract Documents.

CS 42.14 Check that backfill quantities are not part of the lump sum item.

CS 41.15 Check that concrete barrier is not part of the lump sum item.

CS 41.16 Check excavation limits in backfill zone.

CS 42.17 M Check alignment such as stations, lines and grades, cross-sections, verify levelling pad elevation and other constraints as specified in the Contract drawings.

CS 42.18 M Check for Out-of-Tolerance Geometry, Performance and Aesthetics Conditions/Deficiencies in accordance with the Working Drawings requirements.

For walls: visible distress in wall, differential settlement, tilting or rotating facing elements, bulging, panel/block contact resulting in spalling or chipping, wall facing out of vertical (plumb) or horizontal alignment.

For slopes: lack of vegetation, sloughing, lack of erosion protection, maximum slope angle exceeds that specified in the contract.

CS 42.19 M Check that Warranty requirements are satisfied.

CS 42.20 M Inspect for each RSS walls, prior the commencement of subsequent operations on that RSS wall:

a) Layout and marking of all lines and grades needed to construct the RSS; and construction of the alignment elements, where applicable;

b) Delivery and storage on site of facing elements and reinforcing elements, where applicable; and

c) Installation of the facing elements; placement and compaction of the backfill for RSS; and installation of the reinforcing elements, where applicable.

For RSS where the design height is greater than 5.0 m, a series of written permissions signed by the Contractor's Engineer to proceed for c) shall be submitted corresponding to the constructed height of the RSS at 5.0 m, 10.0 m, and 15.0 m, as applicable, up to and including the design height.

- CS 42.21 M Check that any monitoring requirements (vertical/horizontal displacement) are provided.**
- CS 42.22 M Verify if the Contractor's RSS representative oversees work in accordance to the Contract Documents.**
- CS 42.23 M Receive and check that the Contractor's Engineer inspection report for each RSS.**
- CS 42.24 M Receive and check that the Certificate of Conformance is sealed and signed by the Contractor's Engineer for the completion of each RSS.**

LEVEL OF INSPECTION – A1/A2

CONCRETE AND STRUCTURES

CS 46 DOWELS IN CONCRETE

Task #	Activity
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CS 46.1M	For all dowels, not limited to those selected for testing, check that concrete in the vicinity of the dowel location is free of cracks.
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CS 46.2	Schedule dowel pull testing with the independent laboratory and check that the testing is completed within 5 business days of Contractor notice.
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CS 46.3	Review equipment calibration documentation and that calibration test data is not more than 12 months old.
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CS 46.4 M	Check that dowel adhesive being used is on the MTO's approved Designated Sources list.
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CS 46.5	Select the location for Proof of Process Installation when in-situ testing cannot be done.
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CS 46.6 M	Check that the hole drilled is correct size, depth and free of all dust, debris and water prior to placing the applicable bonding material.
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CS 46.7	Check that all applicable manufacturer's recommendations and written instructions are adhered to.
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CS 46.8	Check that the gel time of dowel adhesive is long enough to allow proper dowel installation.
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CS 46.9	Check that dowels are maintained in the proper position during the setting period and that excess epoxy is removed.
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CS 46.10	Select dowels for in-situ testing.
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CS 46.11	Check that pull-testing is completed as specified in the Contract Documents.
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CS 46.12 M	Check dowels are free from damage to the dowel or dowel coating.
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CS 46.13 M	Receive and check a Request to Proceed from the Contractor after the installation of metallic dowels and prior to concrete placement.
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CS 46.14 M	Issue a Notice to Proceed to the Contractor, in a timely manner, after installation of metallic dowels and prior to the next operation.
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LEVEL OF INSPECTION – C1/C2

CONCRETE AND STRUCTURES

CS 52 **PRESTRESSED CONCRETE – PRECAST GIRDERS**

Task # Activity

CS 52.1 M Check that submissions are in accordance with the Contract requirements. Check that Working Drawings and supporting documents are submitted and contain the information listed in the Contract Documents.

CS 52.2 Check that the concrete mix design submission contains the information required by the Contract Documents. Obtain Form A portion of the concrete mix design along with any supporting documentation at least 7 Days prior to placement of concrete and review it to determine that it meets the Contract Document requirements. Check that all materials are from approved lists and meet the requirements of the Contract Documents. For Contracts including the new mandatory Greenhouse Gas Greenhouse Gas Reduction Initiative Reduction, check that the Contractor has provided the specified level of reduction (10% or 20%) and the means by which the Contractor will achieve the specified level of GHG reduction (that is, through the use of supplementary cementing materials, or Portland-limestone cement, or limestone filler, or a combination of...etc.) on the Concrete Mix Design forms.

Issue written confirmation that the concrete mix design submission meets the contract requirements or advise the Contractor of any requirements that have not been met. Check that the Regional Quality Assurance Section has received Form B portion of the concrete mix design from the concrete supplier prior to placement of concrete.

CS 52.3 Check that the girders are fabricated at a precast plant certified according to the requirements of the Contract Document. If concrete will be supplied by a ready-mixed concrete supplier check that documentation has been submitted verifying that the plant is certified by the Concrete Ontario.

CS 52.4 Check that the concrete temperature control plan is submitted one week prior to commencement of fabrication of girders.

CS 52.5 Review and provide a written response within 10 Business Days for any Design Proposals that are submitted.

CS 52.6 Check that the Contractor provides written notification a minimum of 7 Days prior to commencement of girder fabrication.

- CS 52.7 Check the temperature dataloggers, prior to use on the contract, to verify thermocouple function readings and verify they provide unalterable records during the recording period. Provide written notification to the Contractor that the temperature monitoring and recording system is deemed acceptable to the MTO. Verify that the thermocouple wires are placed according to Contract requirements.
- CS 52.8 Identify which girders make up each Lot (as defined in the Contract Documents).
- CS 52.9 After all the girders in the Lot have been fabricated, randomly select one girder from each lot for acceptance testing, and randomly select a location for core removal within that girder (noting the restrictions on location in Section 909.07.27.03.03 Coring of OPSS 909). Advise the Contractor which girder is to be cored and the coring location.
- CS 52.10 Obtain from the Contractor the planned time and site of coring (job site or precast plant) for each Lot. (Note: One girder in each lot is to be cored at an age of 7-10 days, to remove 2 cores, for air void system and rapid chloride permeability testing, respectively. For selected contracts a Special Provisions will be included, requiring an additional 3 cores to be removed from the same girder for determination of compressive strength which will be used. Coring may take place at the job site or at the precast plant, wherever the girder is 7 to 10 days of age).
- CS 52.11 M Arrange to be present, or have a representative present, for the removal of cores**
- CS 52.12 Upon removal of the core samples, verify that cores are properly labelled and placed in the security bags provided by the MTO. Immediately take possession of the cores and deliver them to the designated laboratory for testing by the MTO.
- CS 52.13 Obtain early rapid chloride permeability test results from QA laboratory, after delivery of cores, and provide results to the Contractor immediately.
- CS 52.14 Randomly select a minimum of one girder per lot for verification of concrete cover measurements. If the concrete cover measurements of any of the girders measured does not meet the tolerances of the Contract Documents, inform the MTO immediately.**
- CS 52.15 M Randomly select a minimum of one girder per lot for verification of dimensional tolerances according to the Contract Documents.**
- CS 52.16 Check that written notification of delivery of girders is provided 3 Business Days prior to delivery.

CS 52.17 M Receive from the Contractor a Manufacturer's Certificate of Conformance, and precast report for each shipment of pre-stressed / precast girders at least 5 Business Days prior to shipping from the pre-casting plant.

CS 52.18 M Receive and check a Request to Proceed from the Contractor before the delivery of each shipment of the pre-stressed/precast girders to the site.

