



Highway Construction Inspection

PCC Paving, HMA Paving, Grading, Bridges and Structures

Brenda Boell

Engineering Technician Senior
Office of Local Systems
Iowa Department of
Transportation

Iowa Department of Transportation **Construction Manual**

- Chapter 1 – General Information
- Chapter 3 – General Inspection
- Chapter 5 - Safety
- Chapter 6 – Grading

Iowa Department of Transportation **Construction Manual**

- Chapter 8 – Hot Mix Asphalt (HMA) Pavement, Bases and Subbases
- Chapter 9 – Portland Cement Concrete (PCC) Pavement
- Chapter 11 – Structures

Construction Manual

- Policy for the Administration and Inspection of Construction Projects.
- NOT a Contract Document!
- General reference for common situations.
- Provides uniformity of administration, documentation, and inspection.

Chapter 1 – General Information

- Office of Construction and Materials provides technical and administrative support for DOT and industry (contractors).
- Office of Local Systems works closely with the Construction & Materials Office to provide these services for City and County Engineering staff through the use of Local Agency Instructional Memorandums.

Engineer Relations with the Public

- Communicate with residents and businesses.
- Advise them of upcoming construction and discuss the possible effects the work may have on them.
- Notify postal service, schools, and emergency services of delays and diversions.
- Discuss detours and alternative access.

Engineer Relations with the Public

- Keep local media informed to maintain good public relations.
- The project engineer represents a public agency that is spending public money and has an obligation to share this information with the public!

Engineer Relations with the Contractor

- Conducted in a spirit of mutual cooperation.
- Relations are defined in the Specifications taking into consideration the best interest of both parties in the contract.
- Establish a cooperative and collaborative working relationship.

Engineer Relations with the Contractor

- A well established working relationship helps to improve the quality and lessen the potential for unresolved contractual issues.
- Relations between the contractor and the inspection staff should be fair, firm, courteous, and based on sound judgement using the guidance of the specification requirements.

Consultant Engineering & Inspection

- May be limited to providing professional advice to the governing body.
- May include project level engineering and/or inspection responsibilities.

Consultant Engineering & Inspection

- The project **administrator** will **always** be an employee or elected official of the governing body (MUST be a full time public employee).
- The project administrator shall evaluate the consultant's performance for use in the selection process for future project services.

Chapter 3 – General Inspection

- The quality of the finished product generally reflects the quality of the inspection performed.
- The inspector must avoid supervising the contractor's work operations or performing any other activity that could be construed as a responsibility of the contractor.

Inspection Responsibilities

- **Plan Familiarity**

- An inspector should become thoroughly familiar with project plans, specifications, special provisions, and standard road plans that apply to the work being inspected. The inspector must be capable of recognizing if the work being inspected conforms with the contract requirements.

Inspection Responsibilities

- **Work Done Without Inspection**
 - Good inspection practices include developing a working arrangement with the contractor that allows for being at the right place at the right time for prompt and adequate inspection.

Inspection Responsibilities

- **Contract Compliance**

- All materials furnished and work performed by the contractor are in compliance with contract requirements.
- Contractor's operations must be observed and appropriate tests and measurements must be performed to determine the progress and the quality of work.

Inspection Responsibilities

- **Unacceptable Work**
 - Unacceptable work should be recognized early and reported to the contractor.

Inspection Responsibilities

- **Testing**

- Materials quality tests should be performed expeditiously and carefully.
- Test failures should be promptly reported.
- The inspector should notify the contractor of failures or when materials are rejected before being incorporated into the work.

Inspection Responsibilities

- **Daily Diary**

- The inspector's daily diary should include a record of:
 - the day's happenings,
 - contractor activity on the project,
 - instructions given the contractor,
 - and extra work order agreements made.
- Daily diaries can assume legal importance.

Inspection Responsibilities

- **Authority**

- The inspector has the authority to reject materials or suspend work if the quality of either is in dispute with the contractor.
- Settlement of a dispute is decided by the project engineer.

SUPERVISION BY SUBCONTRACTOR

- [Specification 1105.05](#)
- Requires an authorized, knowledgeable, and experienced superintendent to be the prime contractor's representative any time work is being performed.

CONSULTANT PLAN ERRORS

- Any project costs on IDOT projects resulting from plan errors, such as the removal and reconstruction of an item built according to an erroneous plan, should be reported to the Office of Construction and Materials for recovery from the consultant.
- County and city engineers should apply this same philosophy to errors in plans by consultants they hire.

