

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

PREPARING DISTRICT MATERIALS LABORATORY INSPECTION REPORTS

1. PURPOSE

- 1.1 To set forth a Standard District Materials Laboratory Inspection Report Format
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2. SCOPE

- 2.1 To establish a standard format in the style, form, substance, and frequency of District Materials Laboratory Inspection Reports
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3. INSTRUCTIONS

- 3.1 Format - All District Materials Laboratory Inspection Reports shall conform to the format used herein. See attachments for templates for each section.
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4. MEMORANDUM

- 4.1 A memorandum conforming to the format contained herein (Attachment 1) shall accompany all District Materials Laboratory Inspection Reports
- 4.1.1 The memorandum shall be sent to the attention of the District Engineer or District Manager with a CC to the District Materials Supervisor and the District Construction Engineer.
- 4.1.2 The memorandum shall summarize the findings, observations, and deficiencies (if any) of the Inspection.
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5. REPORT

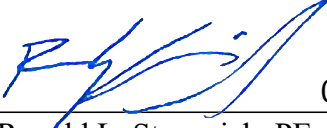
- 5.1 A report conforming to the format contained herein shall accompany all District Materials Laboratory Inspection Reports. (See attached Template for relevant section.)

6. FREQUENCY

- 6.1 District Materials Laboratory Inspections shall be conducted biennially in conformance with Federal Regulations (Federal Highways Administration's (FHWA's) Testing Program to Control Materials and Construction, Section IV, Part 2A; revised April 16, 2007).

7. RESPONSE

- 7.1 The District Materials Supervisor shall respond within thirty (30) days of receipt of the Materials Inspection Report detailing what corrective action, if any will be taken to ensure compliance with testing procedures.


08/16/2022

Ronald L. Stanevich, PE
Director
Materials Control, Soils & Testing Division

MP 110.00.40 Steward – Lab Support Section
RLS:Bh
ATTACHMENT

<Insert Standard WVDOH Header>

MEMORANDUM

**TO: NAME OF DISTRICT ENGINEER/SUPERVISOR
DISTRICT NUMBER, TITLE OF ABOVE PERSON**

**FROM: RONALD L. STANEVICH, P.E.
DIRECTOR
MATERIALS CONTROL, SOILS AND TESTING DIVISION**

SUBJECT: INSPECTION OF DISTRICT (#) AGGREGATE LABORATORY

Attached is Materials Inspection Report (MIR) Number XXXXXX pertaining to the subject inspection. It is our intent to perform such inspections at least once every other year in each district.

The (GROUP) Laboratory testing apparatus inspection resulted in XX recommendations as noted in section X and X. It was recommended that (explain deficiencies and what was done to fix them).

The (GROUP) Laboratory testing procedures inspection resulted in X deficiencies (explain deficiencies and what was done to fix them). The AASHTO re:source proficiency samples had X deficiencies (if applicable - explain deficiencies and what was done to fix them - The corrective action reports are attached to the end of this MIR, detailing the ratings and what has been done to mitigate the deficiencies). The District Materials Supervisor is asked to write a response to this Division within 30 days of receipt stating how the deficiencies were or will be corrected.

If you have any questions or need additional information, please feel free to contact {MCST Section Leader} of this Division at (304) 414-6634.

RLS:XX

Attachment

cc: MCS&T Group Supervisor
District Construction Engineer, District Materials Supervisor

REPORT NUMBER: XXXXXXXX

MATERIALS INSPECTION REPORT

SUBJECT: Inspection of Aggregate Laboratory

LOCATION Choose an item.

INSPECTED BY: Inspector's Name

TECHNICIAN: Technician's Name

DATE OF INPECTION: Click or tap to enter a date.

DATE OF REPORT: Click or tap to enter a date.

