STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
CONSTRUCTION DIVISION

CONSTRUCTION MANUAL

2021

NEVADA DOT
SAFE AND CONNECTED

U.S. Department of Transportation
Federal Highway Administration

Nevada Division

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October 6, 2017

In Reply Refer To:

HFO-NV

Mr. Rudy Malfabon
Director, Nevada Department of Transportation
1263 South Stewart Street
Carson City, Nevada 89712

Attention: Sharon Foerschler, Chief Construction Engineer

Subject: NDOT Construction Manual

Dear Mr. Malfabon:

In accordance with the FHWA/NDOT Stewardship and Oversight Agreement, dated May 2015, I am providing FHWA's approval of the Nevada Department of Transportation's May 2017 Construction Manual.

This was a significant revision of the NDOT Construction Manual and the new format should aid the construction staff at NDOT. Please inform FHWA when any revisions are made to the updated Construction Manual.

Sincerely,

Dale D. Wegner, Jr. P.E.
Bridge Engineer

ec: Susan Klekar, FHWA
Greg Novak, FHWA
Jacob Waclaw, FHWA

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INTRODUCTION

This chapter contains the following sections:

OVERVIEW

ABOUT THIS MANUAL

The purpose of this document is to:

- Establish construction program guidelines to maintain compliance with Title 23 Code of Federal Regulations (CFR) and state regulations to implement and execute the provisions of Federal law relating to the administration of Federal aid for highways.
- Establish and maintain consistency in the statewide construction program.
- Guide Construction Field Crews and the Construction Division in administering the contract and ensuring the quality of construction.
- Communicate the policies of the Construction Division to meet the requirements of Transportation Policy (TP) 1-8-1(Construction Division Policy).
- Outlines the interaction of key stakeholders throughout the contract life-cycle.
- Serve as a training resource in order to provide statewide consistency in all aspects of the construction process.

This manual is divided into the following chapters:

1. Introduction
2. Contract Administration
3. Surveying
4. Sampling and Testing
5. Inspection

This manual should be easily read and understood by anyone with a fundamental understanding of NDOT's construction process. In conjunction with related documentation and supplemental training, this manual will serve as a framework for administering NDOT contracts.

The Construction Manual does not address every phase, process or event throughout the contract/project lifecycle in detail, nor will it replace good engineering judgment. References to documents and/or related resources are provided throughout this manual where necessary or applicable.

CONVENTIONS USED IN THIS MANUAL

References in this manual include the following:

- "The Department": the Nevada Department of Transportation (NDOT).
- "Project": The lifecycle of an NDOT project up until it is advertised.
- "Contract": The lifecycle of an NDOT project upon advertisement.
- "Standard Specifications": NDOT's *Standard Specifications for Road and Bridge Construction*. (This includes "Special Provisions", unless otherwise stated.)
- "Standard Plans": NDOT's *Standard Plans for Road and Bridge Construction*.
- "Project plans": Plans, as defined in Subsection 101.03, "(Terms and Conditions) Definitions", of the Standard Specifications, specific to the contract/project.
- "Special Provisions": Specifications specific to the contract/project.
- "Contract documents": All documents identified under "Contract" in Subsection 101.03, "(Terms and Conditions) Definitions",

of the Standard Specifications.
- "AWP": AASHTOWare Project Construction & Materials™ electronic documentation web-based software

The order of precedence of contract documents is:

1. Supplemental Notices
2. Special Provisions
3. Project Plans
4. Standard Specifications
5. Standard Plans

When discrepancies and/or contradictions exist within the above referenced documents occur, always follow the order of precedence to determine the governing documents. Guidelines when working with Standard Specifications, Standard Plans, Project Plans and/or Special Provisions include:

- Always verify changes to the Standard Plans and Standard Specifications by referencing the Special Provisions, Project Plans and Supplemental Notices.
- Changes to Standard Specifications in between published editions are made as Pull Sheets. When a Pull Sheet is implemented, it is included in a project's Special Provisions. (This incorporation of change in contract documents is a reason why Special Provisions take precedence over Standard Specifications.)
- Changes to Standard Plans are made as Special Details. When Special Details are implemented, they will be included in the Project Plans. (This incorporation of change in contract documents is a reason why Project Plans take precedence over Standard Plans.)
- Changes to contract documents after a project is advertised but before the bid is opened are provided in a Supplemental Notice.

UPDATES, REVISIONS TO THIS MANUAL

The Construction Division is responsible for maintaining an updated Construction Manual. The Chief Construction Engineer will revise and/or issue updates as needed. Users can request a revision to the guide in writing to the Construction Division at ndot-construction@dot.nv.gov . The Construction Division will review the request and take appropriate action. Between revisions/updates, the Chief Construction Engineer may issue interim Construction Division policy memorandums that would be incorporated into the next revision.

The Nevada Division of the Federal Highway Administration (FHWA) approves the Construction Manual and any updates/revisions in accordance with Title 23 CFR.

DISTRIBUTION OF THIS MANUAL

The latest approved version of the Construction Manual is posted on the NDOT Internet site [https://www.nevadadot.com/doing-business/about-ndot/ndot-divisions/operations/construction/construction-manual].

STATEWIDE CONSTRUCTION PROGRAM

The Department administers construction contracts in accordance with Title 23 CFR regardless of whether they are federal- or state-funded to provide uniform guidance for contract administration to all the construction crews.

In Nevada, transportation project funding can come from several sources:

- State and federal governments
- City and county governments
- Regional Transportation Commissions, such as in Clark County, Washoe County and Carson City
- Private entities

If a single project has multiple funding sources, a specific funding source may pay for only a portion of the work to be completed. For example, a roadway project may start in the City of Las Vegas and then cross the City boundary into the City of North Las Vegas. If NDOT and the FHWA participate in funding the project, each city would provide funds for work only within their city. NDOT monitors and documents the cost of work completed in specific portions of the project to ensure that each entity funds only its respective part of the project cost.

Several divisions deliver the Department's statewide construction program. The success of a construction project requires a clear understanding of each individual's role and responsibilities. The Construction Crews, District Administration, Construction Division, FHWA and all participating divisions have specific responsibilities in assuring that construction projects are completed successfully.

ORGANIZATION

Nevada law establishes the general structure of NDOT (Nevada Revised Statutes, NRS, Chapter 408). The seven-member State Transportation Board, chaired by the Governor, approves Nevada's transportation program. Elected officials and public appointees comprise the Board. The elected officials are the Governor, Lieutenant Governor and State Controller. The Governor appoints four public members: two from District 1, and one each from District 2 and District 3.

The Transportation Board appoints a Director to administer the state's transportation program. The Director appoints three Deputy Directors and four Assistant Directors that oversee the Department's divisions and districts. (See Figure 1-1.) NDOT's headquarters is located in Carson City, and the three main district offices are located in Las Vegas, Reno and Elko.

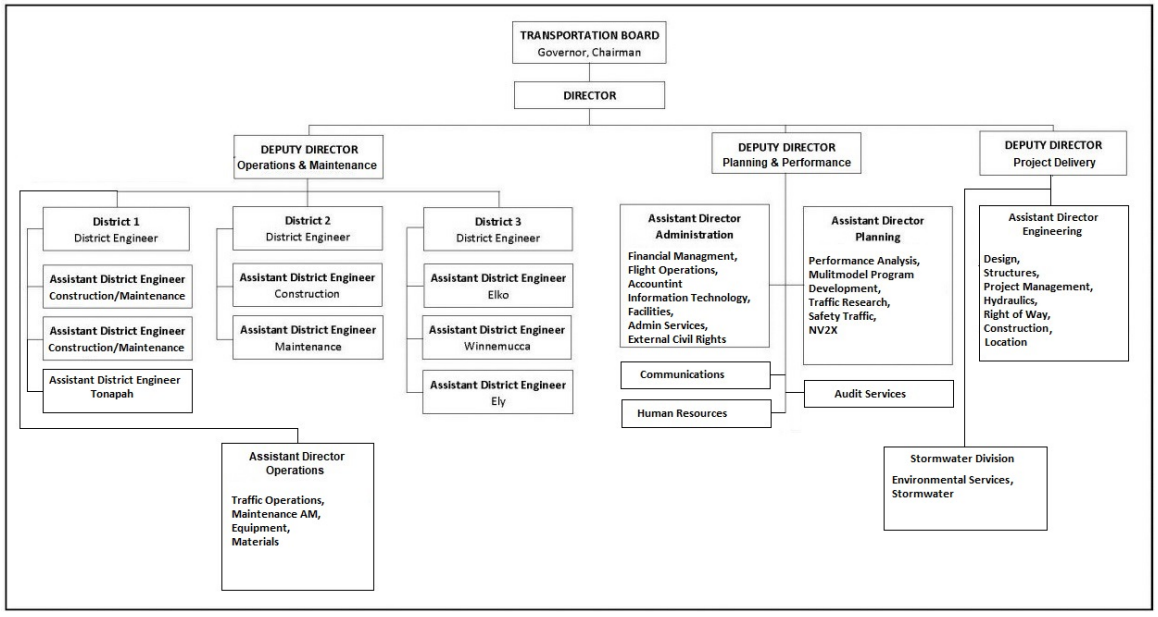

Figure 1-1: NDOT Organization Chart

DISTRICT ADMINISTRATION, CONSTRUCTION FIELD CREWS

The Department has three districts, each with a district engineer and assistant engineers. The districts are responsible for supervising all state transportation activities within their local areas.

Construction crews for each District are administered by the District Engineer and Assistant District Engineer, Construction. A construction crew typically consists of a Resident Engineer, assistant Resident Engineer, Professional Engineer, inspectors, materials testers, and a survey crew chief. The Resident Engineer is NDOT's field representative on construction projects. The Resident Engineer administers the contract, which includes monitoring and documenting the Contractor's operations. (See Figure 1-2.)

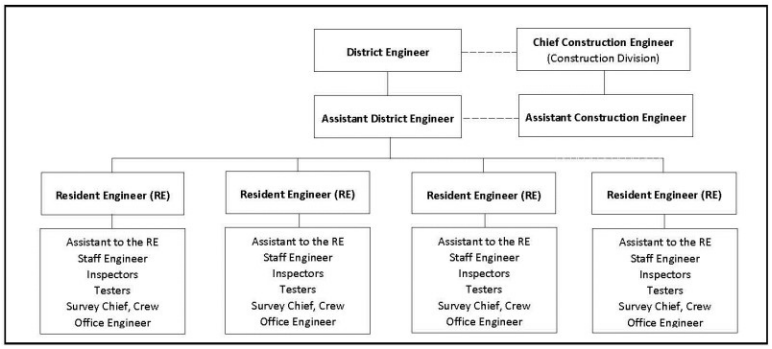

Figure 1-2: Typical District Organization Chart for Construction Crews

CONSTRUCTION DIVISION

The NDOT Director delegates various responsibilities for administering construction contracts to the Assistant Director of Operations. In turn, the Assistant Director of Operations delegates many of these responsibilities to the Chief Construction Engineer. To execute NDOT's construction program, the Construction Division is organized as shown in Figure 1-3.

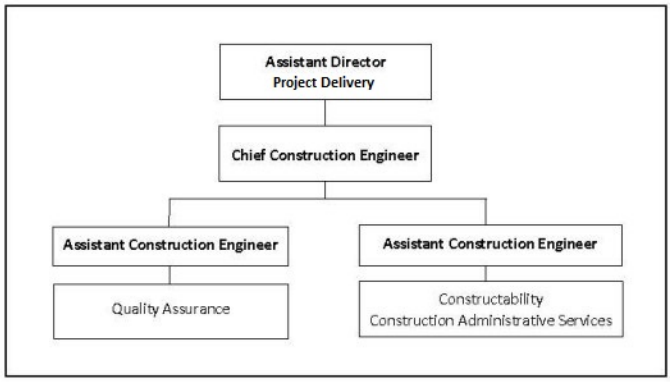

Figure 1-3: Construction Division Organization Chart

ROLES AND RESPONSIBILITIES

DISTRICT ADMINISTRATION

Three districts implement NDOT's statewide construction program. Figure 1-4 depicts the boundaries of each district and sub-district.

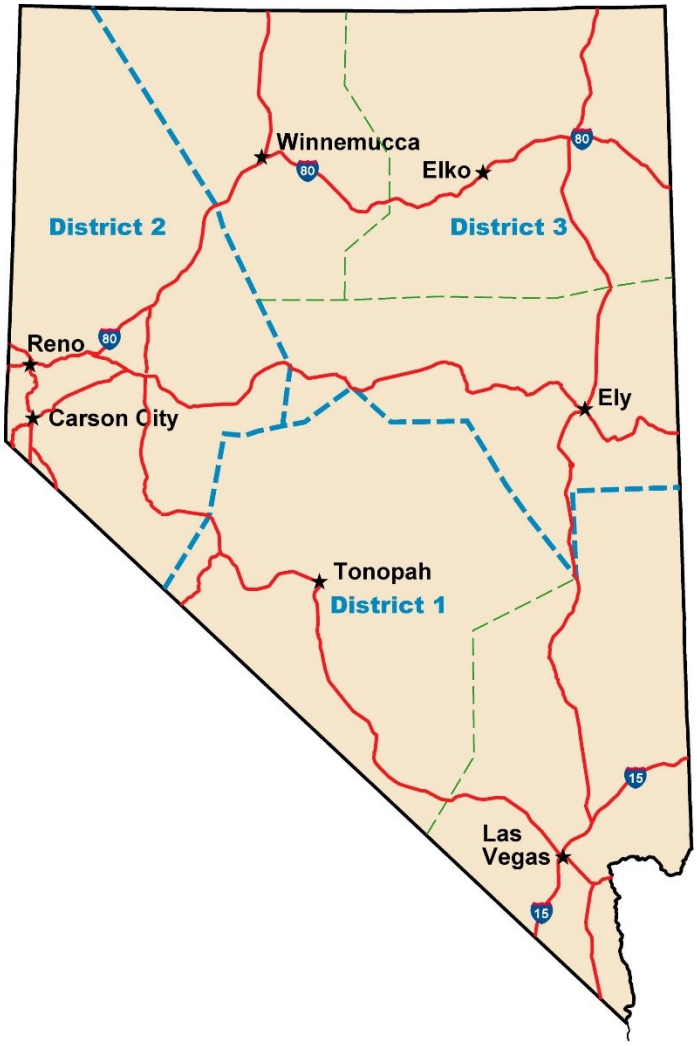

Figure 1-4: District and Sub-District Boundaries

DISTRICT ENGINEER

The District Engineer directs the operations within the boundaries of a district, including both construction and maintenance operations through their respective Assistant District Engineer(s). The District Engineers evaluate, process and recommend approval of Change Orders, and they resolve disputes and claims within the limits of their authority. In cases that exceed allowable authority, the District Engineer will provide recommendations on project issues to the Chief Construction Engineer.

The District Engineer is responsible for informing the Construction Division's Chief Construction Engineer on the status of work. Common status issues include problems or issues encountered on projects/contracts, decisions that have been made and recommendations for improvements in construction practices. The District Engineer is also responsible for conforming to Department and Construction Division policies, procedures and/or directives, and for coordinating construction activities with other district operations. The District Engineer also manages the contract's final inspection and recommends final acceptance to the Director

Because each District is unique in topography, climate, population and industry, districts must be involved through the life of a project/contract. The District Engineer's direction is crucial in mitigating the impacts, such as traffic delay and business disruption, that the project may have on the local communities within the District.