REMOVING MATERIALS FROM PROJECTS

- Contracting authority personnel are not allowed to remove any construction related materials from a project, during or after work hours, for any reason other than official sampling and testing.
- Such actions could be misconstrued by the public as accepting favors from a contractor or private use of public property.

SALVAGED PROJECT MATERIALS REPORTING

- The “Salvaged Project Materials” form ([App 3-1](#)) should be used to document the materials.

SALVAGED PROJECT MATERIALS

Project Number: _____

Date: _____

Contractor: _____

Contract ID Number: _____

Item Description	Units	Item Quality	Inspector Initials	Receiver Initials

Delivered To: _____
(Location)

(Name)

Delivered By: _____
(Cost Center Name & Number)

Received By: _____
(Name)

Distribution: Project File
Area Maintenance Manager

NOTICE OF SUSPENSION OR RESUMPTION OF WORK

- The "Notice of Suspension or Resumption of Work" (Form 810036) shall be used to order a contractor to suspend work because of violation of specifications or a dispute regarding the quality of materials or manner of performing the work.



NOTICE OF SUSPENSION OR RESUMPTION OF WORK

Contractor _____ County _____
Contract I.D. _____ Project No. _____

SUSPENSION OF WORK

In accordance with Section 1105, you are hereby notified to suspend operations on the above referenced project because:

effective on: _____ until further notice.

Signature of Contracting Authority's Representative

Date

RESUMPTION OF WORK

You are hereby notified that since the conditions causing the suspension of work no longer exist, you are allowed to resume operations on _____ and the charging of working days will resume.

Signature of Contracting Authority's Representative

Date

MATERIALS QUALITY ASSURANCE PROGRAM

- [Materials IM 205](#) establishes a framework for the Quality Assurance Program describing how the quality of materials will be determined.

QUALITY CONTROL (QC) TESTS

- QC tests are typically run by a contractor or supplier.
- They are the means by which the contractor/supplier control the quality of their work.

VERIFICATION TESTS

- Typically run by the owner, and they either serve as:
 - The owner's acceptance test or
 - Provide a means to validate contractor's QC test results when used in the acceptance decision.
- Price adjustments may be assessed for deficient materials based on verification tests or QC tests when used in the acceptance decision.

INDEPENDENT ASSURANCE TESTS

- Insure that proper sampling and testing procedures, personnel, and equipment are being used for both QC and verification sampling and testing.
- IA test results are **never** to be used in the acceptance decision.

IM 204

- Identifies the required sampling and testing rates to comply with the Quality Assurance Program.
- All sampling and testing rates are minimums.

PLANT MONITOR

- Agency Employee
- **MUST** be a certified technician for the type of work involved.

QUALITY MANAGEMENT - ASPHALT (QM-A)

- The contractor is also required to design and submit their own mix designs for agency approval.
 - MUST be done by a Certified Asphalt Mix Designer.
- At the plant, the contractor is required to analyze and control mix production properties through frequent field testing, based on specified gyratory mix design criteria.
 - MUST be done by a Certified Asphalt Plant Inspector.

CERTIFIED PLANT INSPECTION FOR HMA

- Will apply to items of work as defined in [*Specification 2521.03*](#).
 - Certified plant inspection will be required for Interstate, Primary, state park, and institutional projects.
 - It will apply to other projects only when designated.

QUALITY ASSURANCE FOR PORTLAND CEMENT CONCRETE (PCC) PAVING

- [IM 527](#) describes the plant inspection (Quality Control) requirements that a contractor must follow for a PCC Paving plant.
- [IM 535](#) describes the plant monitoring (Verification) responsibilities for a PCC Paving plant.
- A list of all verification and IA responsibilities for PCC paving can be found in [Appendix 3-2](#)

