

Administration and Inspection Activities for Prestressed Concrete - Precast Girders

(As Specified in OPSS 909 and SSP 109S24)

909.01 SCOPE

This CAIS covers the construction administration and inspection requirements for fabrication, delivery, and installation of precast prestressed concrete girders with steel reinforcement as specified in OPSS 909, November 2016 and SSP 109S24, ~~March-September 2024~~18.

909.02 REFERENCES

This CAIS refers to the following standards, specifications, or publications:

Ontario Provincial Standard Specifications, Construction:

OPSS 909 Prestressed Concrete - Precast Girders

Ontario Provincial Standard Specifications, Materials:

OPSS 1213 Hot Applied Rubberized Asphalt Waterproofing Membrane

MTO Standard Special Provisions:

SSP 109S24 Amendment to OPSS 909, ~~November-September 2024~~16 - Additional Requirements

Construction Administration and Inspection Specifications (CAIS):

CAIS 905 Steel Reinforcement for Concrete
CAIS 910 Stressing Systems for Post Tensioning
CAIS 919 Formwork and Falsework
CAIS 929 Abrasive Blast Cleaning - Concrete Construction
CAIS 1002 Aggregates - Concrete
CAIS 1213 Hot Applied Rubberized Asphalt Waterproofing Membrane
CAIS 1302 Water
CAIS 1350 Concrete - Materials and Production
CAIS 1440 Steel Reinforcement for Concrete

MTO Forms:

PH-CC-322 Concrete Construction Report
PH-CC-440 MERO Sample Transmittal Form
PH-CC-433A Concrete Mix Design Submission Form A
PH-CC-701 Request to Proceed
PH-CC-702 Notice to Proceed

909.03 DEFINITIONS

For the purpose of this CAIS, the definitions shall be as specified in OPSS 909.

909.04 DESIGN AND SUBMISSION REQUIREMENTS

909.04.01 Design Requirements

909.04.01.01 General

Administrative Activities:

1	M	Check that any design is as per CSA-S6 and the MTO Structural Manual.	-
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909.04.01.02 Permissible Changes from the Contract Drawings

909.04.01.02.01 General

Administrative Activities:

1	M	Receive changes from the Contract Drawings and for permissible changes, verify that they are as specified in OPSS 909.04.01.02.	-
2	M	If changes are not permissible as specified in OPSS 909.04.01.02, Notify MTO.	-

909.04.01.02.02 Prestressing of Girders

Administrative Activities:

1	-	Check that any permissible changes to prestressing of girders are as specified in OPSS 909.04.01.02.02.	-
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909.04.01.02.03 Reinforcing of Girders

Administrative Activities:

1	-	Check that any permissible changes to reinforcing of girders are as specified in OPSS 909.04.01.02.03.	-
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909.04.01.02.04 Other Design Details

Administrative Activities:

1	-	Check that any permissible changes to other design details of girders are as specified in OPSS 909.04.01.02.04.	-
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909.04.01.03 Temporary Bracing

Administrative Activities:

1	M	Check that the temporary bracing details are provided and in conformance with the Contract Documents and as specified in OPSS 909.04.01.03.	-
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909.04.02 Submission Requirements

909.04.02.01 Working Drawings

Administrative Activities:

1	M	Check that the Working Drawings and supporting documents are submitted and contain the information listed as specified in OPSS 909.04.02.01 and Contract Documents.	-
2	M	Verify that 3 sets of fabrication Working Drawings including supporting documents are submitted and received at least 7 Days prior to commencement of fabrication of the girders, or 35 Days when other authorities are involved in the approval of the design or construction.	-
3	M SSI	Receive Working Drawings and review submission for conformance with the Contract Documents.	-
4	-	After reviewing the Working Drawings and technical documentation submissions, submit with comments, to the MTO CSA and MTO Structural within 2 Business Days of receipt.	-
5	-	Ensure a final copy of all Contractor submissions is shared with inspection staff and available to perform on-site administration and inspection duties.	-
6	-	Ensure a final copy is sent to MTO Structural.	-
7	M	Review and provide a written response of acceptability within 10 Business Days for any design proposals that are submitted.	-

909.04.02.02 Concrete Mix Design

Administrative Activities:

1	M	Receive and review concrete mix design according to CAIS 1350.	-
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909.04.02.03 Concrete Plant Certification

Administrative Activities:

1	M	Receive plant's certificates with the concrete mix design submission	-
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2	M	Verify that the precast concrete girders are fabricated at a precast plant certified according to OPSS 909 04.02.03. 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.	-
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909.04.02.04 Control of Concrete Temperature

Administrative Activities:

1	-	Check that the concrete temperature control plan is submitted one week prior to commencement of fabrication of girders for information purposes.	-
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909.04.02.05 Manufacturer's Certificate of Conformance and Precast Report

Administrative Activities:

1	M	Receive the Contractor's Manufacturer's Certificate of Conformance, and precast report for each shipment of prestressed/ precast girders at least 5 Business Days prior to shipping from the precasting plant.	-
2	M	Receive the Request to Proceed from the Contractor, before the delivery of the prestressed precast girders to the site.	-
3	M	Check that the submissions by the Contractor, including the Manufacturer's Certificate of Conformance, Precast Report and Request to Proceed conform with the requirements of the Contract Documents and OPSS 909.04.02.05.	-
4	M	Check that the prestressed precast girders are fabricated according to the Contract Documents, prior to delivery to the site.	-
5	M	Check that defects and deficiencies repairable by standard methods are repaired according to the Contract Documents.	-
6	M	Check that precast and prestressed girders with defects and deficiencies causing rejection according to the Contract Documents, are not included in the Work.	-
7	M	Issue a Notice to Proceed, in a timely manner, and prior to delivering the prestressed / precast girder to the site.	-

Administrative Activities: Activities related to MTO's Centralized Precast Retainer

1	M	Provide the following information to MTO Concrete section's centralized retainer inspector: <ul style="list-style-type: none"> • Precast concrete plant's contact information for the centralized retainer to coordinate inspection. • Shop drawings of girders. • Contract specific specifications. • Change orders relating to manufacturing process, drawing, etc. • Production schedule. • Approved repair proposal. 	-
2	-	Receive and upload the inspection report from the centralized retainer in WBCMS for each Contract.	-
3	M	Review the inspection report and issues emails from the centralized retainer and act on the non-conformances identified by the centralized retainer.	-

909.04.02.06 Design Proposals

Administrative Activities:

1	-	Receive and check 5 copies of the design proposal. Check that they also bear the seal and signature of the design Engineer and the design checking Engineer.	-
2	-	Issue a response for the design proposal within 10 Business Days.	-

909.05 MATERIALS

909.05.01 Bearing Plate

Administrative Activities:

1	M	Verify that the bearing plate, anchor studs and galvanizing meet the requirements in the OPSS 909.05.01.	-
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909.05.02 Burlap

Administrative Activities:

1	M	Check the burlap material requirements as per OPSS 909.05.02.	-
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909.05.03 Concrete

Administrative Activities:

1	-	Check that concrete mix design submitted is according to CAIS 1350, Contract Documents and meeting requirements in OPSS 909.05.03.	-
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909.05.04 Concrete Sealers

Administrative Activities:

1	-	Receive the Owner's list of acceptable sealers from MTO Quality Assurance.	-
2	-	Check the concrete sealers are from Owner's list of acceptable sealers.	-

909.05.05 Elastomeric Coating

Administrative Activities:

1	-	Check elastomeric coating material requirements as per OPSS 1213.	-
2	-	As specified in CAIS 1213.	-

909.05.06 Formwork

Administrative Activities:

1	-	Check formwork requirements as per CAIS 919.	-
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909.05.07 Hardware

Administrative Activities:

1	-	Check all hardware requirements as per OPSS 909.05.07.	-
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909.05.08 Moisture Vapour Barrier

Administrative Activities:

1	-	Check the moisture vapour barrier requirements as per OPSS 909.05.08.	-
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909.05.09 Post-Tensioning Material

Administrative Activities:

1	-	Check post-tensioning material requirements as per CAIS 910.	-
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909.05.10 Proprietary Patching Materials

Administrative Activities:

1	-	Receive the Owner's list of proprietary patching materials from MTO Quality Assurance.	-
2	-	Check the proprietary patching materials are from MTO's List of Concrete Patching Materials.	-

909.05.11 Steel Reinforcement

Administrative Activities:

1	-	Check steel reinforcement according to CAIS 1440.	-
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909.05.12 Water

Administrative Activities:

1	-	Check water according to CAIS 1302.	-
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909.06 EQUIPMENT

909.06.01 Chipping Hammers

Administrative Activities:

1	-	Check that chipping hammers are according to OPSS 909.06.01.	-
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909.06.02 Pretensioning and Post-Tensioning

Administrative Activities:

1	-	Check the pre-tensioning and post-tensioning equipment is as specified in OPSS 909.06.02.	-
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909.06.03 Thermocouples and Dataloggers

Administrative Activities:

1	-	Check that the temperature monitoring and recording system is meeting the requirements of OPSS 909.06.03.	-
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909.07 CONSTRUCTION

909.07.01 General

Inspection Activities:

1	-	Check each girder's identification number and casting date.	100%
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Administrative Activities:

1	-	Receive written notification 7 Days prior to commencement of fabrication.	-
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909.07.02 Precast Plant Certification

Administrative Activities:

1	-	Check the compliance of the plant with the certification requirements as specified in OPSS 909.07.02.	-
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909.07.20 Concrete Cover Measurement

Administrative Activities:

1	-	Check the Contractor's concrete cover measurement on each girder conforms to the requirements of OPSS 909.07.20 in the Precast Report submitted.	-
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909.07.21 Dimensional Measurements

Administrative Activities:

1	-	Check the Contractor's dimensional measurements on each girder conform to the requirements of OPSS 909.07.21 in the Precast Report submitted	-
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909.07.22 Access for Quality Assurance

Administrative Activities:

1	-	Check the access for quality assurance requirements as described in OPSS 909.07.22.	-
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909.07.23 Delivery