CS 52.19 M Check that the submissions by the Contractor, including the Manufacturer's Certificate of Conformance, Pre-cast report and Request to Proceed meet the requirements of the Contract Document.

When specified in the CA Agreement, carry out a plant inspection and check that the pre-stressed / precast girder is fabricated according to the Contract Documents, prior to delivery to the site.

CS 52.20 M Issue a Notice to Proceed, in a timely manner, and prior to delivering the pre-stressed / precast girder to the site.

CS 52.21 Check that written notification of installation of girders is provided 3 Business Days prior to commencement of field installation. Check that the Workings Drawings are on site and being followed during installation of the girders.

CS 52.22 M Check that the girders delivered to site are fabricated and installed according with the Contract Documents, including all surface defects and other dimensional tolerances.

CS 52.23 M Immediately after installation, check that the girders are temporarily braced and measure the sweep of each girder.

CS 52.24 M Randomly select a minimum of one girder per lot delivered to the site for verification of dimensional tolerances according to the Contract Documents.

CS 52.25 Obtain and review acceptance test results for compressive strength, air void system and rapid chloride permeability.

CS 52.26 If referee testing of rapid chloride permeability is invoked, witness the removal of the core(s) for referee testing from the same girder from which the disputed acceptance core was obtained. Check that the referee core is properly labelled. Take possession of the core and deliver it to the referee laboratory designated by the MTO.

- CS 52.27 Check that defects and deficiencies repairable by standard methods are repaired according to the Contract Documents.
- CS 52.28 Check that girders with defects and deficiencies causing rejection according to the Contract Documents are not included in the Work.
- CS 52.29 For all other defects and deficiencies, check that a repair proposal meets the requirements of the Contract Documents is submitted. Review the proposal and provide a written response to the Contractor indicating whether the proposal has been accepted. Consult with MTO as necessary when reviewing the proposal.
- CS 52.30 Check that the girders have been properly braced after the installation.
- CS 52.30 M Receive and check a Request to Proceed from the Contractor after the installation of the pre-stressed/pre-cast girder.**
- CS 52.31 M Issue a Notice to Proceed, in a timely manner, and prior to the next operation.**

LEVEL OF INSPECTION – A2

CONCRETE STRUCTURES

CS 53 GLASS FIBRE REINFORCED POLYMER (GFRP) REINFORCING BAR

Task # Activity

CS 53.1 M Receive and check material Quality Control test reports and verify that the supplier and specific product are pre-qualified and the submission meets the requirements of the Contract Documents.

CS 53.2 Receive and check that the Working Drawings and supporting documentation meet the requirements of the Contract Documents.

CS 53.3 Receive and check the protection plan for placed and partially embedded bars according to the requirements of the Contract Documents.

CS 53.4 Receive and check change proposals for substitution of suppliers/product and forward to Owner for approval.

CS 53.5 M Receive from the Contractor a Manufacturer's Certificate of Conformance and GFRP Quality Control report for each shipment of GFRP prior to shipping from the plant.

CS 53.6 M Receive and check a Request to Proceed from the Contractor upon completion of fabrication of the GFRP and prior to shipping from the plant to the site.

CS 53.7 M Check that the submissions by the Contractor, including the Manufacturer's Certificate of Conformance, GFRP Quality Control report and Request to Proceed meet the requirements of the Contract Documents.

When specified in the CA Agreement, carry out a plant inspection to verify that the GFRP is fabricated in conformance with the requirements of the Contract Documents, prior to delivery to the site.

CS 53.8 M Issue a Notice to Proceed to the Contractor, in a timely manner, and prior to delivery of the GFRP to the site.

The Notice to Proceed shall be specific as to which reports were verified and shall include reference to lot numbers and bar sizes and other information such as date of issue where necessary for clarify.

- CS 53.9 M Randomly select samples for Quality Assurance (QA) testing according to the requirements of Contract Documents. Verify proper sampling against definition of a lot and lot size. Verify that the QA samples are properly tagged, stored and delivered in a timely manner to a laboratory designated by MTO.**
- CS 53.10 Check GFRP for proper delivery, storage, handling and protection.
- CS 53.11 M Check bars are free of mud, oil, concrete or other contaminants, and surface finish defects.**
- CS 53.12 Check that bar placement conforms to the grade, size, shape, and location as described in the Contract Documents. Verify that there is no mixing of products from different manufacturers in the same component unless permitted by the Contract Drawings.
- CS 53.13 Check that GFRP bars are tied, supported and secured according to the Contract Documents. Verify that bars have been secured to resist settlement, floating upward, or movement in any direction during concrete placement.
- CS 53.14 Check for proper use of associated hardware. Verify the use of tie types are as per Contract Documents for connections between different types of reinforcing materials, e.g. GFRP, stainless steel, black steel.
- CS 53.15 Check for proper workmanship and finish of bars using the Guidelines for Inspection and Acceptance of Glass Fibre Reinforced Polymer (GFRP) Reinforcing Bars available from the Materials, Engineering and Research Office (MERO). Check that the surface condition of bars is free of contaminants and other defects. Check for any damage from placement, handling, or transportation. Condition of bars should conform to the requirements of the Contract Documents.
- CS 53.17 Participate in the marking and removal of damaged GFRP bars as specified in the Contract Documents.
- CS 53.18 For placed or partially embedded bars, check that the time period for unprotected exposure is less than the limit as specified in the Contract Documents.
- CS 53.19 Check that lot numbers for placed bars match those of the material QC test reports referred to by the Contractor.
- CS 53.20 Check that bars exposed to construction traffic and foot traffic are protected according to Contract Documents.
- CS 53.21 M Receive and check a Request to Proceed from the Contractor upon completion of the placing of the GFRP and sign/date the form.**

CS 53.22 M Check that the GFRP has been installed according to the Contract Documents requirements.

CS 53.23 M Issue a Notice to Proceed, in a timely manner, and prior to the next operation after the installation of the GFRP.

CS 53.24 M The Notice to Proceed shall be specific as to which reports were verified and include reference to lot numbers and bar sizes, and other information, such as date of issue, where necessary for clarity.

CS 53.25 M Check that GFRP bars are protected from fresh (plastic) concrete splatter on the surface of bars that will later be embedded in new concrete, caused by adjacent concrete placements. Any concrete splatter shall be removed immediately while the concrete is still fresh without damaging the GFRP bars.

LEVEL OF INSPECTION – C2

CONCRETE AND STRUCTURES

CS 58 JACKING OF SUPERSTRUCTURES

Task # Activity

- CS 58.1 M Receive 3 sets of jacking drawings and calculations 7 Days prior to the commencement of the jacking operations.**
- CS 58.2 M Check that the drawings bear the seal and signatures of a design Engineer and a design checking Engineer and that all the submissions meet the requirements of the Contract Documents.**
- CS 58.3 M Check that all material used meets the Contract Documents.**
- CS 58.4 M Check that the Contractor has carried out a Pre-Construction Survey according to the Contract Documents and prior to the start of any work related to the jacking operation.**
- CS 58.5 M Check that the jacking operations are carried out under the direct supervision of the Contractor's Engineer.**
- CS 58.6 M Receive and review the Pre-Construction Survey prior to jacking.**
- CS 58.7 M Receive notification from the Contractor in writing at least 3 Days prior to the commencement of the jacking operations.**
- CS 58.8 M Receive and review the jacking drawings and calculations if it is determined that the Contractor's field adjustments will have an impact on the bridge structure.**
- CS 58.9 M Check that the jacking operations are carried out under the direct supervision of an Engineer.**
- CS 58.10 M Check that the traffic is not on or below a bridge undergoing jacking unless specified in the Contract Documents.**
- CS 58.11 M Check temporary supports meets the Contract Documents.**
- CS 58.12 M Receive and review the data from the Contractor's post-jacking survey.**