ASSISTANT DISTRICT ENGINEER

Assistant District Engineers support the District Engineer in successfully delivering the NDOT statewide construction program. Depending on the District, an Assistant District Engineer can be assigned construction and/or maintenance operations. For construction activities, Assistant District Engineers supervise/manage the Resident Engineers.

Assistant District Engineers work in conjunction with the Construction Division's Assistant Construction Engineers in the execution of the construction program to ensure compliance with state and federal regulations along with NDOT policies and procedures through the life of the project/contract.

CONSTRUCTION FIELD CREWS

A typical field crew consists of:

1 – Resident Engineer

1 – Assistant to the Resident Engineer

1 – Staff Engineer

1 – Survey crew chief

8 – Inspectors, testers, and surveyor crew

1 – Office Engineer

Because a Construction Crew is assigned multiple contracts, proper allocation and management of staff resources across contracts is critical in order to maintain consistency within each contract and to ensure sufficient contract oversight and technical expertise. Project staffing needs may require the District Engineer, in consultation with Resident Engineers, to temporarily transfer personnel from one crew to another. If adequate resources are not available within the Department, the District Engineer may request service provider assistance (Refer to "Service Provider Procurement" on page 2-54 for more information).

RESIDENT ENGINEER

The Resident Engineer is responsible for the management, administration and successful completion of an NDOT construction contract, which includes monitoring and documenting the Contractor's operations. The Resident Engineer is a direct representative of the Director and reports directly to the Assistant District Engineer.

The Director delegates authority to the Resident Engineer to administer construction contracts. As part of this authority, the Resident Engineer is the primary point of contact for the Field Crew, Contractor and service providers, and all communication is required to go through the Resident Engineer. At no time will direction be given to the Contractor and/or service provider by anyone but the Resident Engineer (or his/her designee). All site visits will be coordinated and approved by the Resident Engineer.

A contract's successful completion depends on the Resident Engineer's positive leadership of the Construction Crew and a professional relationship with the Contractor.

By building and maintaining trust and teamwork on the contract, the Resident Engineer creates a collaborative environment with the Contractor, NDOT field crew and other NDOT divisions. To maintain a high level of involvement, the Resident Engineer must frequently visit the job site and review the work.

The Resident Engineer also provides leadership to the staff assigned by the District Engineer. The Resident Engineer builds a highly effective crew by emphasizing communication and learning. When the staff communicates well among themselves, sharing knowledge and experience, they can quickly and confidently address situations that arise on a contract.

As NDOT's most visible representative on a project, the Resident Engineer frequently communicates with the public, government representatives and motorists. The Resident Engineer's professionalism often establishes the public's image of NDOT.

In addition to working with the Contractor and supervising the field crew, the Resident Engineer's specific contract-related responsibilities include:

- Providing input on development of project plans and specifications.
- Assessing the compatibility of the design with site conditions.
- Administering the contract in accordance with federal regulations, the Construction Manual and established policies and procedures.
- Monitoring projects to confirm compliance with the contract documents.
- Overseeing documentation, surveying, inspection and testing.
- Ensuring proper documentation.
- Approving contractor pay estimates.
- Resolving issues and disputes with the Contractor within the Resident Engineer's authority.
- Negotiating and preparing Change Orders.
- Minimizing construction impacts to the public.
- Protecting the State from harm or damage during construction of the project.
- Providing guidance and training to the field crew.
- Communicating with the District Engineer and Assistant Chief Construction Engineer on major issues that have immediate and significant public impact.
- Overseeing the implementation of traffic control and ensure the flow of traffic along with the safety of workers and the public.
- Reviewing the Contractor's certified payrolls.

The Resident Engineer is the first level of authority in quickly resolving issues or conflicts. The Resident Engineer may consult with the District Engineer or the Construction Division for additional guidance.

ASSISTANT TO THE RESIDENT ENGINEER

This position assumes one or more of the roles and responsibilities of the Resident Engineer (as directed).

STAFF ENGINEER

For crews that contain a Staff Engineer, this position assumes one or more of the roles and responsibilities of the Resident Engineer (as directed).

SURVEY CREW CHIEF

The survey crew chief, under the supervision of the Resident Engineer, is responsible for the accurate and prompt completion of all construction survey activities. The survey crew chief's primary responsibility is to confirm that project personnel complete the survey in conformance with the plans and specifications. To perform these responsibilities, all survey equipment and instruments must be in proper condition and accurately calibrated. The survey crew chief must be knowledgeable and understand current survey practices and technologies. Additionally, the survey crew chief maintains complete and accurate survey documentation.

After construction activities are complete, notations are added to the project plans, describing all revisions that were made to the original plans. These drawings are called record drawings, or as-built plans. The survey crew chief is responsible for adding survey information to the as-built plans. If the contractor performed the survey, then the survey crew chief collects and reviews the contractor's survey data. The Resident Engineer reviews the survey data prior to archiving the data with the project records.

Refer to "Surveying" on page 3-1, or the *Construction Survey Manual*, for more information.

INSPECTOR

Under the supervision of the Resident Engineer, inspectors are authorized to inspect all work performed and materials furnished. Inspections may extend to all or any part of the work and to the preparation, fabrication or manufacture of the work materials. Inspectors are not authorized to alter or waive provisions of the plans and specifications, issue instructions contrary to the plans and specifications, or direct contractor operations. However, an inspector communicates with the contractor and other project personnel to reduce misunderstandings relating to the interpretation of the plans and specifications.

Inspectors have two important responsibilities. The first and primary responsibility is to confirm that the contractor's work and site activities conform to the plans and specifications. The second responsibility is to document the contractor's work.

Inspection duties include:

- Observing and documenting the contractor's workmanship, materials and methods for conformance with the plans and specifications.
- Communicating the project requirements to the contractor's field staff for work under construction or about to be constructed.
- Interpreting the plans and specifications.
- Documenting inspection operations in the Daily Work Report.
- Measuring work and materials for payment in accordance with the Construction Division's *AWP Documentation Manual*.
- Observing construction operations for compliance with safety regulations, traffic control requirements and construction-related government regulations.

Refer to "Inspection" on page 5-1, or the *Field Inspection Guide*, for more information.

TESTER

Under the supervision of the Resident Engineer, testers are authorized to inspect or test materials incorporated or to be incorporated into the work. Additionally, testers may test materials fabricated at commercial material sites or fabrication facilities.

Because test results are the deciding factor in accepting or rejecting work or material, accurate test results are important. Therefore, the tester must maintain testing equipment in good condition. When testing equipment requires repair, replacement or calibration, the tester must inform the Resident Engineer. Additionally, testing procedures will conform to NDOT test methods, and documentation will be complete and accurate.

Refer to "Sampling and Testing" on page 4-1 , or the *Field Testing Guide*, for more information.

OFFICE ENGINEER

The Office Engineer manages the administrative activities under the supervision of the Resident Engineer. Administrative responsibilities span contract issues, as well as Department-related administrative matters. The Office Engineer is the primary resource in the Resident Engineer's office for implementing the requirements of the *AWP Documentation Manual*.

Principal responsibilities include:

- Maintaining project files, testing records, general files and documents.
- Maintaining an inventory of survey records.
- Verifying test reports for completeness and accuracy.
- Preparing Contractor pay estimates.
- Performing preliminary calculations for liquidated damages.
- Reviewing prior approvals, Change Orders and letters of authorization for completeness.
- Reviewing force account analysis for completeness and accuracy.

CONSTRUCTION DIVISION

The NDOT Director delegates various responsibilities for administering construction contracts to the Assistant Director of Engineering. In turn, the Assistant Director of Engineering delegates many of these responsibilities to the Chief Construction Engineer.

The Construction Division, under the direction of the Chief Construction Engineer, has responsibility and authority for establishing uniform policies and procedures for the statewide construction program. In coordination with the districts, construction field crews, FHWA and other NDOT divisions, the Construction Division manages and administers the statewide construction program and is responsible for ensuring compliance with federal regulations for construction activities on all construction contracts.

CHIEF CONSTRUCTION ENGINEER

The Chief Construction Engineer manages the statewide construction program, which includes:

- Providing guidance, policies and procedures to ensure conformance with federal and state regulations.
- Assigning personnel and resources.
- Providing technical support and training.
- Establishing construction-related policies, procedures and related documentation for statewide uniformity.
- Generating and managing budgets.
- Developing construction specifications.
- Providing technical expertise to legislative and regulatory agencies.
- Resolving construction claims and disputes.
- Serving as NDOT liaison with the construction industry.

ASSISTANT CONSTRUCTION ENGINEER

Two Assistant Construction Engineers support the Chief Construction Engineer. One Assistant Construction Engineer oversees the construction program in District 1, the southern portion of the state, and the other Assistant Construction Engineer oversees the construction program in Districts 2 and 3, the northern portion of the state.

In addition, the Assistant Construction Engineers oversee the operations of the Construction Division's sections.

CONSTRUCTION ADMINISTRATIVE SERVICES SECTION

The Construction Administrative Services Section assists the crews during the construction phase by providing contract oversight, administering the electronic documentation system, process analysis/improvement, and managing service providers and the Partnering Program.

Responsibilities include:

- Ensuring statewide uniformity in construction project documentation.
- Auditing project documentation for completeness and accuracy.
- Serving as a resource to the project crew on administrative matters.
- Reviewing and processing contractor pay estimates.
- Reviewing and processing Change Orders, letters of authorization and force account documentation.
- Reviewing and processing requests for stockpile payment.
- Providing assistance and guidance regarding funding eligibility and allocation.
- Performing project final closeout procedures.
- Developing and maintaining the *AWP Documentation Manual*.
- Procuring service providers.
- Processing service provider invoices.
- Ensuring that Partnering Program elements are implemented in accordance with the *Guide to Partnering on NDOT Projects*.
- Analyzing, documenting and reporting the Construction Division's business processes; explore opportunities and make recommendations for process improvements.

CONSTRUCTABILITY SECTION

The Constructability Section provides input and assists in problem solving for most disciplines within NDOT. The core work provided by this section is vital to safety, construction and budget. The core work is completed by understanding and properly conveying construction standards necessary to build a project.

Constructability works with NDOT disciplines, service providers, other agencies and stakeholders to ensure that constructability, bid ability and administration of projects are achievable with current industry standards and Department policy.

Responsibilities include:

- Reviewing plans and specifications for constructability issues during the design phase.
- Developing project schedules and limitations of operations on construction projects.
- Reviewing and providing recommendations on contractor schedules.
- Providing guidance on proposed traffic control.
- Participating in NDOT bid review process.
- Conducting post-construction reviews.

- Justifying liquidated damages.
- Creating and justifying incentive packages for construction projects.

QUALITY ASSURANCE SECTION

The Quality Assurance Section administers the Department's Quality Assurance/Independent Assurance Program to ensure quality materials are incorporated into the Department's construction contracts.

Responsibilities include:

- Managing the field tester qualification program.
- Providing technical support regarding construction methods and techniques.
- Providing on-the-job and/or formal training for Field Crew personnel.
- Researching construction practices and technologies.
- Collaborating with the construction industry and other stakeholders to improve the quality of construction.
- Developing construction specifications.
- Participating in construction-related research.
- Developing field test methods and revising, as necessary.
- Managing the nuclear testing program.
- Providing independent on-site quality assurance reviews.
- Reviewing project documentation for completeness and accuracy.

FEDERAL HIGHWAY ADMINISTRATION

The Federal Highway Administration (FHWA) plays an important role in Nevada's highway system. As an agency of the Federal Department of Transportation, the FHWA provides transportation funding to NDOT. These funds are subject to federal law, regulations and agreements. The FHWA is charged with managing public funds while ensuring that federal highway programs are conducted in compliance with federal laws, regulations and policies.

The FHWA Nevada Division, located in Carson City, provides federal-funding oversight throughout Nevada. On some projects with federal funding, the FHWA oversees NDOT work to ensure regulatory compliance. The FHWA delegates some project approval authority to NDOT on federally funded projects. Approval authority is delegated by the FHWA to NDOT through a Stewardship and Oversight Agreement that describes the roles and responsibilities of NDOT and the FHWA. Refer to the Nevada Division page on the FHWA Web site [https://www.fhwa.dot.gov/nvdiv/] for more information.

The FHWA has set up a Compliance Assessment Program (CAP) to ensure that NDOT is complying with federal requirements for federal aid projects. Projects are selected randomly by FHWA Headquarters and the FHWA Nevada Division Office is required to review the selected projects for compliance with key Federal requirements. The FHWA Nevada Division will contact the appropriate NDOT staff to gather information for a compliance review of the project. The FHWA Nevada Division staff will also complete a field review of the selected projects.

The FHWA retains oversight authority on environmental, financial and right-of-way issues because of the potential for significant impacts. The FHWA's may actively participate in project meetings, plan reviews and project communication on high-risk issues. The FHWA Nevada Division has staff assigned to program areas and each NDOT District. For additional information on contract administration by FHWA, refer to FHWA's Contract Administration Core Curriculum Manual.

The Chief Construction Engineer is the NDOT contact with the FHWA for construction administration matters. In preparing and approving Standard Specifications, Special Provisions and this manual, the Construction Division seeks the review and approval of

the FHWA. Using the approved provisions and meeting the required outcomes described in this manual become the basis of federal reimbursement.

CONTRACT ADMINISTRATION

This chapter contains the following sections:

OVERVIEW

Note: *Refer to "Conventions Used in This Manual" on page 1-3 "Conventions Used in This Manual" on page 1-3 for terminology used in this chapter and/or the order of precedence of contract documentation.*

This chapter encompasses the primary processes and the corresponding events/activities performed by the applicable Construction Field Crews, District Administration, Construction Division, Other NDOT divisions and FHWA for each major phase of a project/contract's development (Design, Procurement, Construction, Closeout, Other) in order to facilitate the successful delivery and administration of the Department's Construction Program.

On a construction project, the Resident Engineer administers the contract following the Construction Division policies, procedures and manuals as required by NDOT's Stewardship Agreement with FHWA and 23 CFR 635. These policies, processes and procedures are uniform for Design-Bid-Build and Construction Manager at Risk (CMAR) projects throughout the state, unless otherwise noted in this chapter. For Design-Build (DB) projects, refer to NDOT's *Pioneer Program Guidelines*.

DESIGN PHASE

Note: *This phase does not apply For Design Build projects.*

Note: *Refer to "Other Contract Administration Functions" on page 2-32 for processes/activities that can occur anywhere in this phase but are not listed in this phase.*

This Phase of project development begins with the Preliminary Design Field Study (PDFS) and ends with the submittal of final project documents to the Department's Administrative Services Division. A Project Coordinator will be assigned to the project prior to the PDFS.

The Design Phase requires the input of data from all applicable disciplines within the Department. Service Providers may be hired to execute a discipline's function due to workload. In these cases, the Service Provider would be held to the same standards as the Department discipline would be required to follow. The following information is an overview of the processes followed for project development through the Design Phase. For more information, refer to the NDOT *Road Design Guide*.