PCC Paving Verification Responsibilities

Duty	Task	Performed By/ Required Cert	Minimum Frequency
1. Sample and test aggregate gradations (Fine, Coarse, and Intermediate)	<ul style="list-style-type: none"> •Obtain independent sample per Materials IM 301. •Test per Materials IM 302 and 306. 	Construction Sampling AGG I Testing - AGG II	Sample 1/day Test 1st day and 1/week (QM-C Test 1st day and 2/week)
2. Verify aggregate quality.	•Obtain independent sample and submit to Central Materials (Coarse and Intermediate).	Sampling - District Materials AGG II	1/100,000 square yards
		Testing - Office of Materials	
3. Verify cementitious.	•Obtain independent sample and submit to Central Materials (Portland Cement, Fly Ash, and Ground Granulated Blast Furnace Slag).	Sampling - District Materials PCC II	1/100,000 square yards
		Testing - Office of Materials	
4. Verify admixtures.	•Obtain independent samples and submit to Central Materials.	Sampling - District Materials PCC II	1/producers lot
		Testing - Office of Materials	
5. Verify air, Plastic	<ul style="list-style-type: none"> •Sample per Materials IM 327. •Test per Materials IM 318. 	Construction PCC I	1/700 cubic yards - Central Batch
			1/100 cubic yards - Ready Mix
6. Slump, Hand Finish or Std. Fixed Form Only	<ul style="list-style-type: none"> •Sample per Materials IM 327. •Test per Materials IM 317. 	Construction PCC I	1/700 cubic yards - Min. 1/pour

QUALITY ASSURANCE FOR PORTLAND CEMENT CONCRETE (PCC) PAVING

- Test beams for determining flexural strengths are to be transported from the grade to the plant site by contracting agency personnel.

QUALITY ASSURANCE FOR READY MIX CONCRETE

- [*IM 528*](#) describes the plant inspection (Quality Control) requirements that a contractor must follow for a PCC Ready Mix plant.
- [*IM 535*](#) describes the plant monitoring (Verification) responsibilities for a PCC Ready Mix plant.
 - [*Appendices B and C in IM 535*](#) list the minimum monitoring requirements.
- A list of all verification and IA responsibilities for Ready Mix Concrete can be found in [*Appendix 3-3*](#).

PCC Structures Verification Responsibilities

Duty	Task	Performed By/ Required Cert.	Minimum Frequency
1. Sample and test aggregate gradations (Fine, Coarse, and Intermediate)	<ul style="list-style-type: none"> •Obtain independent sample per Materials IM 301. •Test per Materials IM 302 and 306. 	Construction Sampling AGG I Testing - AGG II	Sample 1st day & 1/week Test 1st day & 20% of samples S & T 1/deck pour
2. Verify aggregate quality.	•Obtain independent sample and submit to Central Materials (Coarse and Intermediate).	Sampling - District Materials AGG II	Ready Mix/Central Batch 1/1000 cubic yards
		Testing - Office of Materials	Mobile Mixer - 1/project
3. Verify cementitious.	•Obtain independent sample and submit to Central Materials (Portland Cement and Ground Granulated Blast Furnace Slag).	Sampling - District Materials PCC II	1/1000 cubic yards
		Testing - Office of Materials	
4. Verify admixtures.	•Obtain independent samples and submit to Central Materials.	Sampling - District Materials PCC II	1/producers lot
		Testing - Office of Materials	
5. Verify air, Plastic	<ul style="list-style-type: none"> •Sample per Materials IM 327. •Test per Materials IM 318. 	Construction PCC I	Ready Mix/Central Batch 1/30 cubic yards
			Mobile Mixer - 1/100 square yards
6. Verify slump	<ul style="list-style-type: none"> •Sample per Materials IM 327. •Test per Materials IM 317. 	Construction PCC I	Ready Mix/Central Batch 1/30 cubic yards
			Mobile Mixer - 1/project

QUALITY ASSURANCE FOR READY MIX CONCRETE

- Test beams for determining flexural strengths are to be transported from the grade to the plant site by contracting agency personnel.
- The certified plant inspector is responsible for curing and storage of the beams.
- Contracting agency personnel are responsible for testing and reporting results.

QUALITY ASSURANCE FOR ASPHALT PAVING

- [IM 508](#) describes the plant inspection (Quality Control) requirements that a contractor must follow for an asphalt paving plant.
- [IM 511](#) and [IM 511 - Appendix A](#) describe the plant monitoring (Verification) responsibilities and minimum monitoring requirements for an asphalt paving plant.
- A list of all verification and IA responsibilities for asphalt paving can be found in [Appendix 3-4](#).