- CS 58.13 M Receive details of the proposed methodology, equipment/materials for remedial work of any bearings not properly seated.**
- CS 58.14 M Check that the modular bridge has been constructed to meet the requirements of the Contract Documents.**
- CS 58.15 M Receive and check remedial work proposals and that the work carried out meets the proposal and Contract Documents.**
- CS 58.16 M Check that the jacking of superstructure work meets the requirements of the Contract Documents.**
- CS 58.16 M Receive the Certificate of Conformance, check that it meets the requirements of the Contract Document, and that it is sealed and signed by the Contractor's Engineer.**
- CS 58.17 M Check that all anchor holes are filled according to the Contract Documents.**
- CS 58.18 M Check that expansion joint and handrail components removed or loosened have been reinstated.**

LEVEL OF INSPECTION – C2 unless specified otherwise

ELECTRICAL

E 4 POLE FOUNDATIONS AND POLE INSTALLATION

Task #	Activity
E 4.1 M	Check all delivered material to verify that the material is being supplied from the approved list that was submitted by the Contractor at the commencement of the Contract. Record all non-conformance items and provide recommendations.
E 4.2	Check that the Contractor augers holes to the specified dimensions for the poles and footings.
E 4.3M	Receive and check a Request to Proceed from the Contractor prior to the date of the commencement of the dewatering of the excavation for structure operation.
E 4.4 M	Check that the foundations are constructed according to the Contract Documents. The Foundation Engineering Specialist shall check that the excavation was carried out without causing instability to the base and walls of the excavation.
E 4.5 M	Check that the earth excavation meets the requirements of the Contract Documents.
E 4.6 M	Inspect 100% of the time for the caisson pile and earth excavation operations.
E 4.7 M	Issue, in a timely manner, a Notice to Proceed to the Contractor before proceeding with the next operation.
E 4.8 M	Receive and check a Request to Proceed from the Contractor prior to the date of the commencement of the caisson pile.
E 4.9	Visually check all poles for dents, cracks, scratches, paint chipping, and any other obvious imperfections. Check that the base of the caisson or shallow concrete foundation was cleaned of loosened or softened material or both prior to placing concrete.
E 4.10 M	Issue, in a timely manner, a Notice to Proceed to the Contractor before proceeding with the next operation.

- E 4.11 M** Receive and check a Request to Proceed from the Contractor prior to the date of the commencement of the steel reinforcement, anchorage assemblies, sleeves and ducts, and concrete placement operations.
- E 4.12 M** Check that the cage is secured.
- E 4.13 M** Check that the commencement that the anchorage assemblies, sleeves, and ducts were properly placed in the centre of the concrete footings within a 15 mm tolerance of backfilling excavation.
- E 4.14 M** Check that the work is in conformance with the Contract Documents.
- E 4.15 M** Issue in a timely manner, a Notice to Proceed to the Contractor before the Contractor proceeds with the placement of concrete.
- E 4.16 M** Check that the placement of concrete is in conformance with the Contract Documents, and according to OPSS 904.
- E 4.17** Check that the Contractor properly stores, erects and supports the poles in accordance with the manufacturer's recommendations and the Contract constraints.
- E 4.18** Check that the pole orientation and handhole orientation are as specified in the Contract Documents.
- E 4.19 M** Check that the orientation and elevation of each and every frangible base is as specified in the Contract Documents. Perform 100% inspection of frangible bases.
- E 4.20 M** Check that pole foundations and poles are installed to the correct elevation, station, offset and are vertically aligned, as specified in the Contract Documents.
- E 4.21 M** Check that the local grading around the pole foundations is completed as specified in the Contract Documents.
- E 4.22 M** Check that the distance between the pole bases and the pole footings are according to the Contract Documents.
- E 4.23 M** Check that all formwork is removed.
- E 4.24 M** Obtain GPS readings for all lighting poles.

LEVEL OF INSPECTION – A1 / A2

ELECTRICAL

E 5 GROUNDING

Task # Activity

E 5.1 M Check all delivered material to verify that it is in accordance with the Contract Documents. Record all non-conformance items and provide recommendations.

E 5.2 M Receive and check a Request to Proceed prior to the Proof of Performance testing and inspection with the date, time and location for each testing.

E 5.3 Check that insulated ground wire is of correct colour and type, as specified in the Contract Documents.

E 5.4 M Check that the specified ground electrodes are used and that the type, quantity, dimensions and locations of ground electrodes are according to the Contract Documents.

E 5.5 M Check that all ground connectors are Canadian Standards Association (CSA) approved, and are of the size and type specified in the Contract Documents.

E 5.6 M Check that all inaccessible ground connections are installed as specified in the Contract Documents.

E 5.7 M Verify that the Contractor conducts the resistance to ground tests.

E 5.8 M Verify that the Contractor ensures that the grounding system complies with the requirements of the Electrical Safety Authority (ESA) and is in conformance with the Contract Documents.

E 5.9 M Verify and record the testing and measurement of the grounding grid at each power supply location and that it is completed in accordance with the Contract Documents.

E 5.10 M Check that the traffic signal grounding system is in conformance with the Contract Documents.

E 5.11 M Check that all metal components throughout the contract are grounded according to the Ontario Electrical Safety Code.

E 5.12 Check that the system ground is continuous throughout.

- E 5.13 M** Check that the Work was inspected and tested to meet the requirements of the Contract Documents and to check that all components are installed, tested and proven as specified in the Contract Documents
- E 5.14 M** Receive and check a Request to Proceed from the Contractor after completion of the Proof of Performance Testing and Inspection with the date, time and location for each inspection/test.
- E 5.15 M** Receive a signed inspection report from the Contract Administrator's Electrical Specialist/Inspector verifying that all grounding systems (e.g. traffic signals, roadway lighting, power supplies, etc.) have successfully passed proof of performance testing and inspection.
- E 5.16 M** Issue, in a timely manner, a Notice to Proceed to the Contractor if the Work, materials, installation and inspection/testing/test results are in conformance with the Contract Documents, before the next operation after the Proof and Performance Testing and Inspection.

LEVEL OF INSPECTION – D2

ELECTRICAL

E 7 LUMINAIRES

Task # Activity

E 7.1M Verify that the Working Drawings submission is in accordance with the Contract Documents.

E 7.2 Check that the Proof of Performance and Installation of the luminaires is completed in accordance with the requirements of the Contract Documents.

E 7.3 M Check all the delivered material to verify that it is being supplied from the approved list that was submitted by the Contractor at the commencement of the contract according to the with the requirements of the Contract Documents submissions, and meets the luminaire “burn-in” period for acceptance as specified in the Contract Documents.

E 7.4 Check that the luminaires delivered have the correct light source (lamp or LED), socket position, photometrics, ballast and that they are dated.

E 7.5 Check that all luminaires undergo a minimum burning-in period of 100 consecutive nighttime hours prior to the acceptance of the work by the Contract Administrator. For daytime tunnel illumination systems, the burning-in period shall be 100 consecutive daytime hours.

E7.6 M Receive and check a Request to Proceed from the Contractor after completion of the Pre-installation Testing and Inspection with the date, time and location for each testing.

E7.7 M Issue, in a timely manner, a Notice to Proceed to the Contractor if the Work, materials, and pre-installation inspection/testing/test results are in conformance with the Contract Documents, before the next operation after the Proof and Performance Testing and Inspection.

E 7.8 M Check that the luminaires are installed and aligned correctly.

E 7.9 M Check that the luminaire shields, refractors, and reflectors are installed and aligned correctly.