PRELIMINARY DESIGN FIELD STUDY

The Preliminary Design Field Study (PDFS) determines the scope of work to be included in the design development. The PDFS typically includes a meeting to determine areas of concern within the proposed project limits, field visit to identify existing conditions as well as critical field-observed data to help develop a list of project priorities addressing the concerns of each Division. (These studies should involve a representative from the appropriate Divisions.) Plans of the preliminary design should accompany the PDFS invitation.

CONSTRUCTION FIELD CREWS

- Attend the PDFS meeting and provide input for scope and additional issues to be addressed through project development.

DISTRICT ADMINISTRATION

- Assign a Resident Engineer to attend the PDFS meeting.
- Assign a Maintenance representative to identify problem areas within project limits, provide potential solutions for existing issues and identify maintenance concerns on proposed improvements.

CONSTRUCTION DIVISION

CONSTRUCTABILITY SECTION

- Provide input relative to the constructability of the project concept and recommendations for applicable scope. The Constructability representative will take notes on discussions and recommendations to include in the final PDFS Report.

FHWA

- May attend or provide information depending upon project type and scope

OTHER NDOT DIVISIONS

- The Project Coordinator from the division responsible for the project:
  - Schedule the PDFS meeting and distributes the invitation to the appropriate disciplines, and provides all information pertinent to the project. (This may include past project information within the same limits, crash data, pipe condition survey, Road Safety Audit (RSA) information and stakeholder information.)
  - Write/distribute the PDFS report to all PDFS meeting attendees and Division heads.

ROAD DESIGN

- Approve the PDFS report (Chief Road Design Engineer).

ENVIRONMENTAL SERVICES DIVISION

- Identifies requirements to ensure compliance with National Environmental Protection Act (NEPA).

RIGHT-OF-WAY

- Initiate the right-of-way setting verification.

INTERMEDIATE REVIEW

For Design Bid Build projects, the Intermediate Review (also referred to as the 60% Review) is a comprehensive review of project documents that have been developed based upon data provided and discussions with internal disciplines and stakeholders between the development of the Final PDFS Report to the time of the review meeting of intermediate documents. Each division finalizes its plans, specifications and quantities, and provides them to the Project Coordinator to include in the review set.

For CMAR projects, this process is still applicable with the basic exception that an agreement with the Contractor is in place and they are engaged in the review process. Refer to the NDOT *Pioneer Program Guidelines* for more information.

CONSTRUCTION FIELD CREWS

- Review and provide comments on the intermediate review documents in advance of the meeting.
- Attend Field Review with Constructability Section.
- Attend the Intermediate Review meeting to clarify the comments provided and collaborate on any proposed solutions.

DISTRICT ADMINISTRATION

- Distribute intermediate review documents to the appropriate Resident Engineer.

CONSTRUCTION DIVISION

ASSISTANT CONSTRUCTION ENGINEER

- Assists the various Sections within the Division in assuring that issues are addressed properly.

CONSTRUCTABILITY SECTION

- Participate in various activities to discuss constructability issues/concerns between the PDFS and the Intermediate Review, including:
  - Preliminary traffic control approach.
  - Preliminary Transportation Management Plan (TMP).
  - Discipline specific meetings.
  - Cost Risk Assessment (CRA), value Engineering (VE) and product evaluations.
  - Field crew review with Resident Engineer.
  - Review plans and specifications and quantities.
  - Generate/distribute memos providing recommendations to the Intermediate Review documents.
  - Attend the Intermediate Review meeting to clarify the comments provided and collaborate on any proposed solutions.

QUALITY ASSURANCE SECTION

- Provide material-specific specifications and testing requirements.
- Provide specifications for pavement smoothness and compaction requirements for the surface courses, including the monetary incentive/disincentive requirements.

FHWA

- For federally-funded projects:
  - Review and provide comments on the intermediate review documents in advance of the meeting.
  - May attend the Intermediate Review meeting or provide information, depending upon project type and scope.

OTHER NDOT DIVISIONS

- The Project Coordinator from the division responsible for the project:
  - Compiles and distributes all information required for comprehensive review.
  - Schedules and provides information for discipline specific meetings. (These meetings may be required if issues are identified that require significant changes to project documents.)

ALL PARTICIPATING DIVISIONS

- Review and provide comments on the intermediate review documents in advance of the meeting.
- Attend the Intermediate Review meeting.

TRAFFIC OPERATIONS DIVISION

- Develop the Traffic Management Plan (TMP).

ENVIRONMENTAL SERVICES DIVISION

- Develop the required National Environmental Protection Agency (NEPA) documents.

RIGHT-OF-WAY DIVISION

- Confirm that the right-of-way elements and setting comply with the current scope.

PLANS, SPECIFICATIONS AND ESTIMATE REVIEW

For Design Bid Build projects, the Plans, Specifications and Estimate (PS&E) Review, also referred to as the 100% Review, is the final review of contract documents. Upon the incorporation of comments/input from this review, the final documents are prepared for advertisement.

For CMAR projects, this process is still applicable with the basic exception that an agreement with the Contractor is in place and they are engaged in the review process. Refer to NDOT's *Pioneer Program Guidelines* for more information.

CONSTRUCTION FIELD CREWS

- Review and provide comments on the PS&E documents.
- Attend the PS&E review meeting; provide additional information as needed.

DISTRICT ADMINISTRATION

- Communicate with and assist field crews to assure that issues are properly addressed.

CONSTRUCTION DIVISION

ASSISTANT CONSTRUCTION ENGINEER

- Assist the various Sections within the Division to assure that issues are properly addressed.

CONSTRUCTABILITY SECTION

- Perform a final review of plans and specifications, addressing the comments/concerns that were identified during the Intermediate Review.
- Generate a memo to the Project Coordinator that includes the following:
  - Time Determination Schedule (Working Day/Completion Date) in accordance with Subsection 108.02, "(Prosecution and Progress) Notice to Proceed", of the Special Provisions

- Limitations of Operations in accordance with Subsection 108.04, "(Prosecution and Progress) Limitation of Operations", of the Special Provisions
- Liquidated Damages in accordance with Subsection 108.09, "(Prosecution and Progress) Failure to Complete the Work on Time," of the Special Provisions
- Asphalt base price for demerits in accordance with Subsection 109.02, "(Measurement and Payment) Scope of Payment" and Subsection 402.05.01, "(Plantmix Bituminous Surface) Payment", of the Special Provisions
- For federally-funded projects, provide a contract closeout ("federal end") date.
- Attend the PS&E review meeting; provide additional information as needed.

FHWA

- For federally-funded projects, review and approve the PS&E documents.

OTHER NDOT DIVISIONS

- The Project Coordinator from the division responsible for the project:
  - Prepare and distribute all PS&E documents for review.

ALL PARTICIPATING DIVISIONS

- Review and provide comments on the PS&E documents.
- Attend the PS&E review meeting; provide additional information as needed.

TRAFFIC OPERATIONS

- Finalize the Traffic Management Plan (TMP).

ENVIRONMENTAL SERVICES

- Finalize the required National Environmental Protection Agency (NEPA) documents and obtain the necessary permits.

DOCUMENTATION DATE

The Documentation Date is the date that all contract documents have been corrected, updated and are sent to the Administrative Services Division for advertisement. The typical duration between the Documentation Date and the advertisement of a contract is 2 weeks. For federally-funded projects, an additional 1-2 weeks may be required to ensure adequate time to review the contract documents. FHWA will be informed of all changes that occur after the PS&E.

CONSTRUCTION FIELD CREWS

- N/A

DISTRICT ADMINISTRATION

- N/A

CONSTRUCTION DIVISION

- N/A

FHWA

- N/A

OTHER NDOT DIVISIONS

ADMINISTRATIVE SERVICES DIVISION, CONTRACT SERVICES SECTION

- Prepare documents for advertisement.

RIGHT-OF-WAY DIVISION

- Certify that the project is in compliance with the right-of-way and utility criteria (Chief of Right-of-Way Agent).

ENVIRONMENTAL SERVICES DIVISION

- Certify that the appropriate clearances are in place.

PROCUREMENT PHASE

Note: *This phase of the contract lifecycle applies to a Design-Bid-Build program only.*

Note: *Refer to "Other Contract Administration Functions" on page 2-32 for processes/activities that can occur anywhere in this phase but are not listed in this phase.*

Once a project is designed and ready for construction, the Department undergoes the procurement process to enter into a contract with a Contractor that is both responsible and responsive. The process of procuring a Contractor is managed by the Administrative Services Division's Contract Services Section, which is responsible for ensuring compliance with the applicable state and federal regulations regarding procurement of a Contractor. For additional information, refer to Section 102, "Bidding Requirements and Conditions", and Section 103, "Award and Execution of Contract", of the Standard Specifications, Nevada Revised Statutes (NRS) Chapter 408, and 23 CFR 635.

ADVERTISE

To initiate the advertise process, the Department issues an Invitation to Bid, as identified in Section 102, "Bidding Requirements and Conditions", of the Standard Specifications, to the Contractor community. The minimum advertisement period is 3 weeks; however most contracts are advertised for 4 weeks. Highly complex projects, such as projects requiring a mandatory pre-bid meeting, may be advertised for up to 6 weeks. All bids are electronically submitted and can be viewed in the NDOT e-Bidding Portal Intranet.

Contractual information throughout the advertisement period is considered confidential and should not be discussed with the bidding community. During the advertisement period, no person from NDOT, other than the Administrative Services Division, may discuss the project with any contractors. Contractor questions regarding any/all contract documents shall be submitted in writing in the NDOT e-Bidding Portal Intranet, through the Request for Clarification (RFC) process as identified in Subsection 102.05, "(Bidding Requirements and Conditions) Examination of Plans, Specifications, Contract Documents, and Site of Work", of the Standard Specifications. The project team will review Contractor questions and publish responses to the e-Bidding Portal. If changes to the

contract documents and/or an extension of the advertisement period is warranted, a Supplemental Notice as identified in Sub-section 101.03, "(Terms and Definitions) Definitions", of the Standard Specifications, will be issued.

At the end of the advertisement period, proposals by responsible and responsive bidders are opened and read publicly at the time and place indicated in the Invitation to Bid or as revised by Supplemental Notices.

CONSTRUCTION FIELD CREWS

- Respond to the Administrative Services Division memo regarding the required number of paper copies of the contract documents.
- Review RFCs and provide recommendations for responses to the project team.
- Review the final set of plans and specifications and identify items that may cause issues during construction including but not limited to:
  - Delays to construction activities.
  - Quantity discrepancies leading to potential disputes during construction.
  - The ability to effectively manage traffic control.
- Request supplemental notices to address any necessary changes.
- Incorporate supplemental notices into contract documents.

DISTRICT ADMINISTRATION

- Review RFCs and provide recommendations for responses to the project team.
- Incorporate supplemental notices into contract documents.

CONSTRUCTION DIVISION

ASSISTANT CONSTRUCTION ENGINEER

- Review RFCs and provide recommendations for responses to the project team.
- Review and/or request supplemental notices.

CONSTRUCTABILITY SECTION

- Review RFCs and provide recommendations for responses to the project team.
- Review and/or request supplemental notices.

FHWA

- N/A

OTHER NDOT DIVISIONS

- The Project Coordinator from the division responsible for the project:
  - Gather information and publish the response to the RFCs.
  - Develop and submit supplemental notices as needed.

ADMINISTRATIVE SERVICES DIVISION, CONTRACT SERVICES SECTION

- Advertise the contract and manage the process.

PRE-BID MEETING (OPTIONAL)

For complex or unique contracts, the project team may consider holding a mandatory pre-bid meeting to address concerns and anticipated questions requiring clarification beyond what the contract documents provide. A representative of the Contractor shall be present at the mandatory meeting in order to submit a bid. The pre-bid meeting will include the Department's discussion of the contract and allow for contractors to ask questions regarding the contract.

CONSTRUCTION FIELD CREWS

- Attend the meeting; provide input and/or clarify the intent of contract documents.

DISTRICT ADMINISTRATION

- Attend the meeting; provide input and/or clarify the intent of contract documents.

CONSTRUCTION DIVISION

ASSISTANT CONSTRUCTION ENGINEER

- Attend the meeting; provide input and/or clarify the intent of contract documents.

FHWA

- Attend the meeting as needed.

OTHER NDOT DIVISIONS

- The Project Coordinator from the division responsible for the project:
  - Schedule and facilitate the meeting.

ADMINISTRATIVE SERVICES DIVISION

- Advertise and attend the meeting.
- Ensure that any Contractor who submits a bid attends the meeting.

BID REVIEW AND ANALYSIS

The Bid Review and Analysis Team (BRAT) evaluates the two lowest bids to identify mathematically or materially unbalanced bids as identified in Subsection 102.07, "(Bidding Requirements and Conditions) Irregular Proposals", of the Standard Specifications. A mathematically unbalanced bid contains unit bid prices that do not reasonably reflect the actual costs (plus reasonable profit, overhead costs, and other indirect costs) to construct the item. The Price Sensitivity Report identifies all significant items of work (bid items greater than $50,000) that are mathematically unbalanced, and it defines the amount a quantity of work must vary to change the order of the two lowest bidders. A materially unbalanced bid generates reasonable doubt that award to that bidder would result in the lowest overall cost to the Department. The BRAT also reviews the Notice to Proceed date and provides recommendations.

After thorough evaluation, the BRAT provides a Report of Recommendations to the Director to accept the bids, reject all bids and re-advertise, or reject the lowest bidder and award to the second lowest bid. The Director may or may not accept the recommendations.

CONSTRUCTION FIELD CREWS

- Review bids and attend the BRAT meeting.

DISTRICT ADMINISTRATION

- Review bids and attend the BRAT meeting.

CONSTRUCTION DIVISION

CHIEF CONSTRUCTION ENGINEER

- Develop and maintain the BRAT procedure.
- Co-chair the BRAT.
- Review proposals and attend BRAT meeting.
- Sign the report of recommendations.

ASSISTANT CONSTRUCTION ENGINEER

- Review bids and attend BRAT meeting.

CONSTRUCTABILITY SECTION

- Review bids and attend BRAT meeting.

FHWA

- Review bids and attend BRAT meeting.

OTHER NDOT DIVISIONS

ALL PARTICIPATING DIVISIONS

- Review bids and attend meeting.

DESIGN DIVISION

- Co-chair the BRAT (Design Division Chief).
- Sign the report of recommendations (Design Division Chief).

ADMINISTRATIVE SERVICES DIVISION, CONTRACT SERVICES SECTION

- Manage the bid review and analysis process:
  - Generate and distribute the BRAT Report (Price Sensitivity Report, Bid Tabulation).
  - Schedule and attend the meeting.
  - Gather additional information from bidders as needed.
  - Generate the Report of Recommendations.
  - Obtain signatures.
  - Send the report of recommendations to the Director.

NOTICE OF AWARD

To award the contract, the NDOT Director's office reviews the BRAT recommendation and determines whether to award the contract. If it is not awarded, the project may be re-advertised. For contracts that exceed $5,000,000, Transportation Board approval is required for award. Once the Director or Transportation Board approves the contract for award, an official Notice of Award, Execution and Notice to Proceed letter and the contract to be signed is sent to the Contractor. The Notice of Award, Execution and Notice to Proceed letter identifies the Notice to Proceed date for the contract. The Notice to Proceed date is when construction starts (i.e., Working Day #1).

For additional information, refer to Section 103, "Award and Execution of Contract", of the Standard Specifications.

