AGGREGATE SAMPLING TECHNICIAN DUTIES

Duties of the Aggregate Sampling Technician are detailed in IM 209 and the IM 300 Series and consist of, but are not limited to the following:

A. Sampling

1. Obtain representative samples by approved method(s).
2. Sample at required frequencies.
3. Identify samples with pertinent information such as:
    a. Type of material
    b. Intended use
    c. Production beds working depth
    d. Sampling method
4. Reduce samples by approved method(s).

AGGREGATE TECHNICIAN DUTIES

Duties of the Aggregate Technician are detailed in IM 209 and the IM 300 Series and consist of, but are not limited to the following:

A. Sampling

1. Obtain representative samples by approved method(s).
2. Sample at required frequencies.
3. Identify samples with pertinent information such as:
    a. Type of material
    b. Intended use
    c. Production beds working depth
    d. Sampling method
4. Reduce samples by approved method(s).

B. Gradation Testing

1. Follow appropriate testing methods.
2. Maintain current applicable specifications.
3. Post test results within 24 hours of sampling.

C. Other Testing as required (specific gravity, moisture, deleterious material, etc.)

1. Follow appropriate testing methods.
2. Maintain current applicable specifications.
3. Complete required reports.

D. Sampling & Testing Equipment

1. Clean and check testing sieves for defects.
2. Assure scale accuracy.
3. Maintain sampling and testing equipment.

E. Communication

1. Notify the District Materials office for production start-up or changes.

2. Relay test results to appropriate production or supervisory personnel.

3. Report failing test results immediately to appropriate personnel (including District Materials office) and assure remedial actions are taken.

F. General

1. Monitor stockpiling procedures to avoid contamination and excess segregation.

2. Assure proper identification of stockpiles.

3. Assure specification requirements for intended use are met before shipment.

4. Assure sampling locations are safe.

5. Assure proper bedding planes or production depths are maintained.

G. Documentation

1. Report all production test results of certified aggregates on Form #821278 and distribute as required.

2. Assure “plant production log” is maintained.

EROSION CONTROL TECHNICIAN DUTIES

Duties of the Erosion Control Technician consist of, but are not limited to the following:

A. Carefully review and be familiar with the details in the contract documents.

B. Assign erosion and sediment control monitoring responsibilities to Erosion & Sediment Control (ESC) Basics trained field staff.

C. Review copies of storm water inspection reports.

D. Provide input on initial Erosion Control Implementation Plan (ECIP) submittal and ECIP updates.

E. Provide onsite reviews when requested by Contracting Authority or Contractor field staff.

HOT MIX ASPHALT (HMA) SAMPLING TECHNICIAN INSPECTION DUTIES

Duties of the Hot Mix Asphalt Sampling Technician consist of, but are not limited to the following:

A. Plant Sampling. (Article 2303.04, IM 204 & 511)

1. Obtain asphalt binder samples as directed by Contracting Authority personnel per IM 323 and IM 204.

B. Field Sampling (Article 2303.04, IM 204 & 511)

1. Obtain uncompacted mix random samples as directed by Contracting Authority personnel, and identify time, station, lift and side.

2. Obtain compacted mix core random samples as directed by Contracting Authority personnel.

HOT MIX ASPHALT (HMA) TECHNICIAN INSPECTION DUTIES

The following is a list of the duties that must be performed by the Certified Level I HMA Technicians doing quality control work for the Contractor on all projects where the Quality Management-Asphalt (QM-A) specification applies. The Quality Control Technician shall have no other duties while performing certified inspection duties.

These duties consist of, but are not limited to, the following:

A. Aggregate Stockpiles.

1. Assure proper stockpiling of aggregate deliveries. (stockpile build & additions) (IM 508)
    a. Prevent intermingling of aggregates.
    b. Check for and prevent contamination.
    c. Prevent segregation.
    d. Check for oversize material.

2. Document certified aggregate deliveries. (each delivery) (IM 508). When the aggregate supplier can provide a summary document of all deliveries, do not enter into Plant Book.

    a. Obtain truck tickets.
    b. Check for proper certification.
    c. Check for proper approved source.
    d. Enter deliveries in Plant Book Program when other documentation cannot be provided, Aggregate Certification page.

3. Observe loader operation. (daily) (IM 508)

    a. Check for proper stockpile to bin match-up.
    b. Check that loader does not get stockpile base material in load.
    c. Check that loader does not intermingle aggregate by overloading bins.

B. Asphalt Binder Delivery. (each delivery) (IM 508 & 509)

1. Check that material is pumped into correct tank.

2. Document Deliveries.

    a. Obtain truck tickets.
    b. Check for proper approved source.
    c. Check for proper certification.
    d. Check for proper grade.
    e. Check for addition of liquid anti-strip if required.
    f. Check if weight per gallon or specific gravity has changed.
    g. Enter deliveries into Plant Report Program.