1. OBJECTIVE

- 1.1. To inspect the laboratory testing equipment, test procedures, operator technique, reporting and documentation of test data, and to verify compliance with standard methods of testing.
- 1.2. To evaluate apparatus and procedures used in performing the tests for aggregate and soil as described in:

AASHTO R 18	Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories
AASHTO E 11	Wire-Cloth Sieves for Testing Purposes
AASHTO M 231	Weighing Devices Used in the Testing of Materials
AASHTO T 11	Materials Finer Than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing
AASHTO T 19	Bulk Density ("Unit Weight") and Voids in Aggregate
AASHTO T 27	Sieve Analysis of Fine and Coarse Aggregates
AASHTO T 84	Specific Gravity and Absorption of Fine Aggregate
AASHTO T 85	Specific Gravity and Absorption of Coarse Aggregate
AASHTO T 89	Determining the Liquid Limit of Soils
AASHTO T 90	Determining the Plastic Limit and Plasticity Index of Soils
AASHTO T 265	Laboratory Determination of Moisture Content of Soils

ML-25	Procedure for Monitoring the Activities Related to Sieve Analysis of Fine and Coarse Aggregate
MP 700.00.54	Procedure for Evaluating Quality Control Sample Test Results with Verification Sample Test Results
MP 703.00.21	Standard Method of Test for Percent Crushed Particles

- 1.3. To determine if any deficiencies exist, a Division developed procedure checklist is used. This checklist is based on the AASHTO and Division accepted procedures for the applicable tests.

2. DISCUSSION

- 2.1. The subject laboratory inspection is part of this Division's overall Aggregate Quality Assurance Program. It was developed to evaluate the District's proficiency in performing those tests common to project Quality Control. In addition to apparatus and testing inspection, reporting and documentation was also reviewed to ensure adequate handling of the test data.

3. APPARATUS

- 3.1. The laboratory workroom was checked for compliance with the acceptable range for room temperature, 68°F to 86°F (20°C to 30°C). The temperature at the time of inspection was Click or tap here to enter text.°F (Click or tap here to enter text.°C).
- 3.2. The temperature of the oven used for aggregate testing was checked for compliance within the specified limits of 230 ± 9°F (110 ± 5°C). The oven temperature was Click or tap here to enter text.°F (Click or tap here to enter text.°C).
- 3.3. The coarse and fine aggregate splitters used in separating samples for testing purposes were examined and found to be in good physical condition.
- 3.4. The thermometers in use at the time of inspection were checked to determine compliance with applicable requirements. All thermometers were within the acceptable range of 1°F (0.5°C).
- 3.5. The mechanical shaking devices and their respective timers used for sieve analysis of aggregates in use at the time of inspection were examined and found to comply with the requirements of AASHTO T 11 and AASHTO T 27.

3.6. The laboratory's balances used for aggregate listed below were examined:

Adam Equipment CPWplus 75	Direct Read – Top Load Digital Balance 0.02kg to 75kg
Mettler PM200	Direct Read – Top Load Digital Balance 0.001 g to 200 g
Mettler PE16	Direct Read – Top Load Digital Balance to 16,000 g
Mettler Toledo XS16001L	Direct Read - Top Load Digital Balance 0.1 g to 16,000 g

The laboratory's balances were found to be in good working order.

3.7. The equipment used for the determination of the minus No. 200 material in aggregate was examined and found to conform to the requirements of AASHTO T 11.

3.8. Sieves used in determining the particle size of aggregate were examined and found to conform to the specifications in AASHTO M 92 with one exception:

a) EXAMPLE: The No.8 sieve exhibited corrosion and minor deformations in the wire cloth. The sieve was replaced during the inspection.

3.9. All equipment and measures used in determining the unit weight of aggregate were checked and found to conform to the requirements of AASHTO T 19, with the following exception:

a) EXAMPLE: The 1/3 measure's calibration date was past the yearly calibration deadline. The measure was properly re-calibrated during the inspection. The new calibration date was updated on the measure.

3.10. All equipment used in determining the fine aggregate specific gravity were checked and found to conform to the requirements of AASHTO T 84.

3.11. The water tank and basket used for holding samples of coarse aggregate for specific gravity were examined and were found to conform to the requirements of AASHTO T 85.

3.12. The equipment used for the determination of the liquid limit and plastic limit was examined and found to conform to the requirements of AASHTO T 89 and AASHTO T 90.

