

## Administration and Inspection Activities for Concrete Barriers

(As Specified in OPSS 740)

### 740.01 SCOPE

This CAIS covers the construction administration and inspection requirements for ~~Concrete Barriers~~concrete barriers as specified in OPSS 740, November ~~2010~~2025.

### 740.02 REFERENCES

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

#### Ontario Provincial Standard Specifications, Construction:

~~OPSS 310 — Asphaltic Concrete, Hot Mix, Hot Laid and Hot Mix Patching~~  
~~OPSS 740 — Concrete Barriers~~  
~~OPSS 919 — Formwork and Falsework~~904 — Concrete Structures

#### Ontario Provincial Standard Specifications, Material:

~~OPSS 1010 — Aggregates – Granular A, B, M, and Select Subgrade Material~~  
~~OPSS 1150 — Asphaltic Concrete, Hot Mix and Hot Laid~~  
~~OPSS 1305 — Moisture Vapour Barriers~~  
~~OPSS 1306 — Burlap~~  
~~OPSS 1308 — Joint Filler (Concrete)~~  
~~OPSS 1315 — White Pigmented Membrane Curing Compounds for Concrete~~  
~~OPSS 1350 — Concrete (– Materials and Production)~~  
~~OPSS 1352~~OPSS 1355 — Precast Concrete – Materials and Production

#### Construction Administration and Inspection Specifications (CAIS):

CAIS 904 — Concrete Structures  
CAIS 1350 — Concrete – Materials and Production  
CAIS 1355 — Precast Concrete Barriers– Materials and Production  
~~OPSS 1442 — Epoxy Coated Steel Reinforcement for Concrete~~

#### **CSA Standards:**

~~CAN/CSA-G40.21-M87 — Structural Quality Steels~~  
~~CSA-G164-M1981 — Hot Dip Galvanizing of Irregularly Shaped Articles~~

#### **MTO Forms:**

PH-CC-322 ~~Concrete Construction Report~~  
PH-CC-340 ~~Field Sample Data Sheet – Concrete~~  
PH-CC-433A ~~Concrete Mix Design Submission Form A~~  
PH-CC-433B ~~Concrete Mix Design Submission Form B~~  
PH-CC-434 ~~Sample Letter to Contractor – Concrete Mix Design~~

## 740.03 DEFINITIONS

~~Definitions~~ For the purposes of this CAIS, the definitions shall be as specified in OPSS 740.

## 740.04 DESIGN AND SUBMISSION REQUIREMENTS

Administrative Activities:

4	-	<del>At the commencement of the Contract, Check that the list of material sources includes all concrete barrier related materials (concrete aggregates, cementing materials, concrete admixtures, water, epoxy coated steel for concrete reinforcing, etc.), as well as suppliers of pre-cast concrete barriers.</del>	-
<u>21</u>	-	<del>At the commencement of the Contract, Check that all mix design requirements and submissions are adhered to and that all required documentation is submitted as specified in the Contract Documents</del> <u>OPSS 740.</u>	-
3	-	<del>Check that the method of construction (conventional wooden or steel formwork, slip-form or pre-cast) is as specified in the Contract Documents.</del>	-

## 740.05 MATERIALS

Administrative Activities:

<u>1</u>	:-	<u>Check that materials are as specified in OPSS 740.</u>	:-
<u>2</u>	:-	<u>Check that the specified strength shown on PH-CC-433-A (Form A) for concrete barrier is as specified in OPSS 740.</u>	:-
<u>43</u>	-	<del>Check that the concrete mix design requirements (submissions, supporting documentation, forms, tests, certificates) are as specified</del> <u>is accompanied by a test report demonstrating that the coarse aggregate used in the Contract Documents</u> <del>concrete has all faces crushed when tested according to LS-607.</del>	-
<u>24</u>	-	<u>For precast concrete barrier. Check that the concrete for cast-in-place precast concrete barrier has the minimum required strength: 35 MPa for Tall Wall is as specified in OPSS 1355 in its entirety. For precast concrete barrier, additional inspection and 30 MPa for all other concrete barrier types</u> <del>administrative activities shall be as specified in CAIS 1355.</del>	-