C. Plant Operations. (daily)

1. Prepare Plant Report Program for daily entries. (IM 511)

    a. Enter Date.
    b. Enter Report Number.
    c. Enter expected tonnage for the day.
    d. Enter any proportion or target changes that apply.

2. Aggregate Delivery System. (IM 508)

    a. Check for proper cold feed gate settings.
    b. Check for proper cold feed belt speed settings.
    c. Check for proper moisture setting (drum plants).
    d. Monitor RAP proportions.

3. Mixing System. (Article 2303.03, IM 508)

    a. Check for proper asphalt binder delivery setting.
    b. Check for proper interlock operation.
    c. Monitor coating of aggregates.
    d. Monitor mixing time (batch plants).

4. Loading System. (Article 2303.03 & 2001.01, IM 508)

    a. Check hopper/silo gates for proper open/close
    b. Check trucks for proper loading and possible segregation.
    c. Check trucks for diesel fuel contamination in box and remove contaminated trucks from service (5 hrs with box raised).

5. Asphalt Binder Quantity Determination.

    a. Obtain totalizer printout readings and periodically check against tank stick readings.
    b. If using batch count for quantity, obtain printouts of each batch and add up the asphalt binder used for total quantity.

D. Plant Operations. (2 hour intervals) (IM 508)

1. Temperatures.

    a. Monitor and record mix temperature at discharge into truck box.
    b. Monitor and record asphalt binder temperature.
    c. Monitor and record air temperature.

2. Observe plant operation for any irregularities.

E. Weighing Equipment.

1. Proportioning scales (batch plants). (min. 1/day) (Articles 2001.07 & 2001.20) (IM 508)
   a. Perform sensitivity checks of scales.
   b. Check for interference at scale pivot points.

2. Pay Quantity Scales. (min. 1/day) (Articles 2001.07 & 2001.20, IM 508)
   a. Regularly perform check weighing comparisons with a certified scale as necessary. (min. 1st day and one additional if >5000 tons, and as directed by Engineer)
   b. Perform sensitivity checks of scales.
   c. Check for interference at scale pivot points.
   d. Perform verification weighing (truck platform scales).

3. Weigh Belts. (daily)

   a. Check weigh belt for excess clinging fines that effects speed reading.
   b. Check weigh belt for interference at bridge pivot points.
   c. Check for proper span setting.

4. Enter scale checks in Plant Report Program. (daily)

F. Plant Sampling. (daily) (Article 2303.04, IM 204 & 511)

1. Obtain cold-feed gradation samples as directed by Contracting Authority personnel per IM 301 and IM 204.

2. Obtain asphalt binder samples as directed by Contracting Authority personnel per IM 323 and IM 204.

3. Obtain cold-feed moisture samples at a minimum of every ½ day (drum mix plants).

G. Field Sampling (if not performed by others). (daily) (Article 2303.04, IM 204 & 511)

1. Obtain uncompacted mix random samples as directed by Contracting Authority personnel, and identify time, station, lift and side.

2. Obtain compacted mix core random samples as directed by Contracting Authority personnel.

H. Testing. (daily) (Article 2303.04, IM 204 & 511)

1. Field cores.

   a. Provide properly calibrated equipment for Contracting Authority technician's use.
   b. Obtain and record core location station and offset information.

c. Obtain copy of core thickness measurements from Contracting Authority Technician.
d. Obtain copy of core weights from Contracting Authority technician.
e. Record weights and thickness in Plant Report Program.

2. Uncompacted mix.

a. Properly store Contracting Authority secured portion of paired sample.
b. Split Contractor half of paired sample into test portions as per IM 357.
c. Perform gyratory compaction as per IM 325G.
d. Perform bulk specific gravity test of laboratory-compacted specimen as per IM 321.
e. Perform maximum specific gravity test as per IM 350.
f. Enter test data into Plant Report Program.
g. Submit secured samples to DOT District Lab.

3. Aggregate.

a. Split one sample each day as directed by Contracting Authority personnel and provide half for testing by Contracting Authority.
b. Perform gradation analysis as per IM 302 and enter weights into Plant Report Program.
c. Perform moisture tests and produce results upon request.

4. Testing Lab Qualification. (as needed) (IM 208 & 511)

a. Record all HMA sample validations with DOT on form 235.
b. Document corrective actions taken when not correlating.
c. Document all test equipment calibrations.
d. Update IM's, test procedures and specs as required.