Asphalt Mixture Verification Responsibilities			
Duty	Task	Performed By / REQ'D. CERT.	Minimum Frequency
1. Verify Aggregate Gradation.	<ul style="list-style-type: none"> Direct and witness contractor sampling and splitting of cold feed combined aggregate. Secure and identify split sample for delivery to District Lab or take possession of split sample. 	Construction HMA SAMPLER & AGG. I	First Day and Weekly Thereafter
	<ul style="list-style-type: none"> Test combined aggregate sample for gradation. Compare results to contractor test results per IM 216. Report validation results. 	District Materials or Construction AGG. II	First Day and Weekly Thereafter
	<ul style="list-style-type: none"> Investigate validation issues. 	District Materials	As Needed
2. Verify Aggregate Quality.	<ul style="list-style-type: none"> Obtain independent sample. Send sample to Office of Materials with documentation. 	District Materials AGG. I	1/20,000 Tons
3. Verify Asphalt Binder Quality.	<ul style="list-style-type: none"> Direct and witness contractor sampling of asphalt binder. Secure and identify sample for delivery to District Lab. 	Construction HMA SAMPLER	1/Day
	<ul style="list-style-type: none"> Test asphalt binder samples on DSR. Report binder test results. 	District Materials	First Day then 1/Week
	<ul style="list-style-type: none"> Obtain binder sample from the pumping line with assistance from the contractor. Send sample to Office of Materials with documentation. 	District Materials HMA SAMPLER	1/20,000 Tons

4. Verify Uncompacted Mixture Properties.	<ul style="list-style-type: none"> • Select random sample locations. • Direct and witness contractor paired sampling of uncompacted mix as per IM 322 and IM 511. • Secure and identify one of each paired sample for delivery to District Lab. 	Construction HMA SAMPLER	1/Sublot
	<ul style="list-style-type: none"> • Randomly select paired sample for testing. • Test selected sample for required mix properties. • Compare results to contractor test results per IM 216. • Report validation results. 	District Materials HMA I	Asphalt Mixture Properties: 1/Day Extracted Gradation: First Day and 20% Thereafter
	<ul style="list-style-type: none"> • Investigate validation issues. 	District Materials	As Needed

Asphalt Mixture Verification Responsibilities

Duty	Task	Performed By / REQ'D. CERT.	Minimum Frequency
5. Verify Compacted Pavement Properties.	<ul style="list-style-type: none"> • Select random sample locations. • Direct and witness contractor coring. • Inspect cores for damage and thickness and direct replacement coring of damaged or unusable cores. • Take possession of cores and transport to the contractors lab or secure core samples if contractor is transporting the cores. • Measure cores for thickness. • Test cores for density and record weights. • Provide copy of thickness and weights to contractor for reporting. 	Construction HMA SAMPLER	8 Mat Cores/Lot 0, 2 or 3 Joint Cores / Lot (based on matched length)
	<ul style="list-style-type: none"> • Select random sections for smoothness testing. • Perform independent smoothness testing. • Compare results to contractor test results per IM 216. • Report validation results. 	District Materials PROFILOMETER	10% of Project
	<ul style="list-style-type: none"> • Investigate validation issues. 	District Materials	As Needed

QUALITY ASSURANCE FOR ASPHALT PAVING

- A plant monitor will normally be assigned to each project with duties split between plant and grade inspection.
- Core samples for determining asphalt pavement density (field voids) are transported from the grade to the plant site by contracting agency personnel (non-agency personnel may transport with tamper-proof identification/security measures in place).

QUALITY ASSURANCE FOR ASPHALT PAVING

- Agency personnel (plant monitor or project inspector) are responsible for performing the density testing and reporting results.
- The project inspector will also be providing production and placement information to be entered on the daily plant report.

PLANT REPORTS

- On QM-A projects, the contractor shall deliver a copy of the Daily Plant Report and Daily Production Summary Sheet to the District Materials Engineer on a daily basis.

DOCUMENTATION

- A separate field book should be set up on each PCC project to document plant inspection.
- It is important to document discrepancies and corrective action taken by the contractor.

DOCUMENTATION

- A copy of this documentation must be furnished to the District Materials Engineer (DME) at the time of project acceptance.
- A sample format for providing this documentation is contained in [Appendix 3-6](#).

SPECIFICATION VIOLATIONS

- Failing test results are to be recorded on the daily plant report by the plant inspector.
- Verbal notification of such failing results shall precede completion of paperwork to assure timely changes.

SPECIFICATION VIOLATIONS

- The plant monitor will convey to the responsible project inspector all specification violations, discrepancies in results with the plant inspector, and improper procedures and equipment used by the plant inspector.
- The project inspector will issue noncompliance notices for failing test results and inadequate testing procedures or equipment.