CONSTRUCTION FIELD CREWS

- Set up contract files.
- Contact the Contractor to discuss contract details, including but not limited to:
  - Establishing the Pre-Construction Conference date.
  - Identifying key project personnel.
  - Establishing the submittal management protocol.
  - Reviewing and tracking any environmental mitigation requirements.
  - Contract schedule.
  - Schedule Partnering meeting.

DISTRICT ADMINISTRATION

- N/A

CONSTRUCTION DIVISION

ASSISTANT CONSTRUCTION ENGINEER

- Assist the Resident Engineer in scheduling the Pre-Construction Conference.

CONSTRUCTABILITY SECTION

- Provide the Construction Field Crew with:
  - Constructability assumptions.
  - Training as needed.

CONSTRUCTION ADMINISTRATIVE SERVICES SECTION

- Provide the Construction Field Crew with:
  - The contract start-up package.
  - Loading contract into electronic documentation system.
  - Training as needed.

QUALITY ASSURANCE SECTION

- Provide the Construction Field Crew with:
  - Acceptance Testing Summary Sheet (ATSS).
  - Training as needed.

CONSTRUCTION ADMINISTRATION SERVICES MANAGER

- Partnering system set-up.
- Dispute Resolution system set-up.

FHWA

- N/A

OTHER NDOT DIVISIONS

ADMINISTRATIVE SERVICES DIVISION, CONTRACT SERVICES SECTION

- Notify the Construction Division, the Resident Engineer, the District Engineer and FHWA of the Notice of Award.
- Issue the Notice of Award, Execution and Notice to Proceed letter, which includes the Notice to Proceed date.

EXTERNAL CIVIL RIGHTS DIVISION, CONTRACT COMPLIANCE SECTION

- Load contract into electronic documentation systems.

CONSTRUCTION PHASE

Note: *The guidelines identified in one or more of the processes in this phase may not necessarily apply for Design-Build projects.*

Note: *Refer to "Other Contract Administration Functions" on page 2-32 for processes/activities that can occur anywhere in this phase but are not listed in this phase.*

The project that the Department has planned and designed is now a contract. The Construction Phase is the most expensive, has the greatest risks, and is the most critical aspect of building or rehabilitating a roadway. This phase also has the most public impact, and it is when the workers and the traveling public are at the greatest risk of injury.

The goals of the Department during this phase are to administer the contract in a manner that ensures safety, provides quality roadways and delivers on schedule and within budget.

PRE-CONSTRUCTION CONFERENCE

Upon receipt of the Notice to Proceed, the Resident Engineer will schedule a Pre-construction Conference in accordance with Subsection 108.07, "(Prosecution and Progress) Preconstruction Conference", of the Standard Specifications. The Pre-construction

Conference is vital to a successful project in that it establishes a mutual understanding of project requirements, provides a forum to discuss key elements of the project and identifies key project personnel. Discussions at the Pre-Construction Conference relate mostly to the project's construction details and compliance with labor laws and regulations. The Contractor will likely ask the Resident Engineer specific project-related questions. If the Resident Engineer cannot provide an immediate answer and requires additional time to research, it is appropriate to tell the Contractor that research is required and that a written response will be forthcoming. A written response provides a record that supplements the recording of the meeting. The meeting is voice recorded, and the completed agenda becomes a permanent file for the contract.

Refer to the Construction Division's SharePoint Forms library [https://nevadadot.sharepoint.com/sites/040/FormServerTemplates/], for a Pre-Construction Conference template and related documents.

Upon the date of the Pre-Construction Conference, the Contractor shall submit various documentation. Required submittals prior to or upon the date of the Pre-Construction Conference may change in accordance with the Contract Special Provisions.

Examples of required submittals include but are not limited to:

- Preliminary Progress Schedule, in accordance with Subsection 108.03, "(Prosecution and Progress) Prosecution and Progress", of the Standard Specifications.
- Traffic Control Supervisor information:
  - Name
  - Contact Information
  - Qualifications.
- Water Pollution Control Manager information:
  - Name
  - Contact information
  - Qualifications
- Quality Control Plans.
- Temporary pollution control documents in accordance with Section 637, "Temporary Pollution Control", of the Standard Specifications:
  - Notice of Intent
  - Stormwater Pollution Prevention Plan (SWPPP)
  - Other related documents (as needed or required)
- Safety plans.
- Pre-Construction Conference Memorandum of Record (External Civil Rights Division, Contract Compliance Section).
- Disadvantaged Business Enterprise (DBE) Implementation Plan.
- Environmental and other permits.
- Contractor representatives that have signatory authority.
- Testing personnel information:
  - Names
  - Certifications
- Required submittals in accordance with the Contract Special Provisions.

CONSTRUCTION FIELD CREWS

- Ensure that a schedule is received from the Contractor prior to the Pre-construction Conference showing anticipated DBE Program subcontractor utilization.
- Ensure that the contract has been fully executed prior to the Contractor starting construction activities.
- Review the RFCs, BRAT findings, plans and specifications that may need to be addressed at the Meeting.

- Ensure the required submittals are generated and received in accordance with the contract documents and are available for discussion at the meeting.
- Identify key stakeholders to invite, including but not limited to FHWA, utility companies, business owners, etc.
- Arrange the meeting location, ensuring that sufficient space is provided for all attendees to take part in the discussion.
- Prepare the agenda and distribute it to attendees.
- Facilitate and record the meeting.
- Set Partnering Meeting date.
- Discuss the DBE Implementation Plan with the Contractor to have an understanding of how the DBE goal will be achieved.

DISTRICT ADMINISTRATION

- Attend the meeting and provide input/clarification as needed.

CONSTRUCTION DIVISION

- Assist the Resident Engineer in setting up the Pre-construction Conference including arranging facilities, setting up video or teleconferencing and distributing the invite to the Project Team.
- Assist with any additional requirements.
- Attend the conference.

FHWA

- Attend the conference as needed.

OTHER NDOT DIVISIONS

EXTERNAL CIVIL RIGHTS, CONTRACT COMPLIANCE SECTION

- Send the Contractor the Pre-Construction Conference Memorandum of Record to complete prior to the conference.
- Attend the conference.

ALL PARTICIPATING DIVISIONS

- Attend the conference as needed. Divisions include but are not limited to:
  - Roadway Design.
  - Project Management.
  - Traffic Operations
  - Structures.
  - Materials.
  - Stormwater and Environmental Services (Include an agenda item to discuss NDOT's environmental commitments)
  - Right-of-Way.
  - Maintenance and Asset Management.

SUSPENSION OF WORK

Suspension of work on the contract can be directed by the Resident Engineer in accordance with Subsection 108.06, "(Prosecution and Progress) Temporary Suspension of Work", of the Standard Specifications. The Resident Engineer may also consider suspension of work upon the Contractor's request. The suspension will include an anticipated date of resumption, if one is known.

CONSTRUCTION FIELD CREWS

RESIDENT ENGINEER

- Determine the need for suspension of work, including the evaluation/validation of any Contractor request for suspension of work.
- Discuss the suspension with the Contractor, Assistant District Engineer and Assistant Chief Construction Engineer.
- Send the Contract Suspension letter, containing the approval of the date to suspend work and the date when work is to resume (if known), to the Assistance District Engineer and Chief Construction Engineer (cc: Contractor, District Engineer, Construction Administrative Services Section, and Contract Compliance).
- Implement suspension of working days.

DISTRICT ADMINISTRATION

- Review/sign Project Suspension letter.

CONSTRUCTION DIVISION

ASSISTANT CHIEF CONSTRUCTION ENGINEER

- Review/sign Project Suspension letter.

CONSTRUCTION ADMINISTRATIVE SERVICES

- Record the suspension date.

FHWA

- N/A

OTHER NDOT DIVISIONS

- Contract Compliance receives a copy of the Suspention Letter.

RESUMPTION OF WORK

When the reasons for the suspension no longer exist, and/or the date to resume work (if stated in the Contract Suspension letter) is reached, the Resident Engineer provides written notification of the date the work has resumed. The Resident Engineer will coordinate with the Contractor to provide sufficient time to resume operations.

CONSTRUCTION FIELD CREWS

RESIDENT ENGINEER

- Discuss the resumption with Assistant District Engineer and Assistant Chief Construction Engineer.
- Send the Contract Resumption letter to the Assistant Chief Construction Engineer (cc: Contractor, District Engineer, Assistant District Engineer, Chief Construction Engineer, Construction Administrative Services Section and Contract Compliance).
- Implement resumption of working days.

DISTRICT ADMINISTRATION

- N/A

CONSTRUCTION DIVISION

CONSTRUCTION ADMINISTRATIVE SERVICES

- Record the resumption date.

FHWA

- N/A

OTHER NDOT DIVISIONS

- Contract Compliance receives a copy of the Resumption Letter.

CONTRACT COMPLIANCE

The function of contract compliance is to ensure fairness in Department contracting through compliance with Disadvantaged Business Enterprise (DBE) program regulations and to ensure that contracts are compliant with Department contracting policy and procedures and applicable State and Federal Wage and Labor laws.

The External Civil Rights Division's Contract Compliance Section provides guidance and support in determining a contractor's compliance with:

- Contractor/Subcontractor Requirements.
- Employee Wage Requirements.
- Equal Employment Opportunity Requirements.
- DBE program.
- SBE program.
- Title VI of the Civil Rights Act.
- Training Hours/Apprenticeship Agreement(s).

In accordance with Section 110, "Wages and Conditions of Employment", of the Standard Specifications, the Department utilizes two separate electronic systems/software programs, administered by the Contract Compliance Section, to monitor and track payroll and contract compliance:

- LCP Tracker: The electronic system being utilized for certified payroll tracking; software to assist with labor compliance.
- B2Gnow: The software to assist with DBE compliance and subcontract monitoring utilized to process applications for DBE Certification, track certified DBEs, perform outreach, manage Requests to Sublet and subcontract agreements, monitor monthly payments to subcontractors, and monitor contract compliance.

> ***Important:*** *Contractors are required to use both programs. Refer to the NDOT Certified Payroll and Compliance Manual for additional information.*

CONSTRUCTION FIELD CREWS

- Ensure all subcontractors (including service providers) are approved and listed in B2Gnow prior to performing work on contract in accordance with Subsection 108.01, "(Prosecution and Progress) Subletting of Contract", of the Standard Specifications.
- Ensure Contractor and all subcontractors are listed in LCP Tracker and reporting payrolls weekly.
- Verify each week that the information reported in LCP Tracker accurately reflects that the Contractor and subcontractor(s) are actively working on the contract.
- Document any conversations about late payrolls.
- Make recommendations to withhold progress payments (in accordance with "Contractor Progress Payments" on page 2-23) for contractors who have not corrected their late reporting of weekly certified payrolls.
- Assess Liquidated Damages for any Affirming Orders received as part of Late Payroll Determinations.
- Review and monitor the Contractor's DBE Implementation Plan.
- Monitor DBE goal attainment:
  - Ensure Contractor to subcontractor payment information is reported monthly in B2Gnow (by the 15th of the month following the payment).
  - Ensure if DBE goal attainment is jeopardized, the Contractor is properly documenting the good faith effort and Contract Compliance is notified early in the process.
- Prepare NDOT Form 052-073 (Commercial Useful Function/CUF) for each DBE working on a federally funded contract.

> ***Note:*** *If the DBE firm is not performing a CUF, notify prime Contractor in writing and cc: Contract Compliance Section.*

- Assist Contract Compliance to ensure proper certification and documentation of each trainee on the project prior to starting work.
- Ensure the Contractor is meeting the trainee hours goal.
- Monitor reimbursement of trainee hours.
- Conduct random, on-the-job interviews with several employees of the contractor, subcontractors, service providers and owner operators each month.
- Make available self-addressed postage paid cards (NDOT form 052-010) to every Contractor and subcontractor employee working on the contract for prevailing wage complaints.
- Forward hauling agreements to the External Civil Rights Division's Contract Compliance Section.
- Notify the External Civil Rights Division's Contract Compliance Section of any discrepancies:
  - LCP Tracker
  - B2Gnow
  - DBE goal attainment and DBE Implementation and Utilization Plan.
- Ensure Contractor submittal of FHWA Form 1391 (Annual EEO Report) for any contracts active in the last week of the month of July.
- Ensure that the jobsite bulletin board is erected and maintained in accordance with Subsection 110.01 "(Wages and Conditions of Employment) Description", of the Standard Specifications.
- Ensure Contractor submittal of FHWA Form 1391 (Annual EEO Report) for any contracts active in the last week of the month of July.
- Ensure that the jobsite bulletin board is erected and maintained in accordance with Subsection 110.01 "(Wages and Conditions of Employment) Description", of the Standard Specifications.

DISTRICT ADMINISTRATION

- Advise Resident Engineers of any course of action to take on projects where meeting the stated commitment is in jeopardy.
- Make a recommendation to the Director's Office to impose sanctions when applicable. Notify the Contractor's DBE Representative, the Resident Engineers and Contract Compliance if sanctions are requested.
- Review any denials of requests to sublet for DBE subcontractors and consult with Contract Compliance, the Resident Engineers and the Contractor to ensure a clear understanding of the denial and the course of action to take.

CONSTRUCTION DIVISION

ASSISTANT CONSTRUCTION ENGINEER

- Assist the Resident Engineer as needed if subcontractors are not being paid in a timely manner.
- Support the Resident Engineer's request(s) to withhold Contractor progress payments for contractors who have not corrected their late reporting of weekly certified payrolls.

CONSTRUCTION ADMINISTRATIVE SERVICES SECTION

- If the Affirming Order is received after Semi-Final estimate is generated, assess Liquidated Damages for any Affirming Orders received as part of Late Payroll Determinations.
- Notify the Contract Compliance Section when Liquidated Damages for any Affirming Orders received (as part of Late Payroll Determinations) are withheld.

FHWA

- Review/audit pertinent documents distributed in this section.

OTHER NDOT DIVISIONS

EXTERNAL CIVIL RIGHTS DIVISION, CONTRACT COMPLIANCE SECTION

- Set-up Field Crews and District for access and permissions in LCP Tracker and B2Gnow.
- Review/approve all requests to sublet, subcontract agreements, and requests to utilize service providers in B2Gnow and assign them in LCP Tracker.
- Ensure sublet/subcontracted work does not exceed the requirements for self-performance in accordance with Subsection 108.01, "(Prosecution and Progress) Subletting of Contract", of the Standard Specifications.
- Ensure that prevailing wage rates for the contract are being paid to all employees.
- Ensure the Contractor and subcontractors report required Equal Employment Opportunity and Affirmative Action information.
- Ensure that contractors follow the DBE program rules and regulations.
- Ensure that discrimination does not occur in programs or activities receiving federal financial assistance.
- Monitor and disseminate information from LCP Tracker regarding late payroll submittals.
- Review late monthly payroll submittals for Consideration or Determination:
  - If Considerations applied to late payrolls, notify the Contractor.
  - If Determination made, calculate penalties and prepare letter to Labor Commissioner.
- Ensure any Affirming Orders from Labor Commissioner are distributed and that Field Crew/Resident Engineer or Construction Division assesses appropriate Liquidated Damages.
- Review DBE Implementation Plan and assist the Resident Engineer with the contractor's proper plan implementation.
- Monitor DBE goal attainment reporting in B2Gnow.

