

**MINNESOTA DEPARTMENT OF TRANSPORTATION
SCHEDULE OF INDEPENDENT ASSURANCE SAMPLING AND TESTING
For
Federal Aid Projects
(Not S.A.P Projects)**

ARRANGEMENTS MUST BE MADE WITH DISTRICT MATERIALS ENGINEER FOR SCHEDULING IAST VISITS TO COMPLY WITH PROJECT REQUIREMENTS

I. Construction not covered by Quality Control/Quality Assurance Specifications.

A. GRADING AND BASE

<u>Type of Construction</u>	<u>Test</u>	<u>Frequency</u>
Grading	Compaction – Review results and procedures for moisture, sand cone, Proctor and DCP for all projects.	1 per project per year. None for projects with less than 40,000m ³ (LV) [50,000 Cu Yd (LV)] of grading. (Note: 1)
All Aggregate Base and Aggregate Shouldering	Compaction – Review results and procedures for moisture, sand cone, Proctor and DCP for all projects.	1 per project per year. None for projects with less than 10,000 metric ton [10,000 ton]. Check during first 3,000 metric ton [3,000 ton], whenever possible, for both the Specified Density and the Penetration Index Methods. (Note: 1)

I. Construction not covered by Quality Control/Quality Assurance Specifications (Continued)

B. BITUMINOUS (2331)

Plant Mix Bituminous

<u>Kind of Material/Test</u>	<u>Frequency</u>
1. Aggregate Gradation	1 per agency tester per year (Notes: 1, 4, 6, and 8)
2. Extraction and Gradation Type 32, 42 and 48	1 per agency tester per year (Notes: 1, 6, and 8)
3. Mix Properties A. Maximum Specific Gravity B. Marshall Bulk Specific Gravity (3 Specimen Average) C. Calculate % Air Voids	1 per agency tester per year May be performed in: (A) District Lab (B) Contractor's Lab (With Contractor's permission) (Notes: 1, 6, and 8)
4. Specified Density	1 per agency tester per year May be performed in: (A) District Lab (B) Field Lab (Notes: 1, 6, and 8)
5. Nuclear Density (2331) (Control Strip)	1 per Contractor tester and gauge per project per year 1 per agency tester per year May be performed in (A) District Lab (B) Field Lab (Notes: 1, 6, 7, and 8)

I. Construction not covered by Quality Control/Quality Assurance Specifications (Continued)

C. CONCRETE

<u>Type of Construction</u>	<u>Sample or Test</u>	<u>Frequency</u>
All Concrete	Aggregate Gradation, Slump, Air Content, Cylinder Fabrication <i>(Not Compressive Strength)</i>	One per year per Certified Concrete Plant One per year per Tester/Monitor performing or observing listed tests (Notes: 1, 5 and 8)

II. Construction covered by Quality Control/Quality Assurance Specifications.

A. GRADING AND BASE

<u>Type of Construction</u>	<u>Sample or Test</u>	<u>Frequency</u>
All Aggregate Base and Aggregate Shouldering	Random Sampling Gradation Acceptance Method (Note: 1 and 3)	1 per project per year for projects over 4,000 metric ton [4,000 ton] - total tons of all classes of aggregate. (Note: 1 and 3)

B. BITUMINOUS

<u>Kind of Material/Test</u>	<u>Frequency</u>
1. Aggregate Gradation	For Stationary Certified Plant, 1 per Contractor's Certified Plant every 3 months, or when production exceeds 100,000 tons for the contract agency since last check, whichever occurs first. For Mobile Certified Plant or Non-Certified Plant, 1 per contractor's tester per year. The equipment shall be reviewed every plant/laboratory set up or at least once per year. 1 per agency observer/tester per year. (Notes: 1, 4, 6, and 8)

II. Construction covered by Quality Control/Quality Assurance Specification (Continued)

B. BITUMINOUS (Cont'd)

<u>Kind of Material/Test</u>	<u>Frequency</u>
2. Extraction and Gradation	<p>For Stationary Certified Plant, 1 per Contractor's Certified Plant every 3 months, Or when production exceeds 100,000 tons since last check, whichever occurs first.</p> <p>For Mobile Certified Plant or Non-Certified Plant, 1 per contractor's tester per year. The equipment shall be reviewed every plant/laboratory set up or at least once per year.</p> <p>1 per agency observer/tester per year (Notes 1, 6, and 8)</p>
3. Mix Properties	<p>For Stationary Certified Plant, 1 per Contractor's Certified Plant every 3 months, or when production exceeds 100,000 tons since last check, whichever occurs first.</p>
A. Maximum Specific Gravity	
B. Bulk Specific Gravity (3 Specimen Average)	<p>For Mobile Certified Plant or Non-Certified Plant, 1 per Contractor's tester per year. The equipment shall be reviewed every plant/laboratory set up or at least once per year.</p>
C. Calculate % Air Voids	<p>1 per agency observer/tester per year.</p> <p>May be performed in: (A) District Lab (B) Field Lab (C) Contractor's Lab (With contractor's permission) (Notes: 1, 6, and 8)</p>
4. Modified Specified Density (2340)	<p>1 per Contractor's tester per year (Core Option) 1 per Contractor's tester and gauge per project per year (Nuclear Option) 1 per agency observer/tester per year</p> <p>May be performed in: (A) District Lab (B) Field Lab (C) Contractor's Lab (With contractor's permission) (Notes: 1, 6, and 8)</p>

