

## **Administration and Inspection Activities for Construction of Mechanically Stabilized Earth Systems**

(As Specified in OPSS 941)

### **941.01 SCOPE**

This CAIS covers the construction administration and inspection requirements for the design and construction of Mechanically Stabilized Earth Systems (MSE) as specified in OPSS 941, November 2025.

### **941.02 REFERENCES**

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

#### **Ontario Provincial Stand Specifications, Construction:**

OPSS 501	Compacting
OPSS 512	Installation of Gabions
OPSS 941	Mechanically Stabilized Earth Systems

#### **Ontario Provincial Stand Specifications, Materials:**

OPSS 1004	Aggregates – Miscellaneous
OPSS 1010	Compacting Aggregates – Base, Subbase, Select Subgrade, And Backfill Material
OPSS 1355	Precast Concrete - Materials and Production

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

CAIS 501	Compacting
CAIS 512	Installation of Gabions
CAIS 1010	Compacting Aggregates – Base, Subbase, Select Subgrade, And Backfill Material
CAIS 1355	Precast Concrete – Materials and Production

#### **Ontario Ministry of Transportation Publications**

MTO Designated Sources for Materials (DSM)  
MTO Structural Manual  
Guideline for Applying for Approval of Retained Soil Systems (RSS) on the Designated Sources of Materials (DSM) for MTO Projects

#### **MTO Forms:**

PH-CC-822	Certificate of Conformance
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## CSA Standards

S6-19 Canadian Highway Bridge Design Code (CHBDC)

### 941.03 DEFINITIONS

For the purposes of this CAIS, the definitions shall be as specified in OPSS 941.

### 941.04 DESIGN AND SUBMISSION REQUIREMENTS

#### 941.04.01 Design Requirements

##### 941.04.01.01 General

##### 941.04.01.02 MSE Selection

Administrative Activities:

1	FES	Check that the MSE supplier is selected from ministry's DSM list and that the proposed MSE meets the application, performance and appearance requirements specified in the contract drawings.	-
2	FES	Check that inspection, instrumentation and monitoring requirements for MSE walls designated under 'DE' status are provided as specified in the <u>Guideline for Applying for Approval of Retained Soil Systems (RSS) on the Designated Sources of Materials (DSM) for MTO Projects.</u>	-

#### 941.04.02 Submission Requirements

##### 941.04.02.01 Working Drawings

Administrative Activities:

1	FES	Receive Working Drawing at least 14 days prior to commencement of construction of the MSE. Check that the Working Drawings are as specified in OPSS 941. Within 2 Business Days, Submit any comments to the Contractor, and the Contract Services Administrator.	-
2	FES	If applicable, Check revised Working Drawings as above.	-
3	M	Forward 1 set of Working Drawings to MTO's Structures Office, Foundations Section.	-
4	-	Ensure a final copy of all Contractor submissions is shared with inspection staff and available to perform on-site administration and inspection duties.	-

##### 941.04.02.02 MSE Superintendent

Administrative Activities:

1	M	Receive and Check the name(s) of the MSE superintendent responsible for each MSE in the contract at least 14 days prior to commencement of construction of the MSE.	-
2	-	Receive and Check any MSE superintendent changes at least 7 days prior to change.	-

**941.04.02.03 Manufacturer's Representative**

Administrative Activities:

1	-	Receive and Check the name(s) of the MSE manufacturer's representative at least 14 days prior to commencement of construction of the MSE.	-
2	-	Receive notice of site visit by manufacturer's representative at least 48 hours prior to site visit.	-

**941.04.02.04 Inspection Report**

Administrative Activities:

1	M	For each MSE, Receive and Check the inspection report from Contractor's Engineer after layout and marking of all lines and grades needed to construct the MSE; and construction of the alignment elements. Inspection report should be checked prior to delivery and storage on site of facing elements and reinforcing elements.	-
2	M	For each MSE, Receive and Check inspection report from Contractor's Engineer after delivery and storage on site of facing elements and reinforcing elements. Inspection report should be checked prior to installation of the facing elements, placement and compaction of the backfill for MSE, and installation of the reinforcing elements.	-
3	M	For each MSE, Receive and Check inspection report from Contractor's Engineer installation of the facing elements, placement and compaction of the backfill for MSE, and installation of the reinforcing elements.	-
4	M	For each MSE greater than 5.0 m in height, Receive and Check inspection reports from Contractor's Engineer after each 5 m of construction height (i.e. at 5.0 m, 10.0 m, and 15.0 m, as applicable, up to and including the design height).	-

**941.05.0 MATERIALS**

**941.05.01 General**

Inspection Activities:

1	-	Check that materials are according to the Working Drawings and OPSS 941.	100%
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#### **941.05.02 Backfill**

Inspection Activities:

1	-	Check that backfill is as specified in OPSS 1010 and CAIS 1010.	100%
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#### **941.05.03 Gabions**

Inspection Activities:

1	-	Check that gabions are as specified in OPSS 512, CAIS 512, OPSS 1004, and CAIS 1004.	100%
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#### **941.05.04 Precast Concrete Elements**

Inspection Activities:

1	M	Check that MSE precast concrete elements are according to Working Drawings and Contract Documents.	100%
2	-	For precast concrete MSE, Check that precast concrete MSE is as specified in OPSS 1355 in its entirety. For precast concrete MSE, additional inspection and administrative activities shall be as specified in CAIS 1355.	100%

#### **941.06 EQUIPMENT – Not Used**

#### **941.07 Construction**

##### **941.07.01 General**

Inspection Activities:

1	FES	<p>Inspect each MSE for compliance with the Working Drawings and Contract Documents, prior to the commencement of subsequent operations:</p> <ul style="list-style-type: none"> <li>a) Layout and marking of all lines and grades needed to construct the MSE; and construction of the alignment elements, where applicable;</li> <li>b) Delivery and storage on site of facing elements and reinforcing elements, where applicable; and</li> <li>c) Installation of the facing elements; placement and compaction of the backfill for MSE; and installation of the reinforcing elements, where applicable.</li> </ul>	100%
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##### **941.07.02 MSE Superintendent**

Administrative Activities:

1	-	Check that the MSE superintendent is on site during MSE construction as specified in OPSS 941.	-
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#### **941.07.03 Manufacturer's Representative**

Administrative Activities:

1	M	Verify that the Manufacturer's representative is on site for a minimum of 3 days to observe the following operations:  a) Layout of the MSE and construction of the alignment elements; b) Installation of the facing elements; and c) Placement and compaction of the backfill for the MSE and installation of the reinforcing elements.	-
2	-	Verify that the Manufacturer's Representative returns to the site if the MSE superintendent changes.	-

#### **941.07.04 Certificate of Conformance - Foundation**

Inspection Activities:

1	FES	Check that all loose, softened, deleterious material at the foundation elevation of the MSE has been removed.	100%
2	FES	Verify that the foundation preparation is carried out in accordance with the Contract Documents and Working Drawings.	100%
3	-	Verify excavation limits.	100%

Administrative Activities:

1	M	Receive and Check MTO form PH-CC-822, Certificate of Conformance for the foundation of the MSE.	-
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#### **941.07.05 Backfill for MSE**

Inspection Activities:

1	-	Verify that backfill type is according to the Working Drawings.	100%
2	FES	Verify that reinforcing elements are installed according to the working drawings.	50%
3	M	Verify that backfill is placed and compacted according to the working drawings, Contract Documents and CAIS 501.	-

**941.07.06 Performance Tolerances**

Inspection Activities:

1	M	<p>Check for out-of-tolerance geometry, performance and aesthetics conditions/deficiencies in accordance with the Working Drawings requirements.</p> <p>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.</p> <p>For slopes: lack of vegetation, sloughing, lack of erosion protection, maximum slope angle exceeds that specified in the contract.</p>	100%
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**941.07.07 Certificate of Conformance**

Administrative Activities:

1	M	Receive and Check the MTO from PH-CC-822, Certificate of Conformance for each MSE.	-
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**941.07.08 Corrective Work****941.07.08.01 General**

Administrative Activities:

1	-	Receive and Check any written commencement of any corrective work at least 1 week prior to the start of the corrective work.	-
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**941.07.08.02 Repair Procedures**

Administrative Activities:

1	FES	Receive and Check any repair procedures for corrective work at least 14 days prior to the commencement of any corrective work.	-
2	-	Confirm the repair procedures bear the seal and signature of an Engineer and is signed by the Manufacturer's Representative.	-

**941.07.10 Management of Excess Materials**

Administrative Activities:

1	-	Check that management of excess materials is as specified in the Contract Documents.	-
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**941.08.0 QUALITY ASSURANCE****941.08.01 Acceptance of MSE****941.08.01.01 End of MSE Construction**

Inspection Activities:

1	-	Inspect the MSE to Determine if any deficiencies from Table 2 are present.	100%
2	-	For precast concrete MSE, Inspect the elements for defects or deficiencies as specified in OPSS 1355. Additional inspection activities shall be as specified in CAIS 1355.	100%

Administrative Activities:

1	-	Check that quality assurance and acceptance of MSE is as specified in OPSS 941.	-
2	-	For precast concrete MSE, Check that quality assurance and acceptance is as specified in OPSS 1355. Check that precast concrete MSE meets 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 MSE, additional administrative activities shall be as specified in CAIS 1355.	-
3	-	Notify MTO's Quality Assurance Section for any MSE that fails to meet the acceptance requirements. Provide written notification to the Contractor, after consultation with MTO, for rejectable work.	-

**941.09 MEASUREMENT FOR PAYMENT**

Administrative Activities:

1	-	Measurement for payment shall be as specified in OPSS 941.	-
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**941.10 BASIS OF PAYMENT**

Administrative Activities:

1	-	Basis of payment shall be as specified in OPSS 941.	-
2	-	Calculate the payment adjustment as specified in OPSS 941.	-