- Discuss with Resident Engineers and Contractors on DBE-related issues in order to ensure the stated commitment is met or non-attainment is appropriately documented; maintain documentation for audit purposes.
- Initiate sanctions and notify the RE, DE, Construction Office and Contractor DBE Representative if commitments are not met and sufficient documentation of good faith efforts are not provided.
- Calculate/verify final DBE participation dollar amounts or determine adequate good faith efforts, and issue final DBE attainment certification at project completion.
- Assess penalties or impose sanctions if applicable.
- Maintain documentation (in B2Gnow) to clearly show the DBE participation, or why the commitment was not met with the subcontractors and suppliers on the original bid reports.
- Monitor CUF reviews.

ENVIRONMENTAL AND STORMWATER COMPLIANCE

NDOT and its contractors will comply with Federal, state, and local agencies environmental regulations. The requirements that relate to water quality, wetlands, endangered species, naturally occurring asbestos (NOA) and cultural resources are identified in the project design phase as part of the National Environmental Policy Act (NEPA). In addition to those environmental issues identified in NEPA, other environmental factors such as dust and noise are evaluated and addressed.

NDOT has environmental and stormwater requirements that control erosion and pollution during the life of the finished roadway project and during construction activities. To control pollution that may occur following completion of the project, plans and specifications incorporate measures to reduce erosion, sedimentation, and other environmental damage. For long-term pollution control measures, refer to "211 Erosion Control", in Chapter 2 of the *Field Inspection Guide*. For temporary pollution control measures during construction, refer to "637 Temporary Pollution Control", in Chapter 2 of the *Field Inspection Guide*.

The Resident Engineer is responsible to monitor compliance with the environmental requirements, as violations of these regulations can result in civil penalties, criminal penalties, or both. Violations of environmental regulations can result in construction delays.

CONSTRUCTION FIELD CREWS

- Follow all environmental requirements described in the project plans and specifications.
- Consult with the Stormwater Division as needed regarding:
  - Archaeological considerations.
  - Biological considerations.
  - Compliance requirements.
  - Non-compliance escalations.
- Verify that the Contractor's activities (1) occur within the contract limits or any approved locations, and (2) have been cleared through the Environmental Services Division.
- Discuss NDOT's and the Contractor's environmental mitigation commitments and obligations at weekly meetings.
- Review the Stormwater Pollution Prevention Plan (SWPPP) for completeness.
- Follow all best management practices (BMPs) identified in the completed SWPPP prior to allowing work to begin.
- Ensure that inspection and documentation are performed at required intervals.
- Ensure that all provisions of the *NDOT Stormwater Guidance Manual for Construction Projects* are met.

DISTRICT ADMINISTRATION

- N/A

CONSTRUCTION DIVISION

CONSTRUCTABILITY SECTION

- Support Construction Field Crews with environmental/stormwater issues or concerns.

CONSTRUCTION ADMINISTRATIVE SERVICES SECTION

- Pick up all original forms and correspondence at the time of contract closeout.
- Deliver forms and correspondence to Administrative Services Division's Records Management Section.

FHWA

- Provide technical support and assistance

OTHER NDOT DIVISIONS

STORMWATER DIVISION

- Review/approve contractor's plan for staging areas on undisturbed land or outside contract limits.
- Supply appropriate personnel for contract.
- Attend field review in accordance with the *NDOT Stormwater Guidance Manual for Construction Projects*.
- Coordinate the change of operator.
- File the Notice of Termination with the Nevada Department of Environmental Protection (NDEP).

TRAFFIC CONTROL REQUIREMENTS

The traffic control for any project is a large and integral element of the project's construction. NDOT places a great deal of importance on the traffic control of a project. While the traffic control plays a major role in the successful construction of any project, the components/elements that make up the traffic control begin early in a project's development and design phases. This section is intended to provide a basic overview administration of the traffic control on a project; refer to "624 Accommodations for Public Traffic", in Chapter 2 of the *Field Inspection Guide*, for details on the accommodations for public traffic where the majority of the activities related to traffic control occur for the Construction Field Crews. For the requirements of contractor-designed traffic control plans, refer to "625 Construction Signs", in Chapter 2 of the *Field Inspection Guide*.

The *NDOT Work Zone Safety & Mobility Implementation Guide* addresses roadway safety and mobility impacts of work zones. The design of all traffic control shall conform to the requirements of the *Manual on Uniform Traffic Control Devices* (MUTCD), and all corresponding sections of the Standard Plans and Standard Specifications.

Every project has a Transportation Management Plan (TMP) designed/developed during a project's Design Phase and carried through the Construction Phase in accordance with the *NDOT Work Zone Safety & Mobility Implementation Guide*. The TMP is available to bidders to assist in their development and implementation of traffic control.

Traffic control for each project is typically advanced through the Design Phase in one of two formats for bidding purposes in accordance with Subsection 108.04, "(Prosecution and Progress) Limitations of Operations", of the Standard Specifications and Special Provisions:

1. For Lump Sum Traffic Control (Rent Traffic Control Devices – Lump Sum), the Contractor bids a single lump sum item to furnish a traffic control plan and its implementation and maintenance throughout the life of the contract; all necessary traffic control and safety devices not listed as separate items are included in the lump sum item. A project's traffic control will typically fall under this format when it is determined the type of traffic control with its necessary staging and phase is straightforward enough that the Standard Plans and MUTCD standards can be applied with little or no modification.

   Contractor Lump Sum Traffic Control is provided as a submittal in accordance with Subsection 625.03.05 "(Construction Signs) (Construction) Contractor Designed Traffic Control Plans", of the Standard Specifications. For more information, refer to "Submittals: Traffic Control Plans" on page 2-38.

2. NDOT develops a detailed phasing and staging plan with specific devices and individual pay items for each device. These types of projects are typically more complex urban-area contracts where the most efficient method to convey the intent of the devices necessary for the control and protection of public traffic throughout the project is with a detailed plan.

A Traffic Control Supervisor (TCS) is required on all construction contracts, and has the responsibility for initiating, installing, and maintaining all traffic control devices on a project in accordance with Subsection 624.03.06, "(Accommodations for Public Traffic) (Construction) Traffic Control Supervisor", of the Standard Specifications.

The use of Uniformed Traffic Control (UTC) officers is often determined to be an essential element to the successful implementation of a project's traffic control; as such, a force account bid item is set up in the contract. Officers are obtained through agreements between the construction Contractor and local law enforcement agencies. The Contractor is reimbursed in accordance with 624.04.01, "(Accommodations for Public Traffic) (Method of Measurement) Measurement", of the Standard Specifications. Specific use and implementation of the officers is part of the traffic control plan and operations agreed to between the Contractor and Resident Engineer.

CONSTRUCTION FIELD CREWS

- Review/approve submitted TC plans.
- Ensure submitted TC plans are in accordance with contract documents.
- Submit TC plans (as needed) to District Traffic Engineer and Traffic Operations for review/comment.
- Send requests for speed reduction/limitations to Traffic Operations and District Administration.
- Monitor TC daily to ensure compliance with approved TC plans.
- Ensure that TC devices are compliant with MUTCD requirements.
- Ensure the timely submission and review of TC supervisor reports.

CONSTRUCTION DIVISION

- Assist Field Crews with assumptions used to develop TC plans.
- Support Field Crews with TC administration.

DISTRICT ADMINISTRATION

- Review, provide input/recommendations to TC plans (Assistant District Engineer, District Traffic Engineer)

FHWA

- For on-site visits, review for conformance with MUTCD

OTHER NDOT DIVISIONS

- The Project Coordinator from the division responsible for the project:
  - Provide input/recommendations on TC plans (as necessary).

TRAFFIC OPERATIONS DIVISION

- Review, provide input/recommendations to TC plans.

CONTRACTOR PROGRESS PAYMENTS

As the project progresses, the Resident Engineer prepares progress payments for acceptable work completed by the Contractor and for materials that the Contractor incorporated into the work. The Resident Engineer prepares progress payments every 2 weeks and submits them electronically to the Construction Division's Administrative Services Section. The progress payments are based on quantities installed and documented by Construction Field Crews. The Administrative Services Section reviews the quantities submitted by the Resident Engineer and forwards the progress payment request to the Accounting Division for payment.

Withholding Payments. Contractor progress payments may be withheld in accordance with the Subsection 109.06, (Measurement and Payment) Partial Payment", of the Standard Specifications. This includes but is not limited to submission of schedules, contract compliance deficiencies, unacceptable traffic control, failure to follow the Quality Control Plan, Environmental violations, etc. Withholding of progress payments must be approved by the Director's Office prior to withholding.

CONSTRUCTION FIELD CREWS

- Discuss with the Contractor their inability to meet contract requirements. If compliance is not achieved, notify the Contractor in writing that withholding of progress payment(s) will occur, then document the issue in a timely manner.
- Send recommendation of partial or full payment withholding, including the amount, and then work with the Assistant District Engineer.
- The Resident Engineer notifies the District Engineer of the recommendation to withhold payment; the District Engineer coordinates with the Chief Construction Engineer to gain concurrence from the Director's Office.
- Upon Director's Office approval to withhold progress payment(s), notify Contractor immediately, by phone and in writing, of the payment(s) to be withheld.

DISTRICT ADMINISTRATION

ASSISTANT DISTRICT ENGINEER

- Accept/reject the request to withhold progress payment(s).
- Recommend withholding progress payment(s) to the District Engineer.

DISTRICT ENGINEER

- Accept/reject the request to withhold progress payment(s).
- Recommend withholding progress payment(s) to the Chief Construction Engineer.

CONSTRUCTION DIVISION

CHIEF CONSTRUCTION ENGINEER

- Upon District's recommendation to withhold progress payment(s), accept/reject the request to withhold progress payment(s).
- Recommend withholding progress payment(s) to the Director's Office.
- Notify District Engineer and FHWA of Director's Office approval/rejection.

FHWA

- N/A

OTHER NDOT DIVISIONS

DIRECTOR'S OFFICE

- Approve/reject the request to withhold progress payment(s) and the amount.

PARTIAL RELIEF OF MAINTENANCE

When portions of work are complete, Partial Relief of Maintenance may be granted in accordance with Subsection 107.15, "(Legal Relations and Responsibility to the Public) Relief from Maintenance and Responsibility", of the Standard Specifications. The Department may grant relief for the portions of work that are satisfactorily complete.

If all work is complete, Full Relief of Maintenance is warranted and a Final Inspection is required. Refer to the "Final Inspection" section for more information.

CONSTRUCTION FIELD CREWS

- Contact the Assistant District Engineer for Field Review in accordance with Subsection 107.15, "(Legal Relations and Responsibility to the Public) Relief from Maintenance and Responsibility", of the Standard Specifications.
- Perform Field Review with Assistant District Engineer.
- Send Partial Relief of Maintenance Correspondence to Contractor, Chief Construction Engineer and District Engineer.

DISTRICT ADMINISTRATION

ASSISTANT DISTRICT ENGINEER

- Perform the Field Review.
- Concur with satisfactorily completed work.

DISTRICT ENGINEER

- Review/sign Partial Relief of Maintenance correspondence.

CONSTRUCTION DIVISION

- File the Partial Relief of Maintenance correspondence with Final Project Closeout records.

FHWA

- N/A

OTHER NDOT DIVISIONS

- N/A

FINAL INSPECTION

Final Inspection represents the end of the Construction Phase and sets in motion various elements of the Contract Closeout Phase. The Final Inspection is a formal part the contract identified under Subsection 105.16, "(Control of Work) Final Inspection and Acceptance", of the Standard Specifications.

Near the completion of the contract, the Resident Engineer conducts an inspection. The Resident Engineer will verify that all work was constructed or installed according to the contract documents, and if the contract is determined satisfactorily complete, this inspection shall constitute the Final Inspection.

If any work is determined to be unsatisfactory, the Resident Engineer prepares a list of deficiencies related to items of work and areas that the Contractor must clean up in accordance with Subsection 104.05, "(Scope of Work) Final Clean Up", of the Standard Specifications*. The Resident Engineer will provide the Contractor with this list as soon as possible. On large or complex projects, maintaining an ongoing list benefits both the Resident Engineer and the Contractor, as it reduces the level of effort required at the end of the project. The Resident Engineer charges working days until all contract work is complete. If questions exist regarding whether to charge working days, the Resident Engineer should consult with the District Engineer and the Chief Construction Engineer.

* Under no circumstances shall this list be referred to as a "Punch List". Use the term "Deficient or incomplete items of work" for any list provided to the Contractor prior to Final Inspection.

The Resident Engineer will also inspect any sites used as the aggregate sources and haul routes for the project. If an aggregate source is a commercial source, no action is required. If a contractor-furnished source was used, and it is not a commercial source, the Contractor shall provide written documentation that the property owner is satisfied that the Contractor fulfilled the obligations of the agreement between the property owner and the contractor. If the Contractor utilized an NDOT-furnished material source, the Resident Engineer will contact the local Bureau of Land Management (BLM) office and arranges for a BLM inspection of the material site. If the BLM notes deficiencies, the Contractor shall correct the deficiencies and notify the BLM official in writing after the material site work is complete.

In Clark County, a copy of the final inspection and release from the Clark County Department of Air Quality Management is also required.

After all bid item, clean-up work, and aggregate source requirements, and applicable air quality requirements are complete, the Resident Engineer notifies the District Engineer that the project is ready for Final Inspection. Depending on the project type and location, the District Engineer may invite other individuals to the inspection, such as:

- NDOT Maintenance supervisor assigned to maintain the area where the project was constructed
- FHWA representative, if the project used federal funds
- Assistant Construction Engineer

- Local entity representative, if the project included signal system improvements or other improvements to be maintained by the local entity

If the District Engineer notes deficiencies during the Final Inspection, the Resident Engineer will notify the Contractor immediately and in writing. After the Contractor corrects the deficiencies, the Resident Engineer will inform the District Engineer in writing that all work is complete. The District Engineer then prepares and issues a letter to the Contractor stating that the Final Inspection has been completed and that the Contractor is granted Full Relief of Maintenance.

> ***Note:*** *The District Engineer's field acceptance is not final acceptance. The Director's Office issues the contract final acceptance.*

CONSTRUCTION FIELD CREWS

- Prepare and distribute the list of deficient or incomplete items of work.
- Notify the District Engineer that the contract is ready for Final Inspection.
- Notify the Contractor of any additional incomplete items identified during the District Engineer's Final Inspection.
- Notify the District Engineer that the Contractor has completed additional clean up items and contract is ready for final acceptance.

DISTRICT ADMINISTRATION

- Perform the Final Inspection.
- Identify any additional incomplete items during Final Inspection.
- Generate/send letter to Contractor (cc: District Engineer, Chief Construction Engineer), granting Final Inspection (aka "District Acceptance letter") and Full Relief of Maintenance.
- Assume maintenance responsibility.

CONSTRUCTION DIVISION

- File the Final Inspection and Full Relief of Maintenance correspondence with Final Project Closeout records.

FHWA

- Perform the /Final Inspection as required.