4. PROCEDURES

- 4.1. The procedure used in determining the percent crushed particles was observed and was found to conform to the procedure described in MP 703.00.21.
- 4.2. The procedure used in determining the amount of material in aggregate finer than a No. 200 sieve was observed and found to conform to the procedure described in AASHTO T 11.
- 4.3. The procedure used in determining the unit weight of aggregate was observed and found to conform to the procedure described in AASHTO T 19.
- 4.4. The procedure used in determining the sieve analysis of coarse and fine aggregate was observed and found to conform to the procedure described in AASHTO T 27.
- 4.5. The procedures used in determining the specific gravity and absorption of fine and coarse aggregates were observed and found to conform to the procedures described in AASHTO T 84 and AASHTO T 85, respectively.
- 4.6. The procedures used in determining the liquid limit of soils (3-point method) and plastic limit of soils were observed and found to conform to the procedures described in AASHTO T 89 and AASHTO T 90, respectively.

5. AASHTO re:SOURCE PROFICIENCY SAMPLES

- 5.1. AASHTO re:source proficiency samples are provided, at a cost, to all Districts twice a year. Included with the samples are directions for preparation and a scope of tests to be performed. Once testing has been completed and results obtained each District submits these results via the AASHTO re:source website. AASHTO re:source then compiles the results from all participating laboratories across the nation and calculates a standard deviation that is used to rate each lab on a scale from 0-5, 5 being the best. If a District has a rating less than 3 on any individual test MCS&T requires them to submit a Proficiency Sample Corrective Action Report and the reports are to be kept on record. Corrective action reports are independent to the response from the materials supervisor at the conclusion of the laboratory inspection.
- 5.2. The AASHTO re:source Fine Aggregate Proficiency Samples [#Click or tap here to enter text.](#) resulted in zero ratings less than 3.
- 5.3. The AASHTO re:source Fine Aggregate Proficiency Samples [#Click or tap here to enter text.](#) resulted in zero ratings less than 3.
- 5.4. The AASHTO re:source Fine Aggregate Proficiency Samples [#Click or tap here to enter text.](#) resulted in zero ratings less than 3.
- 5.5. The AASHTO re:source Coarse Aggregate Proficiency Samples [#Click or tap here to enter text.](#) resulted in zero ratings less than 3.

6. REPORTING AND DOCUMENTATION OF TEST DATA

- 6.1. Reporting and documentation of completed laboratory results were reviewed and found to be acceptable.

7. CONCLUSIONS

- 7.1. The verification of test equipment and procedures and their conformance to the applicable specification requirements are documented in the preceding sections.
- 7.2. The Aggregate Laboratory testing apparatus inspection resulted in two (EXAMPLES) deficiencies as noted in section 3.8 and 3.9. To correct these deficiencies the technician re-calibrated the measure prior to performing the AASHTO T 85 procedure and replaced one No 8 sieve to comply with AASHTO M92.
- 7.3. The Aggregate Laboratory testing procedures inspection resulted in zero deficiencies.
- 7.4. Deficiencies noted in this report were discussed with laboratory personnel at the time of inspection. The Materials Supervisor is asked to write a response to this Division, stating how any deficiencies were, or will be corrected. There were no AASHTO re:source corrective actions to attach to the Materials Inspection Report, since the scores on the assessment were all satisfactory.

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Aggregate and Soils Section Supervisor

REPORT NUMBER: XXXXXXXX
MATERIALS INSPECTION REPORT
SUBJECT: Inspection of Asphalt Laboratory
LOCATION Choose an item.
INSPECTED BY: Inspector's Name
TECHNICIAN: Technician's Name
DATE OF INPSECTION: Click or tap to enter a date.
DATE OF REPORT: Click or tap to enter a date.

1. OBJECTIVE

- 1.1 To inspect the laboratory testing equipment, test procedures, operator technique, reporting and documentation of test data, and to verify compliance with standard methods of testing.
- 1.2 To evaluate laboratory equipment and procedures used to conduct testing for the quality assurance of Asphalt mixture, Superpave mix design and Marshall mix design as described in:

AASHTO R-47	REDUCING SAMPLES OF HMA TO TESTING SIZE (QUARTERING METHOD)
AASHTO R-68	PREPARATION OF ASPHALT MIXTURES BY MEANS OF THE MARSHALL APPARATUS
AASHTO T 312	DETERMINING THE DENSITY OF HOT MIX ASPHALT SPECIMENS BY MEANS OF THE SUPERPAVE GYRATORY COMPACTOR
AASHTO T 166	BULK SPECIFIC GRAVITY OF COMPACTED BITUMINOUS MIXTURES USING SATURATED SURFACE-DRY SPECIMENS
AASHTO T-331	BULK SPECIFIC GRAVITY (GMB) AND DENSITY OF COMPACTED HOT MIX ASPHALT (HMA) USING AUTOMATIC VACUUM SEALING METHOD
AASHTO T 209	MAXIMUM SPECIFIC GRAVITY OF BITUMINOUS PAVING MIXTURES
AASHTO T 245	RESISTANCE TO PLASTIC FLOW OF BITUMINOUS MIXTURES USING MARSHALL APPARATUS AND THE MATERIALS SECTION'S GUIDE FOR REHEATING AN ASPHALT MIX SAMPLE
AASHTO T 308	DETERMINING THE ASPHALT BINDER CONTENT OF HOT- MIX ASPHALT (HMA) BY THE IGNITION METHOD, (METHOD A)

AASHTO T 30 ANALYSIS OF EXTRACTED AGGREGATE

- 1.3 To determine if any deficiencies exist based on a Division developed procedure checklist. This checklist is based on the AASHTO and Division accepted procedures for the applicable tests.

2. DISCUSSION

- 2.1 The subject laboratory inspection is part of this Division's overall asphalt Quality Assurance Program. It was developed to evaluate the District's proficiency in performing those tests common to project Quality Control. In addition to equipment and testing inspection, reporting and documentation will also be reviewed to ensure adequate handling of the test data.

3. APPARATUS

- 1.1. As specified in AASHTO T 166 and T 209, the laboratory workroom was checked for compliance with the range for standard room temperature, $77\pm 9^{\circ}\text{F}$ ($25\pm 5^{\circ}\text{C}$). The temperature at the time of inspection was [Click or tap here to enter text.](#) $^{\circ}\text{F}$ ([Click or tap here to enter text.](#) $^{\circ}\text{C}$).
- 1.2. The thermometers in use at the time of inspection were checked to determine compliance with applicable requirements. All thermometers were within the acceptable range of 1°F (0.5°C).
- 1.3. The temperature of the oven used for aggregate testing was checked for compliance within the specified limits of $300\pm 15^{\circ}\text{F}$ ($149\pm 8^{\circ}\text{C}$). The oven temperature was [Click or tap here to enter text.](#) $^{\circ}\text{F}$ ([Click or tap here to enter text.](#) $^{\circ}\text{C}$).
- 3.1 The balance(s) in use at the time of inspection [Choose an item.](#) with the Division's calibrated weights. All balance(s) were within tolerances ($0.1\text{g} \pm 0.1\%$) set forth in AASHTO M231 for general purpose balances.
- 3.2 The Sieve shaker(s) in use at the time of inspection were checked for condition and were found to be in good working condition.
- 3.3 The Hot Plate(s) in use at the time of inspection were checked for condition and were found to be in good working condition.

4. PROCEDURES

- 4.1 The Inspector reviewed procedure AASHTO R-47, to reduce an Asphalt mixture sample to an appropriate testing size. The Technician was not required to demonstrate the procedure however the Technician's equipment used was found to [Choose an item.](#) to the AASHTO specification.
- 4.2 The Inspector reviewed procedure AASHTO R-68, to prepare a Marshall sample. The Technician was required to demonstrate the procedure. The Technicians procedure was found to [Choose an item.](#) to the AASHTO procedure. The Technician's equipment used was found to [Choose an item.](#) to the AASHTO specification.
- 4.3 The Inspector reviewed procedure AASHTO T-312, to prepare a Superpave sample. The Technician was required to demonstrate the procedure. The Technicians procedure was found