Administrative Activities:

1	-	Check that written notification of delivery of girders is provided 3 Business Days prior to delivery.	-
2	-	Check the delivery requirements as described in OPSS 909.07.23.	-

909.07.24 Installation

Inspection Activities:

1	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. Check surface defects and the girder sweep prior to girder installation.	100%
2	M	Immediately after installation, check that the girders are temporarily braced and measure the sweep of each girder.	100%
3	M	Check that the girders have been properly braced in accordance with the Contract immediately after the installation.	100%
4	-	After placing the side by side precast concrete box girders without distribution slab at their final locations, check that the lifting devices are not cut until all traverse bars extruded from the girders are inspected and found not damaged.	100%
5	M	Check all the girders are to be permanently connected within the same construction season.	100%

Administrative Activities:

1	M	Receive written notification of the installation date at least 3 Business Days prior to the commencement of field installation operations.	-
2	-	Check the installation requirements as described in OPSS 909.07.24.	-
3	-	Receive and Check the Contractor's submission required under GC 7.02.07 regarding the certification by an Ontario Land Surveyor or Engineer for grade and layout of the component, prior to girder erection. Alert MTO Structural if top of bearing seat elevations or span dimensions are not as specified in the Contract Documents.	-

909.07.25 Repair of Defects and Deficiencies Repairable by Standard Methods

Administrative Activities:

1	-	Receive repair proposal from the Contractor for the defects or deficiencies listed in OPSS 909, Table 2.	-
2	-	Check that if a repair proposal is submitted in the precast report.	-
3	-	Check the repair proposal is following the requirements as specified in OPSS 909 including: all causes, preventative actions, and corrective actions including repair methods and materials as specified in OPSS 909.08.10.04. Consult with MTO as necessary.	-
4	-	Provide a written response to the Contractor indicating whether the Engineer's assessment is deemed acceptable and if deemed unacceptable, the precast and prestressed girders shall be rejected and replaced by the Contractor.	-

909.07.26 Inspection after the Installation of the Girders

Administrative Activities:

1	M	Receive a Request to Proceed, for each structure, after the installation of the girders within a construction stage.	-
2	M	Issue a Notice to Proceed in a timely manner for the next operation to proceed.	-

909.07.27 Material Sampling for Acceptance Testing

Inspection Activities:

1	-	Sample steel reinforcement according to CAIS 905 when requested by the Owner; water, admixtures and cementing materials according to CAIS 1350.	100%
2	-	Prior to coring, witness the detection of reinforcing steel by covermeter and ensure cores do not contain reinforcement or other embedded material. Check that the cores are in accordance with OPSS 909.07.27.03.03.	100%
3	M	Witness the removal of cores when core removal is to take place on site. When coring is conducted at the precast plant, witness or have a representative witness the coring.	100%
4	M	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. Check that the core holes are filled as per OPSS 909.07.27.03.03.	100%

Administrative Activities

1	M	Receive submission from the Contractor, a list of girders and their identification numbers within 24 hours of completion of a lot.	-
2	M	After all the precast girders 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 girder. Advise the Contractor which girder is to be cored and the coring location.	-
3	M	Obtain from the Contractor the planned time and site of coring (job site or precast plant) for each Lot. (Note: One precast girder in each lot is to be cored at an age of 7-10 days, to remove 5 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 girder is 4 to 14 days of age).	-

909.07.28 Management of Excess Materials

Administrative Activities:

1	-	Check the management of excess materials are done in accordance with the Contract Documents.	-
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909.08 QUALITY ASSURANCE

909.08.01 General

Inspection Activities:

1	-	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 girder from which the disputed acceptance core was obtained.	100%
2	-	Check that the referee core is properly labelled. Take possession of the core and deliver it to the referee laboratory designated by MTO.	100%
3	-	Conduct a visual inspection deemed necessary to assess the effectiveness of surface finish and repairs.	100%
4	-	Randomly select a minimum of one girder from each lot for verification of concrete cover and dimensional measurements. If the concrete cover and dimensional measurements of the girder does not meet the tolerances of the Contract Documents and OPSS 909 Table 1, inform MTO immediately.	100%

Administrative Activities:

1	-	Check the acceptance of girders against the Contract Documents and OPSS 909.08.	-
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2	-	Obtain and review acceptance test results for compressive strength, air void system and rapid chloride permeability.	-
3	-	Obtain and review acceptance test results for water, admixtures and cementing materials.	-
4	-	Check the lot size based on the production rate for sampling of the test prior to commencing production as per OPSS 909.	-
5	-	Identify which girders make up each Lot, in accordance with the Contract Documents.	-
6	-	Verify girders with defects and deficiencies causing rejections as specified in OPSS 909.08.10.03 are rejected and replaced.	-

909.10 BASIS OF PAYMENT

Administrative Activities:

1	-	Basis of payment shall be as specified in OPSS 909	-
2	-	Calculate the payment adjustment for individual lots of concrete precast girders as specified in OPSS 909.	-

WARRANT: Always with OPSS 909, Construction Specification for Prestressed Concrete - Precast Girders.