OTHER NDOT DIVISIONS

- N/A

CONTRACT CLOSEOUT PHASE

> ***Note:*** *The guidelines identified in one or more of the processes in this phase may not necessarily apply for Design-Build projects.*

> ***Note:*** *Refer to "Other Contract Administration Functions" on page 2-32 for processes/activities that can occur anywhere in this phase but are not listed in this phase.*

Contract closeout verifies the completion of all the required documents throughout the contract lifecycle to ensure fulfillment of all state and federal obligations and in accordance with 49 CFR Part 18.

Timely closeout is crucial in order to:

- Release the Contractor's retention, allowing the Contractor to pursue future projects.
- Limit Department exposure to potential Contractor issues.
- Ensure the availability and accuracy of contract documents.
- Increase Department efficiency and efficacy by freeing up critical resources.
- Meet federal end date and related funding obligations.

For more information on the closeout procedure and the required documents, refer to Chapter 25 of the *AWP Documentation Manual*.

ACCEPTANCE OF CONTRACT

The final inspection of the contract is performed upon due notice or presumptive completion of the entire contract. If all work is found to be acceptable, the Department Director will accept the contract in accordance with Subsection 105.16, "(Control of Work) Final Inspection and Acceptance", of the Standard Specifications. The Director's acceptance of the contract initiates the required correspondence in accordance with NRS 408.387.

CONSTRUCTION FIELD CREWS

- Follow the instructions in Chapter 25 of the *AWP Documentation Manual*, which includes:
  - Completing/sending the Acceptance Testing Summary Sheet (ATSS) to the Construction Division.
  - Reviewing/approving the Final Audit Report, and sending to the Construction Division.
  - Creating/sending the Pit Release (if applicable) to the Construction Division.
  - Creating/sending the Material Deposit Usage Report to the Construction Division.
  - Creating/sending the Guardrail Inventory Data Sheet to the Construction Division.
  - Creating/sending completed As-Built Plans to the Construction Division.
  - Requesting final pick-up of contract.
- Submit the Final Payroll letter to the External Civil Rights Division's Contract Compliance Section.
- Complete/send the Contractor's Past Performance Report (CPPR).

DISTRICT ADMINISTRATION

- Ensure compliance with required procedures outlined in Chapter 25 of the *AWP Documentation Manual*.
- Review/sign the Final Audit Report.
- Review/sign the CPPR.
- Review/sign partial release of retention

CONSTRUCTION DIVISION

CHIEF CONSTRUCTION ENGINEER

- Review/sign the Final Audit Report.
- Create/modify Final Estimate Amount Balance Report.

ASSISTANT CONSTRUCTION ENGINEER

- Review/sign the Final Audit Report.
- Review/sign partial release of retention

QUALITY ASSURANCE SECTION

- Incorporate Independent Assurance tests into ATSS.
- Send the final ATSS to the Materials Division.

CONSTRUCTION ADMINISTRATIVE SERVICES SECTION

- Ensure compliance with required procedures outlined in Chapter 25 of the *AWP Documentation Manual*.
- Conduct the close out of contract.
- Prepare/send Final Audit Report to Resident Engineer, District Administration and Assistant Construction Engineer.
- Print/file Final Audit Report.
- Collect, Send As-Built Plans.
- File the Pit Release (if applicable).
- File the Material Deposit Usage Report.
- File the Guardrail Inventory Data Sheet.
- Generate/send Request for Director's Acceptance memo.
- Print/file Request for Director's Acceptance memo.
- Review the CPPR and send to the Administrative Services Division.

FHWA

- N/A

OTHER NDOT DIVISIONS

DIRECTOR'S OFFICE

- Review/approve Request for Director's Acceptance memo.

ADMINISTRATIVE SERVICES DIVISION, CONTRACT SERVICES SECTION

- Publish Notice to Creditors (in accordance with NRS 408.387).
- File the CPPR and follow the guidelines in Transportation Policy (TP) 1-2-6.

EXTERNAL CIVIL RIGHTS DIVISION, CONTRACT COMPLIANCE SECTION

- File the Final Payroll letter.
- Provide final EEO Clearance Memo to Construction Administrative Services Section.

PARTIAL RELEASE OF RETENTION

Partial release of retention may be requested by the Contractor when all contract items are closed, final quantities are checked by the field office, and there are no outstanding or unresolved issues (e.g., claim, payroll, wage complaints, EEO Clearance, ATSS, or Lab Clearance). All requests shall be made in writing and accompanied by a letter of concurrence from the Contractor's bonding

company. The Resident Engineer will concur that the retained amount covers any documentation errors or liquidated damages that may develop. This correspondence (Contractor's request, bonding company concurrence and Resident Engineer's concurrence) will be routed through the District Office for their written concurrence, then forwarded to Headquarters Construction for their concurrence and processing. Retention shall not be reduced to less than $10,000. If retention held is less than $10,000, a reduction will not be processed.

CONSTRUCTION FIELD CREWS

- Receive request for partial release of retention (email, memo or letter) from Contractor.
- Receive the Consent of Surety document from Contractor and forward to the Construction Administrative Services Section.
- Create, send the Reduction of Retention letter and send to the Construction Administrative Services Section.

DISTRICT ADMINISTRATION

- Sign the Reduction of Retention letter.

CONSTRUCTION DIVISION

CHIEF CONSTRUCTION ENGINEER

- Sign the Reduction of Retention letter.
- Initial the Reduce Retention memo.

CONSTRUCTION ADMISTRATIVE SERVICES SECTION

- Create, send the Reduce Retention memo (upon receipt of request for partial release of retention and Reduction of Retention letter).
- Create the Semi-Final estimate in AASHTOWare Project (AWP) and release retention.

FHWA

- N/A

OTHER NDOT DIVISIONS

DIRECTOR'S OFFICE

- Sign the Reduce Retention memo.

FINAL PAYMENT

The final payment is made upon the contractor's acceptance of final quantities in accordance with Subsection 109.07, "(Measurement and Payment) Acceptance and Final Payment", of the Standard Specifications. All required documentation that comprise the Final Report are prepared and distributed. The final payment releases the retention of the contract, per NRS 408.383.

Refer to Chapter 25 of the *AWP Documentation Manual* for closeout procedures.

CONSTRUCTION FIELD CREWS

- Generate the Closeout Change Order.
- Generate the Semi-Final payment.
- Review/sign the Final Payment Report.
- File the Final Report Packet.

DISTRICT ADMINISTRATION

- Review/sign the Final Payment Report.
- File the Final Report Packet.

CONSTRUCTION DIVISION

CHIEF CONSTRUCTION ENGINEER

- Review/sign the Final Payment Report.

ASSISTANT CONSTRUCTION ENGINEER

- Review/initial the Final Payment Report.

CONSTRUCTION ADMISTRATIVE SERVICES SECTION

- Ensure compliance with required procedures outlined in Chapter 25 of the *AWP Documentation Manual*.
- Send the Final Estimate Amount Balance Report to Contractor.
- Create/send the Final Payment Report to Resident Engineer.
- Process the final payment to Contractor.
- Finalize the Final Payment Report.
- Create/send the Final Report Packet to Resident Engineer, District Administration and Central Records.
- Create/store the Contract Archive File.

FHWA

- File the Final Report Packet.
- Sign-off on the project in the Financial Management System.

OTHER NDOT DIVISIONS

MATERIALS DIVISION

- Send the Lab Clearance Report to Resident Engineer.
- Review/approve the ATSS.

RECORDS MANAGEMENT DIVISION

- Store contract documents per Records Retention Schedule requirements.

ACCOUNTING

- File the Final Payment Report.
- Perform final billing to FHWA and third-parties as needed.

DIRECTOR'S OFFICE

- Review/sign Final the Payment Report. (Assistant Director, Operations)

POST-CONSTRUCTION REVIEW

The Post-Construction Review provides a forum for evaluating the successes and challenges related to the project. The purpose of the Post-Construction Review is to improve future projects through discussion of Change Orders, field adjustments, plan deficiencies, and constructability issues. Participants evaluate and discuss the challenges and successes of the design, materials, and procedures to identify future opportunities for improvement.

When the project is approximately 85 percent complete, the Constructability Section schedules the Post-Construction Review meeting, which includes representatives from NDOT divisions who had a substantial role in the contract.

In addition to the contract-level Post-Construction Review, the Constructability Section prepares an annual report that summarizes the findings and recommendations from project post-construction reviews held during the preceding year. The annual report includes changes that have been implemented because of the Post-Construction Review recommendations.

CONSTRUCTION FIELD CREWS

- Prepare any project recommendations in advance of the Post-Construction Review meeting.
- Attend and participate in the meeting.
- Review the Post-Construction Report (PCR) for accuracy and provide any comments as needed.

DISTRICT ADMINISTRATION

- Attend and participate in the meeting as needed.

CONSTRUCTION DIVISION

CONSTRUCTABILITY SECTION

- Schedule the meeting location, time and date.
- Conduct the meeting and record discussion.
- Attend and participate in the meeting.
- Prepare the PCR, including findings and recommendations.

FHWA

- For federally-funded projects, attend and participate in the meeting as needed.

OTHER NDOT DIVISIONS

DESIGN DIVISION

- Attend and participate in the meeting.
- Review and implement process changes based on Post-Construction Review recommendations.

MATERIALS DIVISION

- Attend and participate in the meeting.
- Review and implement process changes based on Post-Construction Review recommendations.

OTHER CONTRACT ADMINISTRATION FUNCTIONS

The processes/activities outlined in this section can occur anywhere in one or more phases of the contract administration lifecycle:

- "Design Phase" on page 2-3
- "Procurement Phase" on page 2-8
- "Construction Phase" on page 2-13
- "Contract Closeout Phase" on page 2-26

SAFETY

Safety on any project is a shared responsibility. The transportation construction industry has many dangers on the project, but most if not all safety hazards can be mitigated through engineering effort, education of workers and constant awareness of jobsite surroundings and grades. The culture of safety must be instilled in every worker and continuously reinforced through tailgate meetings, safety meetings, and strong safety leadership values set by the Resident Engineer. Refer to the Human Resources Division's Safety and Loss Section for further guidance on safety matters.

Safety on a construction contract has two main concerns, worker safety and traveling public safety. The safety of the traveling public is directly related to the traffic control set-up on the contract. There are safety hazards wherever a crewmember works, including driving to the project, working on the grade around heavy equipment, working in the lab, taking samples in a pit and working in the field office. These hazards can be in many different forms such as slips, trips, and falls, weather extremes both heat and cold, exposure to harmful substances or environments and/or electrical hazards.

Resident Engineers are responsible for the safety of their crew and all NDOT employees on their project. Each Resident Engineer will supply required personal protective equipment, such as hard hats, safety goggles, hearing protection, respiratory protection, and reflective vests to their crew members. Crewmembers will use the appropriate safety equipment as required by project specific requirements and current policy.

Contractors are responsible for the safety of their employees, including subcontractors and vendors. Each Contractor shall comply with all safety regulations governed by the Occupational Safety and Health Administration (OSHA) and the Mine Safety and Health Administration (MSHA) and ensure the safety and convenience of the public throughout the work zone. The Contractor shall submit a project-specific safety plan to the Resident Engineer before project work begins. Project-specific safety issues (e.g., blasting, fire protection, naturally occurring asbestos (NOA)), will be identified in the Special Provisions. At least once during each construction season, the Contractor shall also complete an OSHA safety checklist form, NDOT form 040-028 (Safety Inspection

Checklist - Contractor Operations). The Contractor conducts the inspection and completes the form in the presence of a Construction Crew representative.

CONSTRUCTION FIELD CREWS

- Review and enforce special provisions for safety issues.
- Attend or designate representative to attend the Contractor's weekly meeting.
- Provide all necessary PPE to crew members
- Hold crew safety meetings.
- Set the example with safety.
- Discuss safety concerns with the Contractor.
- Suspend work on project if Contractor continually disregards safety.
- Ensure crew members are properly trained on safety matters.
- Ensure Safety Data Sheets (for office and lab supplies) are up to date and accessible for crew members.

DISTRICT ADMINISTRATION

- Enforce safety standards.
- Discuss safety with Resident Engineers.
- Wear appropriate PPE on jobsite.

CONSTRUCTION DIVISION

- Follow project specific safety protocol.
- Wear appropriate PPE on jobsite.

FHWA

- Check in with Resident Engineer prior to visiting jobsite.
- Wear appropriate PPE on jobsite.

OTHER NDOT DIVISIONS

ALL PARTICIPATING DIVISIONS

- Check in with Resident Engineer prior to visiting jobsite.
- Wear appropriate PPE on jobsite.

PROJECT RECORDS

> ***Note:*** *The guidelines identified in this process may not necessarily apply for Design-Build projects.*

After the project is assigned to the Resident Engineer, the Resident Engineer begins preparing project records. For every NDOT construction contract, records are organized in accordance with the Construction Division's *AWP Documentation Manual*, *AWP User Guide* and related policies and procedures. These references allow for uniform organization in each field office throughout the state, ensuring that records organization is familiar to construction staff working in different field offices. Standard processes and procedures protect NDOT from legal disputes, claims, or other actions related to NDOT projects. Records organization includes a filing system for documents such as correspondence, submittals and other contract documents.

Project records are maintained in the Resident Engineer's office, commonly referred to as the field office.

CONSTRUCTION FIELD CREWS

RESIDENT ENGINEER

- Ensure that the field crews are correctly documenting the construction projects.
- Submit Daily Diaries.
- Enforce the submission of Daily Work Reports (DWRs).

FIELD CREWS

- Submit DWRs and document the construction progress.

DISTRICT ADMINISTRATION

- Assist and enforce the field crews in correctly documenting the construction projects.

CONSTRUCTION DIVISION

ADMINISTRATIVE SERVICES SECTION

- Manage/update the *AWP Documentation Manual* and the *AWP User Guide*.
- Provide uniform guidance and support to all construction crews for conformance with documentation requirements.

FHWA

- N/A

OTHER NDOT DIVISIONS

- N/A

PARTNERING

Partnering on a construction project is a business model by which the owner (NDOT) and the Contractor work together to achieve mutually beneficial goals. Partnering provides the framework to effectively communicate and to resolve disputes, the ability to manage risk, it will help to anticipate and avoid problems, and provides a forum for innovation and to make necessary changes to the contract.

The positive benefits of partnering will come about through the wise use of the principles of partnering, working cooperatively, and as a team.

The objectives and benefits of partnering are:

- Increased safety.
- Projects delivered on time or ahead of schedule.
- Projects Completed within budget.
- Improved quality.

- Prompt mitigation and resolution of disputes.
- Increased job satisfaction.
- Award-winning project construction.

The partnering relationship can take one of the following forms:

- Formal partnering is conducted by a professional facilitator who leads quarterly partnering meetings, mandated by the Standard specifications on projects greater than $10 million.
- Informal partnering is conducted by the Resident Engineer beginning with the "Conflict Resolution Ladder" completed at the Pre-Construction Conference, continuing with weekly project meetings and/or the Contractor's project manager.

For more information, refer to the *Guide to Partnering on NDOT Projects* and Subsection 105.05, (Control of Work) Partnering", of the Standard Specifications.

CONSTRUCTION FIELD CREWS

- Provide invitation to enter into partnership after award of contract.
- Coordinate with the Contractor to schedule Partnering meetings.
- Work with Contractor to mutually select a Partnering facilitator.
- Attend and participate in Partnering meetings.

DISTRICT ADMINISTRATION

- Attend and participate in Partnering meetings.

