

Construction Inspection/ Using ATTS courses in curriculum

M-TRAC discussion

Construction Inspection



Purposes and Objectives

- **Quality Assurance:** To ensure that construction work adheres to approved plans, specifications, and established quality standards. This includes materials, workmanship, and overall project execution.
- **Safety Compliance:** To verify that construction practices and work zones meet all applicable safety regulations for workers and the public.
- **Contract Compliance:** To confirm that contractors fulfill all contractual obligations, including timelines, materials, and methods.
- **Fiscal Responsibility:** To ensure efficient use of public funds by preventing waste, fraud, and mismanagement, and verifying quantities of work completed for payment.
- **Public Safety and Durability:** Ultimately, to deliver a safe, durable, and functional transportation infrastructure for the public.

Key Responsibilities of State DOT Construction Inspectors

- **On-site Monitoring:** Regularly inspecting construction activities to observe progress, identify potential issues, and ensure compliance with plans and specifications.
- **Material Testing and Verification:** Overseeing or conducting tests on construction materials (e.g., asphalt, concrete, aggregates, soils) to ensure they meet specified quality and strength requirements. This often involves working with certified technicians.
- **Documentation and Record Keeping:** Maintaining detailed daily logs, reports, and photographic evidence of work performed, materials used, equipment on-site, weather conditions, and any deviations or issues encountered. These records are crucial for project management, payment, and potential dispute resolution.
- **Interpretation of Plans and Specifications:** Thoroughly understanding and interpreting construction plans, blueprints, and contractual documents to ensure accurate execution.

Key Responsibilities of State DOT Construction Inspectors

- **Issue Identification and Resolution:** Identifying non-compliant work, safety hazards, or other problems, and working with contractors and project engineers to resolve them in a timely and effective manner. This may include issuing violation notices or stop-work orders if necessary.
- **Measurement and Quantity Verification:** Verifying the quantities of work completed by contractors for payment purposes.
- **Communication and Coordination:** Communicating effectively with contractors, engineers, project managers, and other stakeholders to ensure clear understanding and smooth project flow.
- **Change Order Review:** Participating in the review and documentation of any necessary change orders to the original contract.
- **Post-Construction Inspections:** Conducting final inspections to ensure all work is completed to satisfaction and addressing any warranty period issues.

Areas of Construction Inspection

- **Earthwork:** Grading, excavation, embankment, compaction.
- **Pavement:** Hot-mix asphalt (HMA), Portland Cement Concrete (PCC) – including subgrade, base course, and surface courses.
- **Structures:** Bridges (foundations, substructure, superstructure, decks), culverts, retaining walls, noise walls, overhead sign structures.
- **Drainage Systems:** Storm drains, sanitary sewers, culverts, inlets.
- **Utilities:** Coordination and inspection of utility relocations or installations.
- **Traffic Control and Safety:** Work zone traffic management, signage, temporary barriers, lighting.
- **Erosion Control:** Implementation and maintenance of erosion and sediment control measures.
- **Roadway Features:** Guardrails, fencing, lighting, signals, pavement markings.

Training and Certification

- Many state DOTs require their construction inspectors to undergo specific training and obtain certifications (e.g., through programs like NICET - National Institute for Certification in Engineering Technologies) to demonstrate competency in various construction disciplines and inspection techniques. These certifications often cover areas like:
 - Highway construction inspection levels (I, II, III, IV)
 - Asphalt and concrete testing
 - Soils and aggregate testing
 - Bridge inspection

Construction Field Inspection – Iowa DOT

Grading Field Inspection

Topics covered include:

- *Soils classifications and properties.*
- *Soil compaction.*
- *Erosion and sediment control.*
- *Drainage.*
- *Stabilization methods.*

Construction Field Inspection – Iowa DOT

HMA Paving Field Inspection

Topics covered include:

- *Inspector's role in the construction of HMA pavements.*
- *Equipment and processes used in HMA delivery, placement and compaction operations.*
- *Identify specification requirements and recommended practices to ensure quality and minimize problems during construction.*
- *Recognizing problems and offering possible solutions.*

Construction Field Inspection – Iowa DOT

PCC Paving Field Inspection

Topics covered include:

- *Basics of PCC paving mixtures.*
- *Introduction to design of PCC paving projects.*
- *Introduction to PCC paving equipment and processes.*
- *Introduction to PCC paving inspection and documentation.*

Construction Field Inspection – Iowa DOT

Structures Field Inspection

Topics covered include:

- *Roles of inspector and contractor in the construction process.*
- *Bridge & culvert components, function, and design intent.*
- *Bridge & culvert types and structural elements.*
- *Bridge & culvert survey, foundations, forming, reinforcing steel, concrete testing/placement/curing, and important dimensional checks.*

Contract Administration – Iowa DOT

Module 1- Contract Administration Introduction

- Very Basic Course (1 Day)

Module 2 – Navigating Contractual Elements

- Field Inspection focused (2 Day)
- Contract Review and Preparation, Documentation, Compliance monitoring, Payment administration, Closeout procedures

Module 3 – Davis Bacon (payrolls, etc.)

- Office Staff focused (1 Day)
- Understanding DBE, Payroll checking, EEO

Module 4 – Materials/Audit

- All Staff (2 Day)
- What it takes to finalize a project

AASHTO Technical Training Solutions (ATTS)

A host of training available related to construction inspection activities.

Just a few examples:

- Construction Inspector Orientation
- Fundamentals of Digital Construction Inspection
- Understanding Materials Testing for Inspectors
- HMA and PCC Paving Field Inspection courses
- Construction Inspection of Structures series
- Introduction to e-Construction
- Change Orders, Claims, and Dispute Resolution
- Plan reading series