E 7.10 M Check that all luminaires and associated hardware and materials are visually checked for cracks, dents and other damage.

- E 7.11 M** Once all of the luminaires have been installed, perform an aerial inspection on a minimum of 10% of the conventional (non-high mast) luminaires.
- E 7.12 M** Verify by visual inspection that all luminaires operate properly when the system is energized.
- E 7.13** Check that fuses are of the correct amperage and type.
- E 7.14 M** Receive and check a Request to Proceed from the Contractor after completion of the Proof of Performance Testing and Inspection with the date, time and location for each inspection/test.
- E 7.15 M** Receive a signed inspection report from the Contract Administrator's Electrical Specialist/Inspector verifying that the luminaires have successfully passed the proof of performance testing and inspection.
- E7.16 M** Issue, in a timely manner, a Notice to Proceed to the Contractor if the Work, materials, installation and inspection/testing/test results are in conformance with the Contract Documents.

LEVEL OF INSPECTION – D2

ELECTRICAL

E 8 POWER SUPPLY EQUIPMENT

Task #	Activity
E 8.1 M	Receive the 4 sets of Working Drawings from the Contractor at least 14 Days prior to the commencement of fabrication of the power supply equipment. Check that the Working Drawings include the seal and signature of the Engineer and that the Working Drawings meet the requirements of the Contract Documents.
E 8.2 M	Receive the Contractor's Manufacturer's Certificate of Conformance upon completion of the fabrication of the power supply equipment.
E 8.3 M	Receive and check a Request to Proceed from the Contractor before the delivery of the power supply equipment to the site.
E 8.4 M	Check that the submissions by the Contractor, including the Manufacturer's Certificate of Conformance, and Request to Proceed meet the requirements of the Contract Documents. When specified in the CA Agreement, check that the power supply equipment is fabricated according to the Contract Documents, prior to delivery to the site.
E 8.5 M	Issue, in a timely manner, and prior to delivering the power supply equipment to the site a Notice to Proceed to the Contractor.
E 8.6 M	Check all delivered material to verify that it is being supplied from the approved list that was submitted by the Contractor at the commencement of the contract. Record all non-conformance items and provide recommendations.
E 8.7 M	Check that the Contractor has obtained the Electrical Safety Authority (ESA) label of approval prior to installation of the power supply.
E 8.8	Check the equipment for obvious defects or damage.
E 8.9	Check that the equipment is as specified, paying special attention to the ratings for voltage and amperage.
E 8.10 M	Check that the specified grounding is completed.

- E 8.11 Where applicable, check that the power supply is mounted at the correct height, using the specified brackets.
- E 8.12 M Check that the Contractor has tested the cables and the grounding system in accordance with the contract specifications.**
- E 8.13 M Check that the photoelectric controllers are installed and oriented correctly.**
- E 8.14 M Check that the component layout conforms to the approved shop drawings.**
- E 8.15 M Check that the Contractor has obtained a connection authorization from the Electrical Safety Authority (ESA) prior to energization.**
- E 8.16 M Receive and check a Request to Proceed from the Contractor after completion of the Pre-installation Testing and Inspection with the date, time and location for each testing.**
- E 8.17 M Issue, in a timely manner, and before the next operation after the completion of the proof of performance testing and inspection, a Notice to Proceed to the Contractor if the Work, materials and pre-installation inspection/testing/test results are in conformance with the Contract Documents.**
- E 8.18 M Receive and check a Request to Proceed from the Contractor after completion of the Proof of Performance Testing and Inspection with the date, time and location for each testing.**
- E 8.19 M Receive a signed inspection report from the Contract Administrator's Electrical Specialist/Inspector verifying that the power supply has successfully passed the proof of performance testing and inspection.**
- E 8.20 M Issue, in a timely manner, a Notice to Proceed to the Contractor if the Work, materials, installation and proof of performance testing and inspection results are in conformance with the Contract Documents.**
- E 8.21 M Verify and record the testing and measurement of the grounding grid at each power supply location; verify that it is completed in accordance with the Contract Documents; and, verify that all components are installed, tested and proven as specified in the Contract Documents.**
- E 8.22 M Receive a signed inspection report from the Contract Administrator's Electrical Specialist/Inspector verifying that the power supply grounding grid has successfully passed the proof of performance testing and inspection.**

- E 8.23 M Issue, in a timely manner, a Notice to Proceed to the Contractor if the Work, materials, installation, and inspection/testing/test results are in conformance with the Contract Documents.**

- E 8.24 M Obtain GPS readings for power supply cabinets and distribution assemblies.**

- E 8.25 M Check that Arc Flash warning labels are installed according to the Contract Documents.**

LEVEL OF INSPECTION – E2

ELECTRICAL

E 9 TRAFFIC SIGNAL EQUIPMENT

Task #	Activity
E 9.1	Check all the delivered material to verify that it is being supplied from the approved list that was submitted by the Contractor at the commencement of the contract.
E 9.2 M	Receive manufacturer's certificate for pre-installation testing of equipment.
E 9.3 M	Check that the PH-M-125 (legal approval form) is received prior to signal equipment (both permanent and temporary) being activated.
E 9.4	Check that the signal heads and brackets are the correct size and type.
E 9.5 M	Receive and check a Request to Proceed from the Contractor after completion of the Pre-installation Testing and Inspection with the date, time and location for each testing.
E 9.6 M	Issue, in a timely manner, a Notice to Proceed to the Contractor if the Work, materials and pre-installation inspection/testing/test results are in conformance with the Contract Documents.
E 9.7	Check that the lamps or the LED modules are the correct wattage and are installed correctly.
E 9.8	Check the orientation and mounting heights of traffic signal and pedestrian signal heads.
E 9.9	Check that test results for loops conform to the contract requirements.
E 9.10	Check that all traffic signal actuation devices operate properly.
E 9.11 M	Check that all accessible pedestrian signal pushbutton poles are located according to the Contract Documents and the Accessibility for Ontarians with Disabilities Act (AODA).
E 9.12 M	Check that all accessible pedestrian signals and actuation devices operate according to the Contract Documents and the AODA.
E 9.13 M	Once all of the signal displays have been installed, perform an aerial inspection on a minimum of 2 non-pedestrian signal heads per intersection.

- E 9.14 M** Check that the Contractor has tested all traffic signal control equipment, demonstrated that it is fully operational and that it conforms to the requirements as specified in the Contract Documents.
- E 9.15 M** Check that traffic signal operation conforms to the timing plan and operational parameters set by the regional traffic section.
- E 9.16 M** For Portable Temporary Traffic Signals receive a copy of the standard timing sheet, with a copy of the Generic Signal Timing Sheet attached from the Contractor. Forward timing sheets to the regional traffic section.
- E 9.17 M** Check that the Work was inspected and tested to meet the requirements of the Contract Documents, and to check that all components are installed, tested and proven as specified in the Contract Documents and that the complete traffic signal system performs as intended and according to the Contract Documents.
- E 9.18 M** Receive and check a Request to Proceed from the Contractor after completion of the Proof of Performance Testing and Inspection with the date, time and location for each inspection/test.
- E 9.19** Receive a signed inspection report from the Contract Administrator's Electrical Specialist/Inspector verifying that the complete traffic signal system has successfully passed the proof of performance testing and inspection.
- E 9.20 M** Issue, in a timely manner, a Notice to Proceed to the Contractor if the Work, materials, installation and inspection/testing/test results are in conformance with the Contract Documents.