I. Documentation. (daily) (Article 2303.04, IM 204, 511 & 508)
The Plant Report, Chart, Plant Book, and other HMA worksheets are available on the following website: https://iowadot.gov/construction_materials/Hot-mix-asphalt-HMA

1. Prepare computerized Daily Plant Report.
   a. Check that all data is correct.
   b. Check that all data is complete.
   c. Compute tons of mix used to date.
   d. Enter mix adjustment data on report.
   e. Check for spec compliance.
   f. Immediately report non-complying results.
   g. Obtain and record mat temperatures and stationing.
   h. Provide electronic daily Plant Report to DME.

2. Maintain a daily diary of work activity in Plant Report Program.

a. Record weather conditions.

b. Record daily high and low temperatures.
c. Record sunrise and sunset times.
d. Record any interruptions to plant production.
e. Record any other significant events.

3. Import daily data into charting program.

4. Enter tack shipment quantities in Plant Report Program.

5. Total all truck tickets delivered to project and deduct any waste to determine HMA pay quantity.

6. Complete Daily Check List

J. Miscellaneous. (daily) (IM 208 & 511)

1. Clean lab.

2. Back-up computer files.

3. Dispose of samples as directed by District Lab.

4. Clean and maintain lab equipment.

K. Independent Assurance Duties. (Every 3 months) (IM 205 & 216)

1. Pick up HMA and aggregate proficiency sample from District Lab.

2. Test aggregate proficiency sample for gradation per IM 302.

3. Test HMA proficiency sample per IM 357, 325G, 321 & 350.

4. Report test results on proficiency samples to Construction Materials Bureau per IM 205.

L. Project Duties. (1/project) (IM 508 & 511)

1. Be in possession of appropriate mix design.

2. Be present during plant calibration.

3. Observe scale calibrations.

4. Perform plant site and set-up inspection and fill out Plant Site Inspection List.

5. Set up Plant Report Program and enter all project information to create Project Master files at beginning of project.

6. Check that release agents used in truck boxes are on the approved list in MAPLE.

7. Copy all computer files and provide to the Contracting Authority at completion of project.

8. Copy all paperwork and control charts and provide to the Contracting Authority at completion of project.

PORTLAND CEMENT CONCRETE (PCC) LEVEL I TECHNICIAN DUTIES

Many of the duties of the PCC Level I Technician are detailed in IM 327 and IM 204 and consist of, but are not limited to the following:

A. Sample Fresh Portland Cement Concrete, (IM 327)

1. Secure a representative sample by 1 of 5 methods. (IM 327)
2. Sample at required frequencies (IM 204)

B. Perform required tests

1. Obtain temperature (IM 385)
2. Perform slump test (IM317)
3. Perform air content of freshly mixed concrete by pressure (IM 318)
4. Calculate Unit Weight and perform Yield Checks
5. Flexural Strength Specimens
    a. Making/Protecting/Curing (IM 328)
    b. Testing flexural strength specimens (IM 316)
6. Cylinders
    a. Making/Protecting/ Curing/Testing (IM 315)

C. Maturity Method (IM 383)

1. Establish maturity curve at concrete batch plant.
    a. monitor age and temperature
    b. maturity curve validation
2. Field Maturity
    a. probe placement
    b. probe monitoring

D. Determine Pavement Thickness

1. Determine thickness of plastic concrete
2. Determine thickness of hardened concrete (IM 346)
    a. Method A (MIT Scan)
        1. Placing steel targets
        2. Scanning of steel targets
    b. Method B (Coring/9 Point)
        1. Drill cores
        2. Measure cores (IM 347)

PORTLAND CEMENT CONCRETE (PCC) LEVEL II TECHNICIAN DUTIES PAVING & STRUCTURAL CONCRETE

The Quality Control Technician shall have no other duties while performing certified inspection duties. Refer to IM 528 for exceptions. The District Materials Engineer may approve all quality control activities be performed by a single certified technician for low production situations.

Many of the duties of the PCC Level II Technician are detailed in IM 527 (Paving) and IM 528 (Structural) and consist of, but are not limited to the following:

A. Stockpiles

1. Assure proper stockpiling procedures.
2. Prevent intermingling of aggregates.
3. Prevent contamination.
4. Prevent segregation.

B. Plant Facilities

1. Assure safe sampling locations.
2. Check for equipment compliance.
3. Assure proper laboratory location and facilities.