SAMPLES

- Verification samples are to be taken by agency personnel or by contractor personnel when directed and witnessed by agency personnel.
- [Materials IM 204](#) will indicate when contractor sampling assistance is required.

MEASUREMENT OF PAY QUANTITIES

- Measurements in the units prescribed in the specifications shall be entered directly in the proper field book.
- Each entry must include the date, type of work covered, location, proper measurements, and extensions.
- Names of each inspector making measurements must be included.

MEASUREMENT OF PAY QUANTITIES

- Each entry shall close with the signature of the individual who makes the entry.
- The location should be accurately identified by means of station numbers, right or left side, pier number, etc.

MEASUREMENT OF PAY QUANTITIES

- Computation of areas, volumes, or lengths should be checked by a different inspector using the figures entered in the field book.
- All checks are to be initialed by the inspector making this verification.

MEASUREMENT OF PAY QUANTITIES

- Scale tickets are to be authenticated by an inspector or weighmaster at the point of weighing and again at the point of delivery at the job site by the project inspector.

RETENTION OF RECORDS

- Typically, project records are to be retained for three years after FHWA reimbursement on Federal-Aid projects and three years after final payment on non-Federal Aid projects.
- The required retention periods are minimums and may be increased.

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FIELD TESTING ON CONSTRUCTION PROJECTS

- All sampling, measuring, and testing for construction project acceptance shall be performed as prescribed in Materials I.M. 204.
- *Materials I.M. 204* shows the minimum required frequency of tests for various types of work.

"NONCOMPLIANCE NOTICE" (FORM 830245)

- Test results and work performed on contract items falling outside specification limits will be reported by the project inspector on a "Noncompliance Notice" (Form 830245).
 - Original copy will be immediately delivered to the contractor.
 - Copy retained by the inspector for project files.
- Inspector should also immediately advise the project engineer.

INDEPENDENT ASSURANCE SAMPLING AND TESTING

- *Materials I.M. 205*
 - QUALITY ASSURANCE PROGRAM FOR CONSTRUCTION - OVERVIEW & DESCRIPTION
 - Discusses the requirements of the Independent Assurance Program (IAP).

EVALUATION OF TEST RESULTS

- *Specification 1105.04* requires project engineers to determine if project work is acceptable and within reasonably close conformity with contract documents.

HAULING OF MATERIALS AND MOVEMENT OF CONSTRUCTION EQUIPMENT

- *Specification 1105.11* requires all hauling units delivering equipment or materials to the project to be legal weight loads and/or have appropriate hauling permits.

HAULING ON CLOSED ROADS

- On projects closed to general traffic, if hauling of overweight axle loads on pavements and structures occurs, a non-compliance notice should be prepared.
- If overweight hauling continues, work on the project should be ordered to be suspended.

HAULING ON ROADS OPEN TO GENERAL TRAFFIC

- On projects where overweight hauling occurs on roads open to general traffic, the contractor should be advised that if no action is taken to correct the loads, the Office of Motor Vehicle Enforcement will be notified.

ALLOWANCES TO AXLE LOAD LIMITS

- Truck Hauling
 - Covered by Iowa Code 321.463 subsection 7
- Trucks with retractable axles
 - Additional axles allow increased hauling capacity when in the lowered position.
 - They must be raised to operate in reverse and to maneuver within the work zone.

ALLOWANCES TO AXLE LOAD LIMITS

- Trucks with retractable axles (Continued)
 - Unless otherwise approved by the Engineer, legal loads or restricted loads, as applicable for posted limits, will be required *on bridges*.
 - **The allowance for retractable axles does not apply for operating on a bridge, even if it is within the construction project.**

ALLOWANCES TO AXLE LOAD LIMITS

- Movement of Construction Equipment
 - Administrative rule allows construction equipment with axle weights greater than 20,000, but less than 36,000 pounds, to operate on pavements for the purpose of moving equipment.
 - This allowance is intended only for moving of empty equipment.

ALLOWANCES TO AXLE LOAD LIMITS

- Movement of Construction Equipment Across Bridges
 - Requests for crossing bridges with non-legal load equipment shall be submitted to the Office of Bridges & Structures – Bridge Rating Engineer for review and approval.
 - The request must be for empty equipment.