II. Construction covered by Quality Control/Quality Assurance Specification (Continued)

B. BITUMINOUS (Cont'd)

<u>Kind of Material/Test</u>	<u>Frequency</u>
5. Nuclear Density (Control Strip) (2340)	1 per Contractor's tester and gauge per project per year 1 per agency observer per year May be performed in: (A) District Lab (B) Field Lab (C) Contractor's Lab (With contractor's permission) (Notes: 1, 6, 7, and 8)

6. Maximum Density Method (2350 & 2360)	1 per Contractor's tester per year 1 per agency observer/tester per year May be performed in: (A) District Lab (B) Field Lab (C) Contractor's Lab (With contractor's permission) (Notes: 1, 6, and 8)
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C. CONCRETE

<u>Type of Construction</u>	<u>Sample or Test</u>	<u>Frequency</u>
All Concrete	Aggregate Gradation, Slump, Air Content, Cylinder Fabrication (<i>Not Compressive Strength</i>)	One per year per Certified Concrete Plant One per year per Tester/Monitor performing or observing listed tests (Notes: 1,5,6 and 8)

NOTES

(1) All testers and observers must complete at least one documented Independent Assurance Inspection each year. The Independent Assurance Inspector should monitor the individual tester or observer performing the required sampling and testing during the regular project activities or in the District Laboratory.

The tester is defined as the individual who actually runs the test.

The observer is defined as the inspector who watches the Contractor run the test.

(2) The Independent Assurance Inspector should either observe the spot check being performed in the field or obtain a mixture sample (taken at the time a spot check is being performed) on which the asphalt content will be determined in the District Laboratory.

(3) The Random Sampling Method samples will be tested in the field laboratory (option 1) or District Laboratory (option 2).

Option 1, the Independent Assurance Inspector should document the testers and observers:

1. Randomly selecting sampling locations.
2. Ensuring all samples and testing equipment is in a safe working order and has required calibration performed.
3. Performing the specified sampling, splitting and testing procedures with appropriate equipment.
4. Properly documenting field test results and labeling the sample as "Independent Assurance Sample".
5. Submitting the companion sample to the District Laboratory for verification of the field test results.

Option 2, the Independent Assurance Inspector should document the testers and observers:

1. Randomly selecting sampling locations.
2. Ensuring all sampling and testing equipment is in safe working order and has required calibration performed.
3. Performing the specified sampling and splitting procedures with appropriate equipment.
4. Properly labeling the companion sample as "Independent Assurance Sample".
5. Submitting the companion sample to another Mn/DOT Laboratory for verification of the test results.

(4) For non-asphaltic aggregate portion.

(5) All air meters must be calibrated at least once per year.

(6) Bituminous - None Required if project is less than 1,000 tons.
Concrete - None required if project is less than 200 Cu Yd.

NOTES (Continued)

(7) An independent assurance review of the individual responsible for nuclear density testing will be performed by the District Independent Assurance Tester on a yearly basis. The Bituminous Office will do a periodic check of the I. A. review process. The District I. A. review will involve:

(A) Test site selection and preparation including building a Control Strip

(B) Testing procedures

The Independent Assurance review shall be documented on the appropriate form with discrepancies in testing competence noted. The District Materials Engineer shall be responsible for the general physical condition of the instrument and accessories.

(8) When the Independent Assurance sample is obtained under the observation of the District Materials assurance sampler, the sample may be split into three parts, which can also be used as project samples. One part is the I.A. sample, one part is the verification sample, which may be used by the contract agency to assure compliance of the QC program, and one part is the verification companion sample, which may be used by the contractor for process control (QC).

The sampler shall:

1. Assure location of sampling is selected randomly.
2. Assure proper sample taking equipment.
3. Assure proper sampling procedures.
4. Identify sample as an "Independent Assurance" sample and transport to district laboratory.
5. Identify split sample (from 10.4 above) as "Verification" sample and transport to district laboratory (if applicable).
6. Identify split sample (from 10.4 above) as "Verification Companion" sample and give to Contractor (if applicable).
7. All Independent Assurance samples must be tested using different equipment and personnel from Verification testing.

OPTIONS:

- A. Central Laboratory
- B. Other District Laboratory
- C. Other Agency (County or Municipal Laboratory)
- D. Consultant