C. Calibration

1. Be present during calibration (paving).
2. Check plant calibration (structural).
3. Assure proper batch weights.

D. Cement (Fly Ash) & Aggregate Delivery

1. Check for proper sources and certification.
2. Document quantities delivered.
3. Monitor condition of shipments.

E. Plant Sampling

1. Check aggregate gradations by obtaining, splitting, and testing samples.

2. Check aggregate moistures and specific gravity.

F. Proportion Control

1. Check scale weights and operation.
2. Check admixture dispensers.
3. Check mixing time and revolutions.
4. Check cement yield. (Paving plant only, unless over 10,000 cu. yds.)

G. Concrete Tests

1. Cure flexural test specimens.
2. Test flexural specimens (Contract agency will perform test in structural plant).
3. Conduct maturity testing.

H. Test Equipment

1. Clean and maintain scales, screens, pycnometers and beam molds, and laboratory facility.

I. Documentation

1. Prepare daily plant reports (paving), weekly plant reports (structures).
2. Document all checks and test results in the field book.
3. Maintain daily diary of work activity.

PRESTRESS TECHNICIAN DUTIES

Duties of the Prestress Technician are detailed in IM 570 and consist of, but are not limited to the following:

A. Pre-pour

1. Identify and document materials requiring outside fabrication inspection.
2. Identify potential fabrication or production problems and notify Iowa DOT inspectors.
3. Verify that all materials incorporated meet the requirements of the contract documents.
4. Review concrete placement documents for strand locations.
5. Check tension calculations.
6. Measure elongation and gauge pressure during tensioning.
7. Check hold down and insert locations.
8. Check stress distributions.
9. Check steel reinforcement and placement.
10. Check strand position.
11. Check condition of pallet.
    a. Level
    b. Holes
    c. Gaps
    d. Other deformities
12. Determine moisture of aggregates.
13. Check form condition and placement.
    a. Oil
    b. Line alignment level
    c. Tightness

B. Concrete Placement

1. Check on use of an approved mix design and batching operations (sequence).
2. Assure appropriate placement and proper vibration techniques.
3. Measure and record concrete temperature.
4. Assure test cylinders are properly made.
5. Assure appropriate finish.
6. Assure appropriate curing operations.

C. Post-pour

1. Check temperature and record during curing process.
2. Assure concrete strength has been met prior to releasing the line.
3. Assure proper detensioning procedure.
4. Check unit for defects and obtain approval for repairs.
5. Identify and store cylinders with the respective units.
6. Check beam ends for fabrication in accordance with the plans.
7. Assure exterior sides of facia beams are grouted.
8. Inspect after patching and desired surfacing.
9. Measure and record overall dimensions of beam.
10. Measure and record camber at release and compare to design camber.
11. Check and/or measure and record lateral sweep before shipping.
12. Assure proper cylinder cure.

RIDE QUALITY TECHNICIAN DUTIES

Duties of the Ride Quality Technician are detailed in IM 341 and consist of, but are not limited to the following:

A. Test pavement and bridge surfaces for ride quality.

B. Evaluate the test data.

1. Indentify bumps and dips.

2. Summarize the roughness into segments and sections.

3. Identify the segments for incentive, disincentive, or grind.

4. Retest and evaluate bumps, dips, and must grid segments for specification compliance.

C. Documentation

1. Document the evaluation on a test report. A copy is sent to the Project Engineer, District Materials Engineer, and Central Materials.

2. Notify the Project Engineer if the daily average profile index exceeds the specification tolerance.

3. Submit the profilograms to the Project Engineer for all areas tested.

SOILS TECHNICIAN DUTIES

A certified Soils Technician is required for all projects with Compaction with Moisture Control, Compaction with Moisture and Density Control, or Special Compaction of Subgrade (including for Recreation Trails). Refer to contract documents for Contractor QC testing requirements. Duties of the Soils Technician consist of, but are not limited to the following:

A. Sampling: Obtain samples at required frequencies per IM 204.

B. Proctor Testing

C. Other Testing as Required

1. For projects with Compaction with Moisture Control: Determine moisture content per frequencies in IM 204.

2. For projects with Compaction with Moisture and Density Control or Special Compaction of Subgrade: Determine moisture content and in-place density per frequencies in IM 204.

D. Sampling & Testing Equipment

1. Clean and check testing sieves for defects.

2. Assure scale accuracy.

3. Check and maintain other testing equipment.

E. Evaluate the test data.

1. For projects with Compaction with Moisture Control: Confirm soils are being placed within required moisture content range.

2. For projects with Compaction with Moisture and Density Control or Special Compaction of Subgrade: Confirm soils are being placed within required moisture content range and soil is compacted to density equal to or greater than density requirement.

F. Documentation and Communication

1. Document test data. A copy is sent to the Project Engineer.

2. Relay test results to appropriate supervisory personnel.

3. Notify the Project Engineer if any test results do not meet contract requirements and assure corrective actions are taken.