<u>5</u>	-	<u>For cast-in-place formed or slipformed concrete barrier, Check that concrete is according to OPSS 1350 in its entirety. For cast-in-place concrete, additional inspection and administrative activities shall be as specified in CAIS 1350.</u>	-
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## 740.06 EQUIPMENT

Inspection Activities:

<del>4</del>	<del>-</del>	<del>Check that cast-in-place concrete barrier conforms to OPSS 1350, using a nominal maximum aggregate size of 19 mm.</del>	<del>25%</del>
<del>2</del>	<del>-</del>	<del>Check that all coarse aggregate used for slip formed Tall Wall concrete barrier has all faces crushed.</del>	<del>25%</del>
<del>3</del>	<del>-</del>	<del>Check that precast concrete barrier conforms to OPSS 1352.</del>	<del>25%</del>
<del>41</del>	<del>-</del>	<del>Check that membrane curing compound conforms to OPSS 1315, burlap conforms to OPSS 1306, and moisture vapour barrier conforms to OPSS 1305. Check that equipment is as specified in OPSS 740.</del>	<del>25%</del>
<del>5</del>	<del>-</del>	<del>Check that joint filler material conforms to OPSS 1308.</del>	<del>25%</del>
<del>6</del>	<del>-</del>	<del>Check that formwork conforms to OPSS 919.</del>	<del>25%</del>
<del>7</del>	<del>-</del>	<del>Check that all reinforcing steel in permanent precast concrete barriers are epoxy coated and conform to OPSS 1442.</del>	<del>25%</del>
<del>8</del>	<del>-</del>	<del>Check that epoxy patching is applied to all welds of epoxy coated reinforcing steel.</del>	<del>25%</del>
<del>9</del>	<del>-</del>	<del>Check that asphaltic concrete conforms to OPSS 1150.</del>	<del>25%</del>
<del>10</del>	<del>-</del>	<del>Check that foundation material conforms to OPSS 1010.</del>	<del>25%</del>
<del>11</del>	<del>-</del>	<del>Check that hollow structural steel and wide flange steel sections used in permanent precast concrete barriers are 350W grade, conform to CAN/CSA G40.21, and are hot dip galvanized after fabrication conforming to CSA G164.</del>	<del>25%</del>

## ~~740.06~~ ~~EQUIPMENT~~ - Not Used

**740.07****CONSTRUCTION**Administrative Activities:

<u>1</u>	-	<u>Receive notification from the Contractor a minimum of 21 Days prior to commencement of construction of what method of construction will be used (formed, slipformed or precast) to construct the concrete barrier.</u>	-
<u>2</u>	-	<u>Check that the method of construction (formed, slipformed or precast concrete barrier) is as specified in OPSS 740.</u>	-

## Inspection Activities:

1	-	<u>Foundation Preparation</u> <ul style="list-style-type: none"> <li>• Check that, immediately ahead of placing concrete, the Contractor wets down the subgrade by means of a uniform spray of water sufficient to wet the subgrade thoroughly without leaving standing water <u>for cast-in-place concrete barrier</u>.</li> <li>• Check that placement of asphaltic concrete pavement beneath and adjacent to the precast concrete barrier conforms with OPSS 310.</li> </ul>	25%
2	-	Check that expansion joints are as specified in the Contract Documents.	25%
3	-	Check that construction joints located at the end of a <del>days</del> day placement are squared and as specified in the Contract Documents.	25%
4	-	Check that treatment at bridge piers is as specified.	25%
5	-	<u>Conventional Wooden or Steel Form Construction Method</u> <ul style="list-style-type: none"> <li>• Check for correct alignment, grade and granular base preparation.</li> <li>• Check for correct joint detail and spacing.</li> <li>• Check that the inside face of formwork is clean and in good order, to produce a smooth cast face.</li> <li>• Check that the barrier wall forms are adequately restrained to prevent uplift.</li> <li>• Check that railing mounts/anchorage are correctly installed (Location, elevation, flushness, and anchor bolt protrusion is adequate for tube rails).</li> <li>• Check that concrete material, production and testing is as specified in the contract documents.</li> <li>• Check that concrete placement, consolidation and finishing operations are as specified in the contract documents.</li> <li>• Check that specified curing requirements are carried out.</li> <li>• Check for surface tolerances and cracking.</li> </ul>	25%