LEVEL OF INSPECTION – E2

ELECTRICAL

E 11 HIGH MAST LIGHTING

Task #	Activity
E 11.1	Check all the delivered material to verify that it is being supplied from the approved list that was submitted by the Contractor at the commencement of the contract.
E 11.2 M	Check that the supply erection drawings and procedures have been received prior to the commencement of the assembly of any high mast poles.
E 11.3 M	Check that the high mast equipment training certificates for the Contractor's employees have been received prior to the commencement of construction of any high mast poles.
E 11.4 M	Check that the shop drawings (poles, anchorage assemblies and raising/lowering equipment) have been received prior to the commencement of construction of any high mast poles.
E 11.5 M	Receive a Request to Proceed after completion of the Pre-installation Testing and Inspection with the date, time and location for each testing.
E 11.6 M	Issue, in a timely manner, a Notice to Proceed to the Contractor if the Work, materials and pre-installation inspection/testing/test results are in conformance with the Contract Documents.
E 11.7 M	Check that the distance from the top of the high mast pole footing to the bottom of the bottom levelling nuts is according to the Contract Documents.
E 11.8	Inspect the high mast lighting luminaires in accordance with Task E 7.
E 11.9 M	Check that all high mast lighting equipment and materials are in place and are visually checked for cracks, dents and other damage.
E 11.10 M	Check that the Contractor has tested all high mast lighting equipment, particularly the raising and lowering equipment, demonstrated that it is fully operational, and that it conforms to the requirements as specified in the Contract Documents.

- E 11.11 M** Receive notice a minimum of 2 Business Days prior to each operation below and verify that the following is met for each:
- a) All of the high mast equipment at each high mast pole was tested and inspected.**
 - b) The high mast lighting raising and lowering equipment is according to the Contract Documents.**
 - c) Each sectional steel high mast lighting pole has been installed plumb with the base plate positioned as specified in the Contract Documents.**
 - d) Each sectional steel high mast lighting pole and raising and lowering equipment passed the proof of performance testing and inspection.**
 - e) The torque limiter has been fully tested and verified to be fully functional according to the manufacturer's recommendations and the Contract Documents.**
 - f) The sectional steel high mast lighting pole jacking and installation procedures have been carried out according to the installation drawings, calculations, and procedures.**
 - g) At the end of the testing at each sectional steel high mast lighting pole, the ring assembly has been levelled, raised to the top of the pole, and fully and properly docked and latched to the head frame assembly at the top of the pole.**
- E11.12 M** Receive a Request to Proceed after completion of the Proof of Performance Testing and Inspection with the date, time and location for each inspection/test.
- E11.13 M** Receive a signed inspection report from the Contract Administrator's Electrical Specialist/Inspector verifying that each high mast pole has successfully passed the proof of performance testing and inspection.
- E11.14 M** Issue, in a timely manner, a Notice to Proceed to the Contractor if the Work, materials, installation and proof of performance inspection/testing/test results are in conformance with the Contract Documents.
- E 11.15** Check that the fuses are of the correct amperage and type.

- E 11.16 M** Check that shielding is correctly in place and providing required light transmission cut off prior to the burn-in test.
- E11.17 M** Receive the Test and Inspection Report from the Contractor.
- E11.18 M** Receive and check a Request to Proceed from the Contractor after completion and submission of the Test and Inspection Report by the Contractor.
- E11.19 M** Receive a signed inspection report from the Contract Administrator's Electrical Specialist/Inspector verifying that the Test and Inspection Report submitted by the Contractor is accurate and complete; and, that all high mast lighting equipment is according to the Contract Documents.
- E 11.20 M** Issue, in a timely manner, a Notice to Proceed to the Contractor if the Work, materials, installation, and inspection/testing/test results and Test and Inspection Report are accurate, complete and in conformance with the Contract Documents.

LEVEL OF INSPECTION – F2

ATMS

ATMS 14

GROUNDING

Task #

Activity

ATMS 14.1 M

Check all delivered material to verify that it is in accordance with the Contract Documents. Record all non-conformance items and provide recommendations.

ATMS 14.2 M

Receive and check a Request to Proceed from the Contractor prior to the Proof of Performance testing and inspection with the date, time and location for each testing.

ATMS 14.3

Check that insulated ground wire is of correct colour and type, as specified in the Contract Documents.

ATMS 14.4 M

Check that the specified ground electrodes are used and that the type, quantity, dimensions and locations of ground electrodes are according to the Contract Documents.

ATMS 14.5 M

Check that all ground connectors are Canadian Standards Association (CSA) approved, and are of the size and type specified in the Contract Documents.

ATMS 14.6 M

Check that all inaccessible ground connections are properly installed as specified in the Contract Documents.

ATMS 14.7 M

Check that the Contractor conducts the resistance to ground tests. Check that the Contractor determines that the grounding system complies with the requirements of the Electrical Safety Authority (ESA) and is in conformance with the Contract Documents.

ATMS 14.8 M

Take note of any electrodes installed in a non-standard manner, where additional electrodes were required, and where they were located.

ATMS 14.9

Check that all metal components throughout the contract are grounded according to the Ontario Electrical Safety Code.

ATMS 14.10

Check that the system ground is continuous throughout.

- ATMS 14.11 M** Check that the Work was inspected and tested to meet the requirements of the Contract Documents and to check that all components are installed, tested and proven as specified in the Contract Documents
- ATMS 14.12 M** Receive and check a Request to Proceed from the Contractor after completion of the Proof of Performance Testing and Inspection with the date, time and location for each inspection/test.
- ATMS 14.13 M** Receive a signed inspection report from the Contract Administrator's Electrical Specialist/Inspector verifying that all grounding systems have successfully passed proof of performance testing and inspection.
- ATMS 14.14 M** Issue, in a timely manner, a Notice to Proceed to the Contractor if the Work, materials and installation, and inspection/testing/test results is in conformance with the Contract.

LEVEL OF INSPECTION – D2

ATMS

ATMS 15 POWER SUPPLY EQUIPMENT

- | Task # | Activity |
|---------------------|---|
| ATMS 15.1 M | Receive the 4 sets of Working Drawings from the Contractor at least 14 Days prior to the commencement of fabrication of the power supply equipment. Check that the Working Drawings include the seal and signature of the Engineer and that the Working Drawings meet the requirements of the Contract Documents. |
| ATMS 15.2 M | Receive the Contractor's Manufacturer's Certificate of Conformance upon completion of the fabrication of the power supply equipment. |
| ATMS 15.3 M | Receive and check a Request to Proceed from the Contractor, before the delivery of the power supply equipment to the site. |
| ATMS 15.4 M | Check that the submissions by the Contractor, including the Manufacturer's Certificate of Conformance, and Request to Proceed meet the requirements of the Contract Documents.

When specified in the CA Agreement, check that the power supply equipment is fabricated according to the Contract Documents, prior to delivery to the site. |
| ATMS 15.5 M | Issue, in a timely manner and prior to delivering the power supply equipment to the site, a Notice to Proceed to the Contractor. |
| ATMS 15.6 M | Check all delivered material to verify that it is being supplied from the approved Material Selection Approval (MSA) list that was submitted by the Contractor at the commencement of the contract. Record all non-conformance items and provide recommendations. |
| ATMS 15.7 M | Check that the Contractor has obtained the Electrical Safety Authority (ESA) label of approval prior to installation of the power supply. |
| ATMS 15.8 | Check the equipment for obvious defects or damage. |
| ATMS 15.9 | Check that the equipment is as specified, paying special attention to the ratings for voltage and amperage, and that the appropriate circuit breakers have been fitted per contract requirements. |
| ATMS 15.10 M | Check that the specified grounding and/or bonding is completed. |

ATMS 15.11 M Where applicable, check that the power supply is mounted at the correct height, using the specified brackets.

ATMS 15.12 M Check that the Contractor tested the cables and the grounding system meets the requirements of the Contract Documents.

ATMS 15.13 M Receive and check a Request to Proceed from the Contractor after the completion of the Pre-installation Testing and Inspection of all components listed under this operation, with the date, time and location for each testing.