ALLOWANCES TO AXLE LOAD LIMITS

- Movement of Construction Equipment Across Bridges
 - Requests for crossing bridges with non-legal load equipment shall be submitted to the Office of Bridges & Structures – Bridge Rating Engineer for review and approval.
 - The request must be for empty equipment.

WEIGHING EQUIPMENT FOR PAY QUANTITIES

- *Specification 2001.07* describes equipment and procedures to be used when payment for an item of the contract is based on actual weight.
- Weight Tickets
 - The contractor shall provide a weight ticket for each load showing the required weight information for the procedure being used, the project number or contract description, the truck number, the date, and the type of material.

AUTOMATIC OR SEMI-AUTOMATIC WEIGHING

- For weigh hoppers, batch scales, or silos on load cells, all tickets printed automatically shall include:
 - The gross weight,
 - Empty weight of the hopper or weight not discharged,
 - Net weight of material for each drop,
 - And the total net weight for the load.

AUTOMATIC OR SEMI-AUTOMATIC WEIGHING

- For batch scales:
 - The batch weight and batch count are to be automatically printed under both procedures.
 - The total net weight may be printed with a system or calculated by a weighmaster with a semi-automatic system.

AUTOMATIC OR SEMI-AUTOMATIC WEIGHING

- For truck platform scales, all scale tickets printed automatically shall include:
 - Gross weight,
 - Tare weight of the truck,
 - And net weight of the load.

AUTOMATIC OR SEMI-AUTOMATIC WEIGHING

- For truck platform scales with semi-automatic weighing:
 - The printer shall print the gross weight,
 - The weighmaster shall conduct all weighing,
 - And may enter by hand or by printer the tare weight of the truck
 - And calculate the true net weight.

MANUAL WEIGHING

- For manual weighing of loaded trucks (project quantities less than 10,000 tons):
 - Scale equipment on truck platform scales may or may not include a mechanical ticket printer.
 - A weighmaster shall include the gross and tare weights and calculate the net weight on the scale ticket.
 - The engineer may arrange for weighing to be witnessed.

SCALE TICKETS

- The inspector will:
 - Sign or initial the scale ticket for each accepted load to verify the material was delivered and
 - Accumulate the tickets on a daily basis for determination of pay quantities.
- Quantities for each day's operation shall be:
 - Totaled and checked against the contract records
 - And any discrepancy promptly resolved.

TRUCK PLATFORM SCALE APPROVAL

- Scales for weighing loaded trucks shall meet the requirements of the Iowa Department of Agriculture.
- Permanent scales, so inspected, have an official stamp conspicuously displayed.
- Temporary scales, so inspected, have the same official stamp.
 - It is effective for 90 days at the same location.
 - Shall expire when the scale is moved.

VERIFICATION WEIGHING

- A **second weighing** of the same load on the **same** scale,
- Applies **only** to truck platform scales.
- At least one verification weighing should be made daily when the pay quantity is weighed on truck platform scales.
- **Verification** weighings are made to determine the **repeatability** of truck platform scales.
- The verification weight **should not be different from the initial weight by more than 0.1%**.

CHECK WEIGHING

- A second weighing of the same load on **another** certified truck platform scale.
- **Check weighing** is used to determine **accuracy**.
- When running check weighings of weigh hoppers, load cells, or batch weight tickets need:
 - Tare weight of the truck
 - May need to consider a suitable fuel adjustment.

CHECK WEIGHING

- Platform Scales
 - No more than **0.3%** difference between the two weights.
- Weigh Hoppers, Batch Scales, and Silos on Load Cells
 - No more than **100#** difference.

CHECK WEIGHING

- One check weighing should be performed on the first day of asphalt mixture production or aggregate weighing.
- One additional random check weighing should be performed for project quantities exceeding 5,000 tons.
- For true verification and check weighing, selection of **random loads** shall be done without advance warning to the contractor.

SCALE CHECKS FOR SENSITIVITY

- **Batch Scale, Hopper Scale, and Load Cells**
 - The sensitivity should be checked at least once during a normal working day by placing a weight equal to **one-tenth percent the batch weight** on the fully loaded scales and **observing the movement of the indicator**.
 - A properly sensitive scale will exhibit a visible indicator movement when so tested.