CONSTRUCTION DIVISION

- Attend and participate in Partnering meetings.
- Provide updated Partnering Facilitator List.

FHWA

- Attend and participate in Partnering meetings as needed.

OTHER NDOT DIVISIONS

ALL PARTICIPATING DIVISIONS / STAKEHOLDERS

- Attend and participate in Partnering meetings as needed.

DISPUTES REVIEW TEAM

For construction projects that have a Disputes Review Team (DRT) established, disputes may arise between the Contractor and the Resident Engineer that cannot be resolved through the conflict resolution ladder and affect the timely completion of the contract.

Since litigation and lawsuits are often the most time-consuming and resource intensive ways of resolving disputes, the Department encourages using dispute avoidance through DRTs that consist of third-party experts selected by the Department and the Contractor to assist in and facilitate the timely and equitable resolution of these disputes to avoid unnecessary delay and litigation.

The DRT consists of three members who are chosen per Subsection 105.18, "(Control of Work) Disputes Review Team," of the Special Provisions (if a DRT is required for a contract). The members should be acknowledged experts in the type of construction related to the project, but areas of expertise should be varied. The Department will reimburse the Contractor 100 percent of the DRT costs under a force account payment with no markup.

Once DRT members are chosen, they will need to sign a Three-Party Agreement that outlines payment to DRT members, provides them indemnification for decisions rendered through the DRT and assigns responsibility to DRT member, the Contractor, and the Department. As part of the Three-Party Agreement, the DRT members will have to disclose any conflict of interests.

Prior to or during its first meeting at the project site, the DRT shall, with the agreement of all parties, establish written procedures for the conduct of its routine site visits and its hearings of disputes. At a minimum, hearing procedures should address submitting documents, conducting hearings, providing recommendations and associated tasks.

If the Contractor and the Department cannot resolve a dispute, the DRT provides an unbiased audience that is familiar with the contract and has an industry background. The DRT's recommendations are not legally binding on the Contractor or NDOT. However, any records associated with the Dispute Resolution Team, such as written recommendations, are admissible as evidence in a formal claim process.

For more information, refer to the Dispute Resolution Program page on the NDOT Internet site and Subsection 105.18, (Control of Work) Disputes Review Team", of the Standard Specifications.

CONSTRUCTION FIELD CREWS

- Work with the Contractor to establish DRT members.
- Provide administrative functions associated with the assembly of and communication with the DRT.
- Work with the DRT and the Contractor to establish procedures and guidelines, and execute the Three-Party Agreement.
- Coordinate with the Contractor to schedule DRT meetings.
- Develop/present NDOT's position at DRT meetings.
- Attend and participate in DRT meetings.

DISTRICT ADMINISTRATION

- Attend and participate in DRT meetings.

CONSTRUCTION DIVISION

- Attend and participate in DRT meetings.

FHWA

- Attend and participate in DRT meetings (as necessary).

OTHER NDOT DIVISIONS

ALL PARTICIPATING DIVISIONS / STAKEHOLDERS

- Attend and participate in DRT meetings; provide technical expertise for the Resident Engineer as needed.

DIRECTOR'S OFFICE

- Accept/reject the DRT's written recommendation.
- Attend and participate in DRT meetings (as necessary).

REQUESTS FOR INFORMATION

When clarification of the contract documents is requested, the Contractor submits a Request for Information (RFI) to obtain written clarification. Written questions and responses are an effective method to document ongoing issues and resolutions encountered during the execution of the contract. When a Contractor submits an RFI to the Resident Engineer, the Resident Engineer will respond as quickly as possible so that the project is not delayed. The Resident Engineer has the authority to determine the final response to the Contractor. A complete and comprehensive RFI log is generated and updated timely to track the issues and resolutions.

CONSTRUCTION CREWS

- Review and respond timely to RFIs.
- Provide clarifying information to the Contractor, such as revised plan sheets and/or specification clarification.
- Consult with the Assistant District Engineer on RFI responses to ensure any potential conflicts are mitigated.
- Generate and update RFI log including pending, current status and resolution results with references to documents.

DISTRICT ADMINISTRATION

- Provide input and guidance to the Resident Engineer on RFIs.
- Assist the Resident Engineer and facilitate resolution with the Contractor when issues arise from the RFI responses.

CONSTRUCTION DIVISION

- Assist the Resident Engineer in responding to RFIs as needed.

FHWA

- N/A

OTHER NDOT DIVISIONS

ALL PARTICIPATING DIVISIONS

- Provide support and assistance for responses to RFIs.

SUBMITTALS

Contractors are required to provide submittals in accordance with the contract documents, for review and acceptance by the Department prior to starting work. Submittals requirements vary by type and scope of work.

Refer to the following sections of this chapter for the major submittal types that can be expected on all contracts:

- "Submittals: Traffic Control Plans" on the next page
- "Submittals: Project Schedules" on page 2-39

- "Submittals: Plantmix and Concrete Mix Designs" on page 2-41
- "Submittals: Safety Data Sheets" on page 2-43
- "Submittals: Shop Drawings" on page 2-44

There are submittal requirements throughout the contract documents which will all vary depending on the specific contract. Some examples of these submittals may include individual materials, products, personnel certifications, or subcontractor qualifications.

CONSTRUCTION FIELD CREWS

- Generate and maintain submittal logs with accurate status of submittals.
- Notify Contractor of submittal requirements.
- Review/approve/reject submittals
- Notify Contractor timely of submittal approvals or rejections.
- Provide submittals (as needed) to other Divisions/District for review/comment.

DISTRICT ADMINISTRATION

- Provide input/recommendations on submittals (as necessary).

CONSTRUCTION DIVISION

- N/A

FHWA

- N/A

OTHER NDOT DIVISIONS

- The Project Coordinator from the division responsible for the project:
  - Provide input/recommendations on submittals (as necessary).

SUBMITTALS: TRAFFIC CONTROL PLANS

Maintaining traffic safely through a work zone is a Department priority. Contractors are required to submit a Traffic Control (TC) Plan and related changes in accordance with Section 624, "Accommodations for Public Traffic" and Section 625, "Construction Signs", of the Standard Specifications, for review and acceptance by the Department prior to starting work.

The TC Plan is reviewed/approved to ensure that it complies with one or more of the following:

- Standard Plans.
- *Manual on Uniform Traffic Control Devices* (MUTCD).
- Contract documents.
- The Traffic Management Plan (TMP).
- The NDOT *NDOT Work Zone Safety & Mobility Implementation Guide*.

CONSTRUCTION FIELD CREWS

- Notify Contractor of submittal requirements.
- Provide timely notification to Contractor of submittal acceptance/approval or rejection; provide related documents.

- Review/approve submitted TC plans and related changes.
- Ensure proper compliance of submitted TC plans.
- Submit TC plans (as needed) to the District Traffic Engineer and Traffic Operations for review/comment.

DISTRICT ADMINISTRATION

- Assist Field Crews with assumptions used to develop TC plans.

CONSTRUCTION DIVISION

- N/A

FHWA

- N/A

OTHER NDOT DIVISIONS

- The Project Coordinator from the division responsible for the project:
  - Provide input/recommendations on TC plans (as necessary).

SUBMITTALS: PROJECT SCHEDULES

Contractors are required to submit a project schedule in accordance with Subsection 108.03, "(Prosecution and Progress) Prosecution and Progress", of the Standard Specifications prior to the Pre-Construction Conference. A project schedule is a tool used to define the Contractor's plan on how the project is going to be built. It documents, measures and monitors a Contractor's progress in completing the project on time. Project schedules also serve as an analytical tool for evaluating impacts to contract time.

The Project Schedule identifies activities, durations and logic ties between activities and the critical path. The critical path is the consecutive sequence of activities in a project whose cumulative time requirements determine the minimum total project time. Delays in critical path activities can delay the entire project if mitigating efforts, such as re-sequencing, are not addressed.

Key elements of a Project Schedule include:

- Project complexity.
- Critical path activities applicable to the completion of the project.
- Subcontractor work.
- Durations of physical work.
- Limitations.
- Project duration.

The following are guidelines in reviewing project schedules:

- Preliminary Schedule (submitted 7 days prior to the Pre-construction Conference)
  - Schedule format is established
  - Notice to proceed is identified
  - A minimum of the first 30 working days of activities are identified and durations are provided
  - All logic ties are identified with predecessor and successor
  - Working days are clearly represented

  - Material procurement timelines are identified
  - Submittal timelines are provided
- Baseline Schedule (submitted within 15 days of acceptance of the Preliminary Schedule)
  - The schedule includes all items necessary to complete the project and are identified clearly
  - Submittal, procurement, fabrication and delivery timelines shall be individual activities
  - Mobilization is included as an activity
  - All durations for activities appear reasonable
  - Logic ties are complete and in order
  - Calendars have been defined
  - Schedule completes all required activities within the provided contract time
  - Schedule meets all specification requirements
  - Critical path is easily identified and includes all activity descriptions, durations and logic
  - All concurrent work is achievable

> ***Note:*** *In the event an early completion schedule is submitted, either party may submit a Value Engineering Proposal to modify Subsection 108.02, "(Prosecution and Progress) Notice to Proceed", of the Standard Specifications, to reflect the early completion.*

- Monthly Updates
  - All Baseline Schedule changes are identified
  - Schedule matches the actual work being done
  - Schedule reflects all delays, and critical path has been adjusted if necessary
  - Determine whether a supplemental schedule is required

If the Contractor is not meeting the contractual requirements for schedule submittals, the Resident Engineer will be timely in addressing it with the Contractor. It is in the best interest of the contract to enforce the specifications for schedule submittal. Early identification of schedule delays can assist the Resident Engineer to mitigate or assist in identifying responsibility for potential delays.

If the Contractor fails to submit an updated schedule, the Resident Engineer may withhold all or a portion of a progress payment. Refer to "Contractor Progress Payments" on page 2-23 for more information.

In the event the Contractor requests an extension of contract time and/or submits a request for compensation due to delays to the contract, a recovery schedule shall be submitted.

CONSTRUCTION FIELD CREWS

- Save/archive the progress schedule in electronic format.
- Monitor the contractor's ongoing performance as compared to the progress schedule. Critical activities, as identified in the Progress Schedule, should continually be cross-referenced to the actual work being performed.
- Ensure the schedule accurately represents the anticipated and ongoing work.
- Ensure the Contractor submits the schedules as required.
- Provide electronic schedule to Construction Division for review as needed.
- Follow process to document contractor's noncompliance of submittals.
- Recommend withholding of progress payments to the Assistant District Engineer if schedules are not submitted.

DISTRICT ADMINISTRATION

- Support the Resident Engineer to enforce the contractual requirements for schedule submission.
- Concur with the Resident Engineer to withhold progress payments for the Contractor's failure to submit schedules.
- Provide recommendation to Chief Construction Engineer to withhold Contractor payment for failure to submit schedules.

CONSTRUCTION DIVISION

- Review electronic copies of all schedules for:
  - Reasonableness.
  - Logical activity sequencing.
  - Meeting the contractual requirements.
  - Changes in logic.

FHWA

- N/A

OTHER NDOT DIVISIONS

- N/A

SUBMITTALS: PLANTMIX AND CONCRETE MIX DESIGNS

Contractors are required to submit plantmix and concrete mix designs in accordance with the Standard Specifications prior to starting work. The quality of the project depends on the quality of the materials used, and these materials are subject to the requirements of the contract documents. For materials requirements, refer to Section 106, "Control of Material", and Division III, "Materials Details", of the Standard Specifications.

The mix design for each product and each component of the mixture must conform to requirements described in the contract documents. The Resident Engineer will test* the components of a mixture to ensure they meet specification requirements before submitting the mix design to the Materials Division for review and approval. This assists in mitigating potential delays to approval of the mix design.

*Test – The Materials Division provides approval of the components (materials), this approval is defined as "source acceptance".

PLANTMIX BITUMINOUS PAVEMENTS

The Materials Division develops mix designs and determines bitumen ratios based on approved stockpiles, Contractor-proposed submitted bin percentages and bituminous material supplier.

The Contractor may request to use a mix design developed by the Materials Division within the calendar year. The Contractor's request to use a previous mix design requires approval from the Materials Division.

Because plantmix bituminous pavement mix design specifications vary, the Materials Division's mix design represents one of many designs that could meet specifications using the aggregates supplied by the Contractor. The Contractor proposes a job-mix formula based on the Material Division's mix design with single values within the Standard Specification's range of values.

JOB MIX FORMULA

The Resident Engineer reviews the Contractor's Job Mix Formula (JMF), makes any necessary changes and establishes the approved JMF that the Contractor shall use on the project. While the mix design can be used on multiple projects, JMFs are contract-specific and a new JMF is required for the current contract using the latest JMF from the contract the mix design was approved from.

PORTLAND CEMENT CONCRETE

The Contractor submits a concrete mix design based on the requirements stated in the Standard Specifications. The proposed mix design must be designed by an outside lab with an accreditation acceptable by the Materials Division. In the submittal, the Contractor shall state the class of concrete for which the mix design is being submitted.

The Contractor may choose to submit a mix design of a higher-quality mixture than required. This mix design's strength will become the contract's required strength.

The Contractor may also request to use a previously-approved mix design, if the approval is less than a year old. The request is considered only if the aggregate source and other pertinent information (proportions of aggregates, amount of water, amount and type of cement, and admixtures) remain unchanged. The request must be accompanied by recent certified test results.

The Contractor submits the proposed mix design to the Resident Engineer, who forwards it to the Materials Division for review and approval. The Materials Division approves or rejects the mix design and notifies the Resident Engineer.

A concrete mix design submittal is required for all quantities, large or small, of concrete. Small quantities include:

- Fence posts.
- Curb, gutter and sidewalk less than 100 feet long.
- Small permanent ground-mounted signs.
- Other minor placements under 1.3 cubic yards.

Although a mix design submittal is required for small quantities, the Resident Engineer may:

- Approve mix designs for minor placements.
- Waive trial batch test requirements (aggregates must still come from approved sources)*.
- Waive field tests relating to minor placements based on visual inspection of the quality of the delivered concrete.*

*Refer to Page 2 of the *Field Testing Guide*.

CONSTRUCTION FIELD CREWS

- For plantmix bituminous pavement mix designs:
  - Verify the mix design is not older than one year if the Contractor proposes to use an existing mix design.
  - Verify all material types are as specified in the contract documents.
  - Approve the components of the mix design before submitting it to the Materials Division for review and approval.
  - Review the approved mix design from the Materials Division and forward to the Contractor upon agreement.
  - Review the Contractor's JMF for conformance with the Job Mix Formula Process Memo and:
    - Make any necessary changes in accordance with Subsection 401.02.02 "(Plantmix Bituminous Pavements) (Materials) Composition of Mixtures", of the Standard Specifications.
    - Develop/send the Job Mix Formula letter to the Contractor.

- For Portland cement concrete mix designs:
  - Review/forward the mix design to the Materials Division for approval.
  - Review the approved mix design from the Materials Division and forward to the Contractor upon agreement.

DISTRICT ADMINISTRATION

- N/A

CONSTRUCTION DIVISION

QUALITY ASSURANCE SECTION

- For plantmix bituminous pavement mix designs, review the draft JMF for conformance with the Job Mix Formula Process Memo and provide comments.
- Post the approved mix design and JMF for future reference.