- to Choose an item. to the AASHTO procedure The Technician's equipment used was found to Choose an item. to the AASHTO specification.
- 4.4 The Inspector reviewed procedure AASHTO T-166, to test a pill for Bulk specific gravity. The Technician was required to demonstrate the procedure. The Technicians procedure was found to Choose an item. to the AASHTO procedure. The Technician's equipment used was found to Choose an item. to the AASHTO specification.
- 4.5 The Inspector reviewed procedure AASHTO T-331, to test a pill for Bulk specific gravity using the Vacuum sealing device. The Technician was required to demonstrate the procedure. The Technicians procedure was found to Choose an item. to the AASHTO procedure. The Technician's equipment used was found to Choose an item. to the AASHTO specification.
- 4.5.1.1.1 EXAMPLE OF NON_CONFORMITY: Technician did not engage the retention latch on the CoreLok device
- 4.6 The Inspector reviewed procedure AASHTO T-209, to test a sample for Theoretical Maximum specific gravity. The Technician was required to demonstrate the procedure. The Technicians procedure was found to Choose an item. to the AASHTO procedure. The Technician's equipment used was found to Choose an item. to the AASHTO specification.
- 4.6.1.1.1 EXAMPLE OF NON_CONFORMITY: Sample was cooled to the touch, but not cooled to room temperature.
- 4.7 The Inspector reviewed procedure AASHTO T-245, to test a pill for stability and flow. The Technician was required to demonstrate the procedure. The Technicians procedure was found to Choose an item. to the AASHTO procedure. The Technician's equipment used was found to Choose an item. to the AASHTO specification.
- 4.8 The Inspector reviewed procedure AASHTO T-308, to test an asphalt mixture sample for asphalt content. The Technician was required to demonstrate the procedure. The Technicians procedure was found to Choose an item. to the AASHTO procedure. The Technician's equipment used was found to Choose an item. to the AASHTO specification.
- 4.9 The Inspector reviewed procedure AASHTO T-30, to test an asphalt mixture sample for gradation. The Technician was required to demonstrate the procedure. The Technicians

procedure was found to Choose an item. to the AASHTO procedure. The Technician's equipment used was found to Choose an item. to the AASHTO specification.

5. REPORTING AND DOCUMENTATION OF TEST DATA

- 5.1 Several District acceptance/verification samples were reviewed and found accurate and free from errors in calculations and data transfer.
- 5.2 Several acceptance and verification samples evaluation, using MP 700.00.54 were reviewed and found accurately performed according to the Materials Procedure.
- 5.3 Several T401 and T407 compaction forms were reviewed and found to be complete and accurately calculated.
- 5.4 Several JMF field design verifications were reviewed and found to be complete and accurately calculated. Proper targets were selected with appropriate ranges assigned.

6. CONCLUSION

- 6.1 The verification of test equipment and procedures and their conformance to the applicable specification requirements are documented in the preceding sections.
- 6.2 The asphalt laboratory general testing equipment inspection resulted in zero findings as noted in Section 3.1.
- 6.3 The asphalt laboratory testing procedure inspection was conducted this year and resulted in two (EXAMPLE) deficiencies as noted in Section 4.5. and 4.6.
- 6.4 The asphalt laboratory procedural equipment inspection resulted in zero deficiencies, as noted in Section 4.6.
- 6.5 Any deficiencies noted in equipment and/or procedures were discussed with laboratory personnel at the time of inspection.
- 6.6 The documentation inspection resulted in no deficiencies, as noted in Section 5.0.
- 6.7 Any deficiencies noted in reporting and documentation were discussed with district personnel at the time of the inspection.

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Asphalt Group Supervisor

REPORT NUMBER: XXXXXXXX
MATERIALS INSPECTION REPORT
SUBJECT: Inspection of Concrete Laboratory
LOCATION: District XX - Location, WV
INSPECTED BY: Inspector's Name
TECHNICIAN: Technician's Name
DATE OF INSPECTION: Click or tap to enter a date.
DATE OF REPORT: Click or tap to enter a date.