6	-	<u>Slip-FormSlipform Construction Method</u> <ul style="list-style-type: none"> <li>• Check for correct alignment, grade and granular base preparation.</li> <li>• Check that specified percentage of air is being maintained.</li> <li>• Check that construction joints, isolation joints and contraction joints are constructed in accordance with the contract requirements.</li> <li>• Check that specified curing requirements are met.</li> <li>• Check that concrete is not placed by <del>slip-formings</del><u>slipforming</u> when the temperature is below 0 °C.</li> <li>• Check that other temperature requirements are adhered to and as specified in the contract documents.</li> <li>• Check for surface tolerances and cracking.</li> </ul>	25%
7	-	<u>Pre-CastPrecast Construction Method</u> <ul style="list-style-type: none"> <li>• Check that the foundation is prepared for acceptance of <del>pre-cast units</del><u>precast elements</u>.</li> <li>• Check that <del>pre-cast units</del><u>precast elements</u> are as specified <del>and supplied from the approved list.</del></li> <li>• Check for correct installation of interlocking devices and <del>check</del><u>Check</u> that no damaged units are installed.</li> <li>• Check for correct alignment and grade.</li> </ul>	25%
8	-	Check that reflectors placed on concrete barriers are as specified in the Contract Documents.	25%
9	-	Check that <u>management of</u> excess material is <del>managed</del> as specified in the Contract Documents.	25%

## 740.08 QUALITY ASSURANCE

### Inspection Activities:

1	<del>M</del>	<del>Inspect the concrete barrier to</del> Check that <del>Quality Assurance</del> <u>the acceptance of concrete barrier</u> is as specified <u>in OPSS 740.</u>	<del>-100%</del>
<u>2</u>	<u>M</u>	<u>For precast concrete barriers, inspect the elements for defects or deficiencies as specified in OPSS 1355. Additional inspection activities shall be as specified in CAIS 1355.</u>	<u>100%</u>
<u>3</u>	<u>M</u>	<u>For cast-in-place concrete barrier, additional inspection activities shall be as specified in CAIS 904 and CAIS 1350.</u>	<u>100%</u>

### Administrative Activities:

<u>1</u>	<u>:</u>	<u>Check that quality assurance and acceptance of concrete barrier is as specified in OPSS 740.</u>	<u>:</u>
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<u>2</u>	-	<u>For precast concrete barrier, Check that quality assurance and acceptance is as specified in OPSS 1355. Check that precast concrete barriers meet the quality assurance requirement as specified in OPSS 1355, including acceptable 28-Day compressive strength, air void system parameters, rapid chloride permeability and salt scaling resistance. For precast concrete barriers, additional administrative activities shall be as specified in CAIS 1355.</u>	-
<u>3</u>	-	<u>For cast-in-place concrete barrier system, Check that quality assurance and acceptance is as specified in OPSS 904 and OPSS 1350. For cast-in-place concrete barrier, additional administration activities shall be as specified in CAIS 904 and CAIS 1350.</u>	-
<u>4</u>	-	<u>Notify MTO's Quality Assurance Section for any concrete barrier that fails to meet the acceptance requirements. Provide written notification to the Contractor, after consultation with MTO, for rejectable work.</u>	-

#### **740.09 MEASUREMENT FOR PAYMENT**

Administrative Activities:

1	-	Measurement for payment shall be as specified <u>in OPSS 740.</u>	-
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#### **740.10 BASIS OF PAYMENT**

Administrative Activities:

1	-	Basis of payment shall be as specified <u>in OPSS 740.</u>	-
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~~WARRANT: Always with OPSS 740, Construction Specification for Concrete Barriers.~~