SCALE CHECKS FOR SENSITIVITY

- **Truck Platform Scales**

- Each scale should be checked for sensitivity initially **at calibration** (0.1 percent of the quantity being weighed) and observe movement

SCALE CHECKS FOR SENSITIVITY

- **Truck Platform Scales**

- At least once each working day (HMA)
- At least twice each working day (PCC)
- Carefully balance the scale, then **observe if movement** of the equilibrium indicator **is discernible** upon application of a weight equal to **one of the minimum gradations but not more than 20 pounds**.

TRUCK PLATFORM SCALE USE

- Each truck to be weighed shall be tared daily.
- Taring of trucks should be on a random basis
 - during the day's operation,
 - using the previous day's tare weight until a new tare weight for that day is determined.
- No truck may be used for hauling material paid for on a weight basis until tared.

WEIGHMASTER'S OATH

- A weighmaster must sign an oath.
 - A copy of the "Oath of Weighmaster" is included in *Appendix 3-8*.

WEIGHMASTER RESPONSIBILITIES

- The weighmaster must be the person actually operating the weighing and recording equipment.
- Shall include on the scale ticket:
 - Tare weight and
 - Calculated true net weight.
- The weighmaster shall sign the ticket for the first weighing each day and initial subsequent tickets.

WEIGHMASTER RESPONSIBILITIES

- The project engineer may arrange for weighing to be witnessed.
- If witnessed, the witness will also initial the ticket.

OATH OF WEIGHMASTER

POST IN CONSPICUOUS PLACE NEAR SCALE

Iowa Department of Agriculture
Bill Northey, Secretary
Weights & Measures Bureau

214.6 Oath of weighmasters.

All persons keeping public scales, before entering upon their duties as weighmasters, shall be sworn before some person having authority to administer oaths, to keep their scales correctly balanced, to make true weights, and to render a correct account to the person having weighing done.

214.7 Registers.

Weighmasters are required to make true weights and keep a correct register of all weighing done by them, giving the amount of each weight, date thereof, and the name of the person or persons for whom done, and give, upon demand, to any person having weighing done, a certificate showing the weight, date and for whom weighed.

214.8 Penalty.

Any weighmaster violating any of the provision of sections 214.6 and 214.7, shall be guilty of a simple misdemeanor and be liable to the person injured for all damages sustained.

STATE OF IOWA

County of _____

I, _____ being first duly sworn on my oath,
(type or print)

depost and say that I will perform my duties as WEIGHMASTER for the

Company: _____ City: _____, Iowa,
to the best of my ability, that I will keep my scales correctly balanced, that
I will record true weights, and that I will render a true and correct account
to the person having weighing done.

Subscribed and sworn to before me by: _____
Weighmaster's signature
this _____ day of _____.

Notary Public in and for

County

_____, Iowa

Non Transferable. Send original to:

Weights & Measures Bureau
2230 South Ankeny Blvd.
Ankeny, IA 50023-9093
515-725-1492

WEIGHMASTER RESPONSIBILITIES on PLATFORM SCALES

- Establish daily tare weights of all delivery vehicles.
- Tare weights will be established at random times throughout the day as directed by project inspection personnel.
- All tare weights will be provided to the engineer on request.

WEIGHMASTER RESPONSIBILITIES on PLATFORM SCALES

- When weighing in trucks:
 - The weighmaster shall enter the truck tare weight by hand or
 - This information can be printed out and entered directly to the automatic weigh recorder.

SMOOTHNESS TESTING

- *Pavement Smoothness* evaluation requirements are included in *Specifications 2316 and 2317*.
- Pavement smoothness requirements for Primary and Interstate projects are included in *Specification 2317*.
- Specification 2316 should apply to all other projects when *Specification 2317* does not apply.
- *Specification 2428* includes smoothness specifications for bridge decks and bridge deck overlays.

SMOOTHNESS TESTING ROADWAYS

- Any pavement and bridge deck areas carrying traffic, but excluded from profilogram index calculation, must be checked for high points and low points with deviations in excess of 0.5 inches in a length of 25 feet.
- All bumps exceeding 0.5 inches in these excluded areas are to be corrected.
- In addition, all dips exceeding 0.5 inches in pavement surfaces are to be corrected.

SMOOTHNESS TESTING BRIDGES

- Dips in bridge decks, deck overlays, bridge approaches, and approach overlays are to be corrected when required by the Engineer.
- Must consider that grinding to correct a dip and the potential loss of concrete cover over the top mat of deck reinforcing).
- A price adjustment of \$900 will be assessed for each dip that is not corrected.