

Administration and Inspection Activities for Compacting

(As Specified in OPSS 501)

501.01 SCOPE

This CAIS covers the construction administration and inspection requirements for compaction of earth and granular materials as specified in OPSS 501, November 2026.

501.02 REFERENCES

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

Ontario Provincial Standard Specifications, Construction:

OPSS 501 Compacting

Construction Administration and Inspection Specifications (CAIS):

CAIS 206 Grading
CAIS 401 Trenching, Backfilling, and Compacting
CAIS 1010 Aggregates - Base, Subbase, Select Subgrade, and Backfill Material

MTO Forms:

PH-CC-009 Field Compaction Report
PH-CC-011 Compaction Summary

501.03 DEFINITIONS

For the purpose of this CAIS, the definitions shall be as specified in OPSS 501.

501.04 DESIGN AND SUBMISSION REQUIREMENTS – Not Used

501.05 MATERIALS

501.05.01 Granular Material

Administrative Activities:

1	-	Granular material shall be administered according to CAIS 1010.	-
---	---	---	---

501.05.02 Water

Administrative Activities:

1	-	Check that Water is as specified.	-
---	---	-----------------------------------	---

501.06 EQUIPMENT**501.06.01 Compaction****501.06.01.01 General**

Inspection Activities:

1	-	Check that the type of compaction equipment used shall be suited for the work and shall have an appropriate weight as specified.	25%
---	---	--	-----

501.06.01.02 Hand Operated Vibratory Equipment

Inspection Activities:

1	-	Check that hand operated vibratory equipment shall have an appropriate power. Remote controlled lightweight vibratory equipment is acceptable.	25%
---	---	--	-----

501.06.02 Water

Inspection Activities:

1	-	Check that equipment for applying water shall be as specified.	25%
---	---	--	-----

501.06.03 Nuclear Moisture and Density Gauge

Administrative Activities:

1	M	Check calibration status of each gauge.	-
2	M	Check that the Density Standard Count and the Moisture Standard Count shall be within specified tolerances.	-
3	M	Check the validity of registered owner's Radioisotope License for each gauge.	-

501.07 CONSTRUCTION**501.07.01 General**

Inspection Activities:

1	-	Check that the method of placing materials and lift thickness shall be as specified.	50%
---	---	--	-----

501.07.02 Restricted Zones

Inspection Activities:

1	-	Check the type of compaction equipment to be used is suited to the material to be compacted, the degree of compaction required and restricted zones as specified.	50%
---	---	---	-----

501.07.03 Water for Compaction

Administrative Activities:

1	-	Approve application of water to achieve required compaction if appropriate, when water is a separate item for compaction.	-
---	---	---	---

501.07.04 Quality Control**501.07.04.01 General**

Inspection Activities:

1	-	Check that field density and field moisture determinations shall be made according to ASTM D6938.	25%
---	---	---	-----

501.07.04.02 Compaction Requirements**501.07.04.02.01 General**

Administrative Activities:

1	M	Check that compaction testing is on a lot-by-lot basis as specified.	-
---	---	--	---

501.07.04.02.02 Submission of Test Data

Administrative Activities:

1	M	Check that all required laboratory test results have been received prior to construction of the control strip.	-
---	---	--	---

2	M	Verify that all applicable QC and QA field test results and associated information are constantly being recorded and updated on PH-CC-009 and PH-CC-011 (or into WBCMS, where required), within specified schedule.	-
3	-	Submit upon completion monthly summary of QC and QA compaction results and summary of acceptability on the Compaction Summary Sheet Trial Strip/Proctor results and QA/QC correlation results.	-

501.07.04.02.03 Test Equipment and Operator Training

501.07.04.02.03.01 General

Administrative Activities:

1	M	Check that only qualified operators using properly calibrated gauges shall conduct QC compaction testing.	-
---	---	---	---

501.07.04.02.03.02 Nuclear Moisture and Density Gauge Requirements

Administrative Activities:

1	M	Receive a valid calibration certificate for each gauge before using the gauge for testing.	-
2	-	Determine the need to request the operator to perform a standardization procedure according to ASTM D6939.	-
3	-	Determine if the gauge shall be replaced due to malfunctions or failure to meet the standardization requirements.	-

501.07.04.02.03.03 Operator Requirements

Administrative Activities:

1	M	Receive proof of proficiency of the operator in the use of a gauge and the correct testing procedures.	-
2	-	Determine the need to require the operator to demonstrate proficiency.	-

501.07.04.02.04 Target Density

Administrative Activities:

1	M	Ensure that target density is established at the specified minimum times.	-
2	M	Determine if a control strip can be reasonably constructed.	-
3	-	Where applicable, determine if the target density shall be based on the maximum dry density (MDD) determined by LS-706 as specified.	-

501.07.04.02.04.01 Control Strip

Inspection Activities:

1		Check if lift thickness and the location of the control strip are suitable.	100%
2	-	Check that the type of compaction equipment to be used and the speed are suited to the material to be compacted and the degree of compaction required.	100%
3	-	Check the number of passes made by compaction equipment as specified.	100%
4	-	Check that the field moisture content of the material is within the specified tolerances, prior to compaction; and that the target density established upon completion of the control strip has also been determined as specified.	100%

Administrative Activities:

1	M	Receive notice for construction of a control strip within specified schedule	-
2	M	Check that optimum moisture content (OMC) is determined according to LS-706 prior to construction of the control strip	-

501.07.04.02.05 Lot Testing

Inspection Activities:

1	-	Check that any visibly soft or loose areas shall be compacted prior to testing .	25%
2	-	Check that the number of tests per lot or subplot is as specified.	25%
3	-	Check that the length of gauge probe shall be suited to the lift being tested.	25%

Administrative Activities:

1	M	Establish suitable lot schedules as specified.	-
---	---	--	---

501.07.04.02.07 Acceptance

Inspection Activities:

1	-	Check that any lot damaged by vehicular traffic shall be restored prior to placement of any overlying material.	25%
2	-	Check that surface with any ruts greater than specified tolerances shall be regraded and recompact to meet the specified requirements. Determine if removal and replacement with new material are required.	25%

Administrative Activities:

1	M	Check that corresponding requirements are applied according to the type of work as specified.	-
---	---	---	---

501.07.04.02.07.01 Rejected Lots

Inspection Activities:

1	-	Determine if a new target density shall be established.	25%
---	---	---	-----

501.08 QUALITY ASSURANCE

501.08.01 General

Inspection Activities:

1	-	Check that field density and field moisture determinations shall be made according to ASTM D6938.	25%
---	---	---	-----

501.08.02 Compaction

501.08.02.01 General

Inspection Activities:

1	-	Visits shall be arranged to ensure that, for each different portion of the work, QA testing is carried out each day on minimum one QC lot AND on minimum one QC lot for every 4 QC lots constructed that day.	25%
2	-	Check that the type of compaction equipment is suited to construct a control strip to establish target density. Determine if the equipment shall be replaced to obtain an appropriate target density.	25%
3	-	Where a compaction control strip is required, verify 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.	25%

Administrative Activities:

1	M	Verify that, for each tested lot, the compaction calculations indicate the lot is acceptable before another lift of material is placed on top.	-
---	---	--	---

501.08.02.02 Gauge Verification

Inspection Activities:

1	-	Verify that the QC average dry density is within specified tolerances when compared with the QA average dry density. Efforts, such as recalibration, re-inspection of the gauge and/or operator, should be taken to minimize the discrepancy between QC and QA test results.	50%
---	---	--	-----

501.08.02.03 Compaction

Inspection Activities:

1	-	Check that QA measurements are carried out for each type of Work as specified, but at separate locations from QC measurements.	25%
2	-	Administer appropriate investigations for a rejected lot.	25%

501.08.02.04 Quality Control Records Inspections

Inspection Activities:

1	-	Select QC records for verification of calculation errors, missing test data, or improper lot quantities. Take appropriate actions for findings.	25%
---	---	---	-----

501.08.02.05 Charges

Administrative Activities:

1	-	Apply charges for each lot that requires retesting as specified. Also apply charges for any subsequent new lots that do not meet the compaction requirements as specified.	-
---	---	--	---

501.09 MEASUREMENT FOR PAYMENT

Administrative Activities:

1	-	Measurement for payment shall be as specified.	-
---	---	--	---

501.10 BASIS OF PAYMENT

Administrative Activities:

1	-	Basis of payment shall be as specified.	-
---	---	---	---

WARRANT: Always with OPSS 501, Construction Specification for Compacting.