ATMS 15.14 M Issue, in a timely manner, a Notice to Proceed to the Contractor if the Work, materials and pre-installation inspection/testing/test results conform with the Contract Documents.

ATMS 15.15 Perform low voltage system tests on wiring of the equipment according to OPSS 604. Test grounding of equipment according to OPSS 609.

ATMS 15.16 M Check that the Work was inspected and tested to meet the requirements of the Contract Documents and to check that all components are installed, tested and proven as specified in the Contract Documents. Check that the following components shall be inspected and meet the Contract Documents:

- a) Barriers and raceways
- b) Breakers
- c) Cabinet materials
- d) Conduits and tubings
- e) Contactors
- f) Disconnect switches
- g) Doors and latching mechanisms
- h) Enclosure materials
- i) Cabinet general appearance
- j) Grounding and bonding materials
- k) Grounding connections
- l) Insulation
- m) Labels
- n) Lightning arrestors
- o) Panelboards
- p) Photoelectric controllers
- q) Switches
- r) Transformers
- s) Wires and connectors

ATMS 15.17 M Receive and check a Request to Proceed from the Contractor after completion of the Proof Performance Testing and Inspection with the date, time and location for each testing.

ATMS 15.18 M Receive a signed inspection report from the Contract Administrator's Electrical/ATMS Specialist/Inspector verifying that the power supply has successfully passed the proof of performance testing and inspection.

ATMS 15.19 M Issue, in a timely manner, a Notice to Proceed to the Contractor if the Work, materials, installation, and inspection/testing/test results are in conformance with the Contract Documents.

ATMS 15.20 Verify local grading has been appropriately addressed for pad mounted power supply plant.

ATMS 15.21 M Obtain GPS readings for ATMS power supply equipment.

LEVEL OF INSPECTION – E2

Other Changes related to other MTO general CAITM updates

Inspection Task	Name	Reason for Change	Page
GD 13B	Compaction	Update to task	i
CS 1	Concrete Material, Production and Testing	To support MTO's Greenhouse Gas Reduction Initiative	ii
CS 7	Concrete Base and Pavement		v
CS 8	Concrete Base and Pavement – Full Depth Repair		viii
CS 10	Structure Rehabilitation – Concrete Patches		x
CS 18	Concrete Base and Pavement – Partial Depth Repair		Edit in CS 18.23
BIT 2	Reclaiming Asphalt Pavement	Edits to BIT 2.2, 2.3, and 2.4	xv

Note: that [CS 36](#) and [CS 52](#) have also been edited to include changes to support MTO's Greenhouse Gas Reduction Initiative

GRADING AND DRAINAGE

GD 13B COMPACTION

Task # Activity

GD 13B.1 M Verify during each visit that, as a minimum, QA testing is carried out at the same minimum QC testing frequency (i.e. but at separate random locations), specified in the Contract Documents for each type of Work involved. QA testing shall be carried out for every QC lot tested while the QA technician is on site. This is to be done on an ongoing basis.

GD 13B.2 M Verify that, where a compaction control strip is required (i.e. GD 48) and especially when the Contractor is using the Modified Layer Compaction Method (MLCM), that the same or similar procedure (i.e. similar types of equipment of at least the same masses, the same vibration characteristics and the same number of passes) that the Contractor used during the construction of the Control Strip is also used during the construction of the associated compaction lots and that the Contractor constructs a new control strip, if there is any changes to that procedure.

GD 13B.3 M Verify that all applicable QC and QA field test results, the associated compaction calculations and all other information relating to compaction testing are constantly being recorded and updated on MTO forms PH-CC-009 and PH-CC-011 (or directly into WBCMS, where required), at the time the testing is done and that, for each tested lot, the compaction calculations indicate the lot is acceptable before the Contractor places another lift of material on top it.

LEVEL OF INSPECTION – C1/D2 for each different portion of the Work, where compaction is required. Visits must be arranged to make sure that, for each different portion of the work, QA testing is carried out each day on at least one QC lot AND on at least one QC lot for every 4 QC lots constructed that day.

CONCRETE AND STRUCTURES

CS 1 CONCRETE MATERIAL, PRODUCTION AND TESTING

Task # Activity

CS 1.1 Obtain the Form A portion of the concrete mix design along with any supporting documentation required by the Contract at least 7 Days prior to placement of concrete and review it to determine if it meets the Contract Document requirements. Check that the concrete plant supplier is certified.

Check that all materials are from approved lists and meet the requirements of the Contract Documents. For Contracts including the new mandatory Greenhouse Gas Reduction Initiative Special Provision, check that the Contractor has provided the specified level of reduction (10% or 20%) and the means by which the Contractor will achieve the specified level of GHG reduction (that is, through the use of supplementary cementing materials, or Portland-limestone cement, or limestone filler, or a combination of...etc.) on the Concrete Mix Design forms. Issue written confirmation that the concrete mix design submission meets the contract requirements or advise the Contractor of any requirements that have not been met. Check that the Regional Quality Assurance Section has received Form B portion of the concrete mix design from the concrete supplier prior to placement of concrete.

CS 1.2 Check that the required quality assurance samples of aggregates are taken as per the requirements of OPSS 1002 and Contract Documents and delivered to the appropriate laboratories. Check that the test results meet all of the requirements of the Contract Documents.

CS 1.3 Check that the required quality assurance samples of cementing materials, limestone filler (if applicable), water, and admixtures are taken and delivered to the appropriate laboratories and that the test results meet all of the requirements of the Contract Documents. Samples of admixture and water shall be protected from freezing and high temperatures. Cementing materials and limestone filler samples shall be protected from moisture.

CS 1.4 Identify which method of acceptance will be used for compressive strength. For acceptance method A, determine lot and subplot sizes and generate random numbers

CS 1.5 Check that the technician performing the testing of plastic concrete is certified by American Concrete Institute (ACI) or Canadian Council of Independent Laboratories (CCIL).

- CS 1.6 M** Check concrete delivery tickets for correct specified 28-day strength (MPa), mix design number and batching time, and record the discharge time, and other information required by the Contract Documents. Check that the Contractor records the amount of any material added after batching, rejection of a load or part thereof, time truck arrived on site and the time when the truck finished discharging.
- CS 1.7 Check that plastic concrete is sampled and tested according to the contract requirements. Identify to the Contractor concrete loads from which performance cylinders, or other cylinders for information purposes, are to be cast as the loads arrive on site.
- CS 1.8 Where the use of test cylinders is specified, check that test cylinders are handled, cured and transported in accordance with Contract Documents.
- CS 1.9 Check that the appropriate curing regime is used for curing of concrete.
- CS 1.10 Check that the required quality assurance samples of curing compound, as applicable, are taken and delivered to the testing laboratory.
- CS 1.11 Obtain submission for “Plastic Concrete Test Results” after each day’s Work. The submission shall include copies of delivery tickets for each load of concrete and a summary of testing, adjustments, rejections, as specified in the contract.
- CS 1.12 M** Check that delivery ticket information for each load of concrete is entered into WBCMS (in order to track GHG Reduction in all Contracts).
- CS 1.13 Obtain submissions for “Cylinder Curing Records” at the completion of the field curing period.
- CS 1.14 Determine the quantity of concrete in lots using the dimensions in the Contract Documents, for the purpose of calculating payment adjustment for air void system and rapid chloride permeability.
- CS 1.15 Identify random locations for coring specimens for AVS and RCP. Upon removal of the core samples, verify that cores are properly labelled and place in the security bags provided by the MTO. Immediately take possession of the cores and deliver them to the designated laboratory for testing by the MTO.