1. OBJECTIVE

- 1.1. To inspect the laboratory testing equipment, test procedures, calibration of equipment, documentation of test data, and to verify compliance with standard methods of testing.
- 1.2. To evaluate apparatus and procedures used in performing the tests for concrete as described in:

AASHTO M 201	Curing Facilities
AASHTO R 18	Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories
AASHTO T 22	Determining Compressive Strength of Cylindrical Concrete Specimens
AASHTO T 23	Making and Curing Concrete Test Specimens in the Field
AASHTO T 119	Slump of Hydraulic Cement Concrete
AASHTO T 121	Unit Weight of Concrete
AASHTO T 152	Air Content of Freshly Mixed Concrete by the Pressure Method
AASHTO T 196	Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM E77	Standardization of Thermometer
ASTM C39	Standard Test Method for Compressive Strength of Cylinders Concrete Specimens

ASTM C 1231

Use of Unbonded Caps in Determination of Compressive Strength of Hardened Cylindrical Concrete Specimens

- 1.3. To determine if any deficiencies exist by a Division developed procedure checklist. This checklist is based on the AASHTO, ASTM, and Division accepted procedures for the applicable tests.

2. DISCUSSION

- 2.1. The subject laboratory inspection is part of this Division's overall Concrete Quality Assurance Program. It was developed to evaluate the District's proficiency in performing those tests common to project Quality Control. In addition to testing and inspection, calibration of apparatus and recordkeeping were also reviewed to ensure that apparatus meet the specifications.

3. APPARATUS

- 3.1. The laboratory water storage tank was checked for compliance with the acceptable range for water temperature, 69.8°F to 77.0°F. The temperature at the time of inspection was °F.
- 3.2. The water in the storage tank was saturated with lime to comply with the requirement of AASHTO M 201.
- 3.3. The specimens were fully immersed in the tank storage water.
- 3.4. The laboratory was keeping temperature record of water storage tank.
- 3.5. The water in the storage tank is being thoroughly stirred more than once a month.
- 3.6. The tank is being cleaned and refilled with water containing 3 g/L of calcium hydroxide every two-year period.
- 3.7. The field thermometer was standardized to comply with the requirement of AASHTO T 309.
- 3.8. The apparatus and testing accessories used in the test for slump for hydraulic cement concrete were examined and found to conform to the requirements of AASHTO T 119. The critical dimensions of equipment were checked by the district on [Click or tap to enter a date.](#)
- 3.9. The standardization records and equipment for volumetric air content test were not checked during this inspection because the district noted that this test has not been performed in a long time (more than 10 years). The equipment and standardization for

- this test method will be verified if a project, requiring this test, arises in this district. does this need to stay in here since they don't seem to do it?
- 3.10. The apparatus and testing accessories used in the test for air content of freshly mixed concrete by pressure method was examined and found to conform to the requirements of AASHTO T 152. The standardization record of apparatus was maintained by the district (date of standardization - [Click or tap to enter a date.](#)).
 - 3.11. The apparatus and testing accessories used in the test for unit weight of cement concrete was examined and found to conform to the requirements of AASHTO T 121. The calibration record of apparatus was maintained by the district (date of calibration - [Click or tap to enter a date.](#)).
 - 3.12. The scale used for measuring the weight in the test for unit weight was examined for the standardization and found to comply with the requirements of AASHTO M 231.
 - 3.13. The Unbonded caps and Retaining Rings for determination of compressive strength of hardened cylindrical concrete specimens were examined and found to comply with the requirements of ASTM C 1231. The record of caps usages was maintained by the district.
 - 3.14. Molds for concrete test specimens were examined and found to comply with the requirements of AASHTO T 23.
 - 3.15. The method of transportation of Specimens from field to laboratory was discussed with the district, and the response was found to comply with the requirements of AASHTO T 23.
 - 3.16. The apparatus for testing compressive strength of cylindrical concrete specimens was examined and found to comply with the requirements of AASHTO T 22. The calibration record of testing machine was maintained by the district (calibrated date - [Click or tap to enter a date.](#)).

4. PROCEDURES

- 4.1. The Technician was asked to demonstrate the procedure to determine the compressive strength of cylindrical concrete specimen and was found to comply with the requirements of AASHTO T22 (ASTM C39) with the following exception:
 - a) Technician did not recheck perpendicularity of specimen before reaching 10% of anticipated load was applied as per ASTM C39 (Section 8.4.2).

5. CONCLUSIONS

- 5.1. The concrete laboratory testing apparatus inspection resulted in no deficiencies.

- 5.2. The laboratory testing procedures inspection resulted in one deficiency and is noted in section 4.1a.

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Concrete Section Supervisor's Name