- CS 1.16 Forward compressive strength, AVS and RCP test results and add payment adjustment information to the Contractor as the results become available. For compressive strength forward analysis of results at a minimum of monthly intervals.
- CS 1.17 Check appropriateness of material selected to fill in core holes.
- CS 1.18 Obtain the Contractor's written intent to invoke compressive strength, AVS or RCP referee testing within 5 Business Days of the Contractor receiving the test results for the subplot or lot, as applicable.

LEVEL OF INSPECTION – A1

CONCRETE AND STRUCTURES

CS 7 CONCRETE BASE AND PAVEMENT

Use this task in conjunction with CS 1

Task #	Activity
CS 7.1	Obtain a plan detailing curing and protection when concrete is placed in cold weather conditions. Check that the plan includes the method by which in-place minimum concrete temperatures are maintained.
CS 7.2	Obtain Form A portion of the concrete mix design along with the supporting documentation at least seven (7) days prior to placement of concrete and review it to determine if it meets the contract requirements. For Contracts including the new mandatory Greenhouse Gas Reduction Initiative Special Provision, check that the Contractor has provided the specified level of reduction (10% or 20%) and the means by which the Contractor will achieve the specified level of GHG reduction (that is, through the use of supplementary cementing materials, or Portland-limestone cement, or limestone filler, or a combination of...etc.) on the Concrete Mix Design forms. Check that the Regional Quality Assurance Section has received Form B of the concrete mix design from the concrete supplier prior to placement of concrete.
CS 7.3	Check that all the delivered material is supplied from the approved list, is properly stored, sampled, tested and the test results meet all of the requirements of the contract.
CS 7.4	Issue written confirmation that the concrete mix design submission meets the contract requirements or advise the Contractor of any requirements that have not been met.
CS 7.5	Check that the tie bars and dowel bars are the proper length and diameter. Check that the tie bars and dowel bars are properly stored on-site and the amount of damage to the epoxy coated. Reject any bars not meeting the contract requirements.
CS 7.6	Check for proper alignment, grade and base preparation.
CS 7.7	Check that the dowel bars are entirely coated with bond breaker prior to installing them.
CS 7.8	Check that the dowel bars and tie bars are placed and remain in the specified location. Check that load transfer devices are placed on the proper skew and staked in place. Check that the spacer wires are cut on

the load transfer devices prior to placing concrete. Check that the location of the dowel bars is visibly marked on the side of the concrete for joint cutting.

- CS 7.9 Check the temperature of the existing surface to receive the concrete, to determine that it is not above 35°C or below 5°C. Check the air temperature to determine that it is not below 0°C or above 32°C prior to or during the concrete placing operation.
- CS 7.10 Load transfer devices should be checked following paving operations to determine that they have not been moved.
- CS 7.11 Check that concrete placement, consolidation, finishing and curing operations are in accordance with the contract requirements.
- CS 7.12 Check that the specified trial run of the paving equipment is made when specified. After the first day's production, check cut-out to determine that the position and alignment of the dowel bars is according to the contract requirements. Check that repair is according to the contract requirements.
- CS 7.13 When fixed form pavers are used, check that hand held vibrators are used properly to supplement consolidation.
- CS 7.14 Check that specified finishing and texturing procedures are adhered to. Check the width, centres and depth of grooves to determine that they meet the contract requirements.
- CS 7.15 Check that timing of form removal is as specified and any honeycombed areas are properly repaired.
- CS 7.16 Check that the joints are the correct type and are cut at the proper location.
- CS 7.17 Check that the initial sawcut is made to the depth specified in the Contract Documents. Check that this initial sawcut is done within the constraints specified in the Contract Documents, without damaging the concrete surface.
- CS 7.18 Inspect hardened concrete surface for cracks outside of the joints and to determine that it is within surface tolerance.
- CS 7.19 M Check that traffic is not permitted on the concrete pavement/base until the concrete has attained a compressive strength of 20 MPa.**

- CS 7.20 Check that Quality Assurance cores are obtained and properly labelled and placed in the security bags provided by the MTO. Immediately take possession of the cores and deliver them to the designated laboratory for testing by the MTO.
- CS 7.21 Calculate the Percent Within Limits for the criteria of strength and thickness.
- CS 7.22 Check that the Profile Measuring Device (PMD) meets the contract requirements and that it has been correlated with the Owner's PMD.
- CS 7.23 Check that the measuring of the concrete surface for roughness is carried out in accordance with the Contract Documents in the presence of the Contract Administrator.
- CS 7.24 M Check profile traces and check that scallops are ground prior to sealing joints, where specified.**
- CS 7.25 Calculate the Percent Within Limits for the criteria of surface roughness.
- CS 7.26 Check that the contract has an effluent containment system in place.
- CS 7.27 Check that reservoir cuts are made to specified widths and depths.
- CS 7.28 Check that the reservoir cuts are immediately flushed with water to remove slurry in accordance with the contract requirements.
- CS 7.29 Check that all the joint faces are abrasive blast cleaned according to the Contract Documents immediately prior to joint sealing and are blown clean and dry.
- CS 7.30 Check that reservoir cuts are sealed according to the contract requirements.
- CS 7.31 Forward all ERS test results electronically to Quality Assurance Section within four (4) days of receiving results.

LEVEL OF INSPECTION – A1/A2

CONCRETE AND STRUCTURES

CS 8 CONCRETE BASE AND PAVEMENT – FULL DEPTH REPAIR

Task #	Activity
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| CS 8.1 | Obtain Form A portion of the concrete mix design along with the supporting documentation at least seven (7) days prior to placement of concrete and review it to determine that it meets the contract requirements. For Contracts including the new mandatory Greenhouse Gas Reduction Initiative Special Provision, check that the Contractor has provided the specified level of reduction (10% or 20%) and the means by which the Contractor will achieve the specified level of GHG reduction (that is, through the use of supplementary cementing materials, or Portland-limestone cement, or limestone filler, or a combination of...etc.) on the Concrete Mix Design forms. Check that the Regional Quality Assurance Section has received Form B of the concrete mix design from the concrete supplier prior to placement of concrete. |
| CS 8.2 | Issue written confirmation that the concrete mix design submission meets the contract requirements or advise the Contractor of any requirements that have not been met. |
| CS 8.3 M | Obtain documentation certifying that the superplasticizer meets the Special Provision requirements. |
| CS 8.4 M | Obtain the Contractor’s linear shrinkage test results within forty (40) days of the mix design submission and forward a copy to the Quality Assurance Section and a copy to the Concrete Section. |
| CS 8.5 M | Check that all supporting test data is not more than twelve (12) months old from the date the concrete mix design was submitted. |
| CS 8.6 M | Obtain the Contractor’s details of the method of concrete removal at least two (2) weeks prior to start of any Work and check that it is according to the Special Provision. |
| CS 8.7 | Obtain and review submissions for Cold and Hot Weather Concrete. |
| CS 8.8 | Check that removal limits shown in the contract drawings are appropriate to existing field conditions. |
| CS 8.9 | Check that the sawcuts are full depth. |
| CS 8.10 | Check Contractor is using proper equipment to remove the concrete slabs. |

- CS 8.11 Check that the concrete removal operation does not damage the subbase or adjacent concrete surfaces. If the subbase is disturbed, check that disturbed material is removed.
- CS 8.12 Check that the dowels, tie bars and load transfer devices are placed as specified in the Contract Documents.
- CS 8.13 Check that gang drills are used to drill holes for dowel bars.
- CS 8.14 Check that all dowel bars are completely encased by epoxy for the full depth of the hole and that a grout retention disk is attached.
- CS 8.15 Check preparation Work, concrete placement, consolidation, finishing and curing procedures are according to the Contract Documents.
- CS 8.16 Check that the technician performing the testing of plastic concrete is certified by A.C.I. or C.S.A.
- CS 8.17 Check concrete delivery tickets for correct class of concrete, mix design number and batching time.
- CS 8.18 Check that the concrete is sampled and tested in accordance with the Special Provision.
- CS 8.19 Check the completed Work for any of the defects listed in the Special Provision. Check that surface of the concrete meets the surface tolerances stated in the Special Provision.
- CS 8.20 Calculate the Percent Within Limit for the 28-day compressive strength.
- CS 8.21 Check that the contract has an effluent containment system in place.
- CS 8.22 Submit all supporting documentation to the Quality Assurance within four (4) days of receiving results.

LEVEL OF INSPECTION – A2 until Contractor demonstrates satisfactory performance of operation then reducing to E2.

CONCRETE AND STRUCTURES

CS 10 CONCRETE BASE AND PAVEMENT – PARTIAL DEPTH REPAIR

Task #	Activity
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| CS 10.1 | Obtain Form A portion of the concrete mix design along with the supporting documentation at least seven (7) days prior to placement of concrete and review it to determine that it meets the contract requirements. For Contracts including the new mandatory Greenhouse Gas Reduction Initiative Special Provision, check that the Contractor has provided the specified level of reduction (10% or 20%) and the means by which the Contractor will achieve the specified level of GHG reduction (that is, through the use of supplementary cementing materials, or Portland-limestone cement, or limestone filler, or a combination of...etc.) on the Concrete Mix Design forms. Check that the Regional Quality Assurance Section has received Form B of the concrete mix design from the concrete supplier prior to placement of concrete. |
| CS 10.2 | Issue written confirmation that the concrete mix design submission meets the contract requirements or advise the Contractor of any requirements that have not been met. |
| CS 10.3 M | Obtain documentation certifying that the superplasticizer meets the Special Provision. |
| CS 10.4 | Obtain the Contractor's linear shrinkage test results within forty (40) days of the time the mix design submission and forward a copy to the Quality Assurance Section and a copy to the Concrete Section. |
| CS 10.5 | Check that all supporting test data is not more than twelve (12) months old from the date the concrete mix design was submitted. |
| CS 10.6 | Obtain the Contractors' details of the method of concrete removal at least two (2) weeks prior to start of any Work and check that it is according to the Special Provision. |
| CS 10.7 | If the Contractor submits a proposal to use a proprietary product instead of concrete, check if material is on the MTO's approval list and that the dimension of the repair area(s) are less than 300 mm. |
| CS 10.8 | Delineate the limits of the areas to be repaired. |
| CS 10.9 | Check that the perimeter of the repair area is sawcut vertically to a depth of 25 mm. |

- CS 10.10 Check that concrete removals are carried out using a chipping hammer to a minimum depth of 50 mm and up to a maximum depth of one third (1/3) the thickness of the existing concrete slab.
- CS 10.11 Check that preparation Work, prior to placing concrete is carried out according to the Contract Documents (i.e. abrasive blast cleaning, pre-wetting, and application of bonding agent).
- CS 10.12 Check that joints are formed in the repair area, where the repair includes an existing pavement joint or working crack. Check joints are formed according to the contract.
- CS 10.13 Check concrete placement, consolidation, finishing and curing procedures are according to the Contract Documents.
- CS 10.14 Check the Work for any of the defects listed in the Special Provision.
- CS 10.15 Calculate the Percent Within Limit for the 28-day compressive strength.
- CS 10.16 Submit all supporting documentation to the Quality Assurance Section within four (4) days of receiving results.

LEVEL OF INSPECTION – A1

CONCRETE AND STRUCTURES

CS 18 STRUCTURE REHABILITATION – CONCRETE PATCHES

Use this task in conjunction with CS 1, CS 2 and CS 14

Task #	Activity
CS 18.1	Obtain documentation certifying that the superplasticizer meets the requirements of the Special Provision.
CS 18.2	Check that appropriate mix design is being used for depth of repair.
CS 18.3	Obtain the Contractor's linear shrinkage test results within forty (40) days of the mix design submission and forward to the Quality Assurance Section.
CS 18.4	Check that all supporting test data is not more than twelve (12) months old from the date the concrete mix design was submitted.
CS 18.5	For FORM AND PUMP placement method, obtain and review the Contractor's proposal at least one (1) week prior to commencement of the Work. Check that the proposal includes methodology and equipment to be used for this construction contract and that it is signed and sealed by a Professional Engineer.
CS 18.6	For FORM AND PUMP placement method, check that the pump is a positive displacement type pump and that it is capable of delivering adequate volumes of concrete to maintain a continuous placement.
CS 18.7	Check the temperature of the air and existing concrete surface to receive the patches, and verify it meets contract requirements prior to and during concrete operation.
CS 18.8	Check equipment and runways, vehicles for the concrete transporting/transferring equipment; verify they are not supported by reinforcing steel.
CS 18.9	Check that the concrete surface and reinforcing steel have been abrasive blast cleaned according to CS 43.
CS 18.10	Check removal of all dust and loose material is carried out by oil-free compressed air.
CS 18.11	Check that the prepared surface is maintained in a wet condition for six (6) hours prior to placing concrete.

- CS 18.12 Check excess water is removed by oil-free compressed air immediately prior to application of bonding grout.
- CS 18.13 Check that thermocouple wires have been installed in the concrete for cold weather protection as specified in the Special Provision.
- CS 18.14 M Review Contractor's temperature records daily for cold weather protection (if applicable).**
- CS 18.15 Check that prior to seasonal shut down, all patches are completed in all areas of concrete removal.
- CS 18.16 Check that no construction vehicles, equipment or traffic, with the exception of sawcutting equipment be permitted on the finished surface of the patches until the curing period has elapsed and a minimum of 80% of the specified compressive strength has been attained.
- CS 18.17 Define the lots and determine core locations for air void system and tensile bond strength test.
- CS 18.18 Check that the tensile bond strength testing is carried out in accordance with the contract requirement. Obtain and review tensile bond strength within 4 business days of testing and forward the results to the Quality Assurance Section.
- CS 18.19 Check that the core holes have been filled according to the contract requirement.
- CS 18.20 Check patches for any areas of debonding by sounding. Also check for honeycombed areas or cracks.
- CS 18.21 Obtain and verify Contractor's crack inspection report, review Contractor's crack treatment proposal if applicable.
- CS 18.22 Check that permission to waterproof is not issued until the cracks are treated (if applicable) and the patches in the deck are dried for 3 days.
- CS 18.23 Obtain and review air void system test results from QA lab within 3 weeks of concrete placement and forward the results to the Quality Assurance Section.

CS 18.24 For Contracts including the new mandatory Greenhouse Gas Reduction Initiative Special Provision, check that the Contractor has provided the specified level of reduction (10% or 20%) and the means by which the Contractor will achieve the specified level of GHG reduction (that is, through the use of supplementary cementing materials, or Portland-limestone cement, or limestone filler, or a combination of...etc.) on the Concrete Mix Design forms.

LEVEL OF INSPECTION – A1
– B2 During placement

BITUMINOUS

BIT 2 RECLAIMING ASPHALT PAVEMENT

Task # Activity

BIT 2.1 M Check that reclaiming is carried out full width to essentially the same station before shutdown each day and properly ramped.

BIT 2.2 M Check and record the depth and width of the section to be removed.

BIT 2.3 Partial Pavement Removal

- (x) Check for correct crossfall and surface texture during milling;
- (xi) Check that the milled surface is broomed and inspected, and that areas of asphalt rich dust are removed.

BIT 2.4 Full Depth Removal

- (i) Check that granular is restored to specified requirements following pavement removal.

LEVEL OF INSPECTION – B1/D2