FHWA

- N/A

OTHER NDOT DIVISIONS

MATERIALS DIVISION

- For plantmix bituminous pavement mix designs:
  - Test the material samples for conformance with specifications.
  - Develop the mix design.
  - Send the mix design to the Resident Engineer.
- For Portland cement concrete mix designs:
  - Review the mix design and:
    - Forward the approved mix design to the Resident Engineer.
    - Notify the Resident Engineer of the rejected mix design.

SUBMITTALS: SAFETY DATA SHEETS

Contractors are required to submit Safety Data Sheets (SDS) for any hazardous material that will be used on the job site. Contractors typically submit the SDS before the Pre-Construction Conference. The Contractor shall have all SDS readily available on the jobsite, which is a required component of the Contractor's safety plan.

CONSTRUCTION FIELD CREWS

- Verify that all SDS are submitted and filed prior to or upon delivery to job site.

DISTRICT ADMINISTRATION

- N/A

CONSTRUCTION DIVISION

- N/A

FHWA

- N/A

OTHER NDOT DIVISIONS

- N/A

SUBMITTALS: SHOP DRAWINGS

Contractors are required to submit shop drawings in accordance with the Standard Specifications prior to starting work.

The plans and specifications describe the quality of the product that the Contractor shall incorporate into the contract prior to the start of related work in accordance with Subsection 105.02 "(Control of Work) Plans and Working Drawings" of the Standard Specifications. When the product is complex or has significant public safety implications, the Department actively monitors the techniques and processes that the Contractor will use. In these situations, the Contractor may use interim designs or drawings. NDOT reviews these drawings, commonly referred to as working drawings or shop drawings. Bridges, major structures, and retaining walls are common examples of when the Contractor uses working drawings. With few exceptions, the Contractor submits shop drawings to the Resident Engineer, who transmits them to the Structures Division for review and approval. On occasion, other divisions or entities will review shop drawings.

The following are common shop drawing submittals that may require other reviewing entities:

- Railroads: Structures or falsework that crosses a railroad
- Utilities: Utility installations or relocations
- City or county governments: Construction of improvements owned by a local agency

If the shop drawing is for reinforcing steel, the Resident Engineer reviews the drawing to confirm that the construction details conform to the contract documents. For all other shop drawings, the Resident Engineer forwards the drawings to the Structures Division for review and approval. The corresponding section(s) of the Standard Specifications cite the required time limitations for reviews and submittals. The Contractor may not proceed with work until the relevant shop drawings are approved.

During the review and approval process, shop drawings may be returned to the Contractor for revision or modification. An important aspect of the shop drawing submittal process is maintaining a complete, accurate, and current log of shop drawing submittals, revisions, and approvals. The Resident Engineer will ensure that inspectors use the current, approved shop drawings for the work they are inspecting.

Shop drawings are critical to the construction of the project, and ample time must be allocated to review shop drawings. The specifications state the minimum time allowed for the Contractor to submit shop drawings before beginning work. The Resident Engineer should encourage the Contractor to submit shop drawings early enough to allow adequate review time.

CONSTRUCTION FIELD CREWS

- Submit shop drawings to appropriate Divisions for approval.
- Provide approval/rejection in writing to the Contractor.

- Maintain submittal log.

DISTRICT ADMINISTRATION

- N/A

CONSTRUCTION DIVISION

- N/A

FHWA

- N/A

OTHER NDOT DIVISIONS

ALL PARTICIPATING DIVISIONS

- Perform necessary review/approval of shop drawings.

CHANGES TO CONTRACT: SUPPLEMENTAL AGREEMENTS

Whenever the termini (contract limits) of the project are changed within the governing environmental document limits of the National Environmental Policy Act (NEPA), a Supplemental Agreement acceptable to both parties to the contract shall be executed in advance of performing the affected work. A Supplemental Agreement is a written agreement between the contractor and NDOT for work not included in the current project limits in accordance with Subsection 104.02, (Scope of Work) "Changes in Character of Work", of the Standard Specifications. After the contractor and the Department approve and execute a Supplemental Agreement, it becomes part of the contract.

Any work outside the project limits requires a Supplemental Agreement. It is necessary to use a Supplemental Agreement in these circumstances because the Department cannot direct a contractor to perform work outside of the original scope of the contract, and work outside the project limits is outside of the original scope.

After a decision is made to enter into a Supplemental Agreement, the Administrative Services Division's Contract Services Section initiates the preparation of the agreement. The Resident Engineer will negotiate prices to be included in the agreement and generate an administrative Change Order in order for the Department to incorporate the additional work into the contract. In addition, there are multiple divisions within NDOT who must be involved in or notified of a change in project limits, and a Supplemental Agreement puts these Divisions on appropriate notice of such a change. There are additional requirements when the project is Federally funded.

CONSTRUCTION FIELD CREWS

RESIDENT ENGINEER

- Negotiate prices to be included in the Supplemental Agreement. Each force account or agreed price used requires an analysis or justification.
- Work with the Construction and Project Management Design divisions to review the updated plans, project limits, and contract terms, and finalize the spreadsheet showing original proposal bid items and quantities, previous Change Orders affecting bid

items, quantities or pricing, and the bid items, quantities and working days (as applicable) to be updated by the Supplemental Agreement.
- Notify District Engineer and the Administrative Services Division's Contract Services Section of the negotiated prices.
- Review updated plans, quantities and unit prices and provide comments.
- Generate the administrative Change Order after the Supplemental Agreement is fully executed.

DISTRICT ADMINISTRATION

- Concur with the scope of work and cost prior to full execution of the Supplemental Agreement, and notify the Administrative Services Division.

CONSTRUCTION DIVISION

- Coordinate with the Resident Engineer to finalize the updated project limits and determine what work will be added or deleted.
- Review updated plans, quantities and unit prices and provide comments.

FHWA

- N/A

OTHER NDOT DIVISIONS

- The Project Coordinator from the division responsible for the project:
  - Prepare or request updated plans showing the updated project limits and plan quantities. **Plans must show the revision date ("REVISED MM/DD/YYYY") in red ink on every page.** Send updated plans to the Construction Division and Resident Engineer for comments. Incorporate comments and finalize the plans.
  - Request an updated Right of Way Certification and Environmental Clearance.
  - Obtain the negotiated prices from the Resident Engineer.
  - Prepare a spreadsheet showing bid items, quantities and unit prices for work to be added to the contract.
  - Generate specifications as needed.
  - Contact the Financial Management Division to obtain funding approval.
  - Prepare a description of the changes to the project limits and any other terms and conditions that need to be changed.
  - Send all information to the Administrative Services Division's Contract Services Section with a request to process a Supplemental Agreement.

ADMINISTRATIVE SERVICES DIVISION, CONTRACT SERVICES SECTION

- Verify receipt of the following:
  - Updated Right of Way Certification
  - Updated Environmental Clearance
  - Verification of funding approval
  - Updated plans
  - Updated project limit description
  - Updated bid items, quantities, unit prices and other contract terms (such as specifications and working days)
  - Prepare the Supplemental Agreement and notify the District Engineer.
  - If the project is a Project of Divisional Interest (PODI), submit the Supplemental Agreement for FHWA approval.
  - Fully execute the Supplemental Agreement.
- Send a copy of the fully executed Supplemental Agreement to the Resident Engineer and post a copy on the E-Bidding Portal.

CHANGES TO CONTRACT: CHANGE ORDERS

Note: *The guidelines identified in one or more of the processes in this phase may not necessarily apply for Design-Build projects.*

Note: *Any changes to the project limits require a Supplemental Agreement. Refer to* *"Changes to Contract: Supplemental Agreements" on page 2-45* *for more information.*

The Department has the right to modify a contract through Change Orders. A Change Order is required for changes to the scope and character of the work, payment, specification or contract working time. A Change Order is legally binding and becomes part of the contract. Just as the original plans and specifications define the scope, terms and conditions of work, a Change Order needs to define the same and include all supporting documentation.

Because a Change Order is legally binding to the Contractor and to the Department, the Change Order must be prepared with care. The required elements of a Change Order must be clear, concise and unambiguous. A Change Order is prepared so that a person not familiar with the modification can readily interpret scope, terms and conditions of the work. Refer to Chapter 3 of the *AWP Documentation Manual* for the essential elements required to generate a Change Order.

The Construction Division, in cooperation with the FHWA, has developed the following standard guidelines outlining conditions that require a Change Order:

- Revision of geometric design (main road, ramps, frontage roads, or crossroads).
- Revision of roadbed structural section's base or pavement thickness.
- Revisions of major structures.
- Any change in planned access provisions. On the Interstate system, changes in planned access require FHWA authorization and should be submitted well in advance. These changes include, but are not limited to, such minor revisions as relocating a control of access locked gate and include plan sheets showing the change.
- Any change that alters the scope of the contract including deletion or addition of contract items.
- Any change related to type or quality of materials to be furnished.
- Changes in specifications or specified construction techniques.
- Changes resulting in adjustment of bid unit prices or in establishing agreed unit prices for items not contained in the original contract.
- Design changes, such as providing for a culvert not indicated on the plans or modifying the diameter of a pipe. A Change Order is not required for changes in pipe lengths.
- Payment for materials stockpiled out of state, unless otherwise stated in the contract documents.
- Acceptance of material or work that does not conform to the Standard Specifications.
- Adding/removing materials sites.

Change Orders may be approved for routine maintenance work or procurement of materials on state-funded projects, but they are not permitted on federally-funded projects.

Change Orders related to right-of-way agreements with property owners and/or utility companies are required for any work required which has not been identified in the contract documents or the current Right of Way agreement. All required agreements/documents must be executed and attached to the Change Order. A Change Order cannot be executed until all required agreements/documents are executed.

Changes require the Resident Engineer to inform other NDOT divisions and coordinate with them for guidance and recommendations. When a division requests a change, the requesting division submits the request in writing to the Chief Construction Engineer. The Chief Construction Engineer reviews the request and, if the Chief Construction Engineer concurs in the request, the Assistant Construction Engineer forwards it to the Resident Engineer and Assistant District Engineer.

If the District Engineer or the Resident Engineer initiates a Change Order, they do not need to submit a request for change to the Construction Division but still need to coordinate with Construction Division and all appropriate divisions. The Resident Engineer should always discuss contemplated changes with the Assistant District Engineer, the Assistant Construction Engineer, the appropriate technical divisions, and FHWA representatives.

NDOT policy and FHWA regulations require that work requiring a Change Order shall not begin until (1) The Change Order has been fully executed; or (2) on PoDI contracts, a written Prior Authorization from FHWA authorizing the work to proceed has been granted. If the Contractor begins Change Order work before the Director executes the Change Order, the Contractor risks receiving no payment for the work.

On PoDI contracts, the FHWA reviews and approves Change Orders. Generally, the FHWA does not approve orders involving changes in the Standard Specifications unless one of the following criteria is met:

- The specifications, as written, are impossible or impractical to comply with.
- A product equal in all respects to the one specified can be furnished at a savings to the contract.
- A product superior to one specified can be furnished at no increase in cost.

Any change in the project limits as defined in the contract documents cannot be made by a Change Order. A Supplemental Agreement is required. Refer to "Changes to Contract: Supplemental Agreements" on page 2-45 for more information.

Refer to Change Order Examples in the Construction Crew Portal of the Construction Division SharePoint for various examples of completed Change Orders.

COMMITMENT AUTHORITY

The Resident Engineer and District Engineer have the authority to initiate Change Order work. Commitment authority is limited to the following:

- District Engineer
  - Projects greater than $5,000,000: Commitment Authority to initiate a Change Order: $100,000
  - Projects less than or equal to $5,000,000: Commitment Authority to initiate a Change Order: $50,000
- Resident Engineer
  - Projects greater than $5,000,000: Commitment Authority to initiate a Change Order: $50,000
  - Projects less than or equal to $5,000,000: Commitment Authority to initiate a Change Order: $25,000

The following categories are excluded from the District Engineer's and the Resident Engineer's commitment authority, regardless of cost:

- Substantial revisions in geometric design, structural section, or revisions in the geometric design that do not conform to design standards.
- Significant changes on a major structure or pile bearing requirements.
- Changes in material specifications of a Major Item. (Refer to Subsection 101.03, "(Terms and Definitions) Definitions", of the Standard Specifications, for more information)

- Changes involving right-of-way limits or access control.
- Changes that would abolish or nullify a right-of-way agreement or changes to proposed right-of-way work not covered by a prior right-of-way agreement.
- Changes allowing work outside contract limits or outside the right-of-way that are not covered by an agreement to which the state is a party.
- Changes that involve an agreement or contract with a government agency, utility, private or corporate agency, and the proposed change is not addressed in a previous agreement.
- Changes that affect property drainage, water, or other abutting property owner rights that may result in action against the state.
- Changes to the payment method to the contractor. This does not include Force Account or agreed prices that may be necessary to perform Extra Work, but does include changes in the method of measurement or adjustment of a unit bid price.
- Changes that involve settlement of a Contractor's claim.

CONSTRUCTION FIELD CREWS

RESIDENT ENGINEER

- If required on a PoDI contract, obtain pre-authorization from FHWA (form FHWA-1365) to proceed with the Change Order.
- Create/send draft of Change Order to Construction Division and District Administration for review.
- After review, generate Change Order in AWP.
- Develop/send Change Order in accordance with Chapter 3 of the *AWP Documentation Manual*.
- Approve executed Change Order in AWP.

DISTRICT ADMINISTRATION

- Review draft of Change Order.
- Recommend Change Order for execution.

CONSTRUCTION DIVISION

CHIEF CONSTRUCTION ENGINEER

- Review/approve request for Change Order.
- Recommend Change Order for execution.
- For federally-funded, non-PoDI contract, provide federal authorization to fund the Change Order.

ASSISTANT CONSTRUCTION ENGINEER

- Notify RE change order request is approved.
- Review draft of Change Order.
- Recommend Change Order for execution.
- Communicate with Financial Management (PCEMSDL@dot.nv.gov) and Project Manager/Project Coordinator to ensure if additional funding is required and it is properly programmed.

CONSTRUCTION ADMINISTRATIVE SERVICES

- Review draft of Change Order.
- Notify Resident Engineer and District Administration of recommended changes to draft of Change Order.
- Process Change Order in accordance with Chapter 3 of the *AWP Documentation Manual*.

- Communicate with Financial Management (PCEMSDL@dot.nv.gov) and Project Manager/Project Coordinator if additional categories (breakouts) need to be added.

FHWA

- For PoDI contracts:
  - Approve/disapprove or limit federal participation.
  - Provide pre-authorization to proceed with the Change Order.
  - Provide federal authorization to fund the Change Order.

OTHER NDOT DIVISIONS

ALL PARTICIPATING DIVISIONS

- Send request for Change Order to Chief Construction Engineer.
- Provide receipt of notification of Change Order (plus any comments) prior to execution.

DIRECTOR'S OFFICE

- Approve Change Order for execution.

CHANGES TO CONTRACT: LETTERS OF AUTHORIZATION

> ***Note:*** *The guidelines identified in this process may not necessarily apply for Design-Build projects.*

Letters of Authorization are used for minor construction items that are not anticipated in the original scope but must still be completed on a project. These minor construction items are incidental construction items, which do not have bid items, but the contractor must still be compensated for. The Resident Engineer can pay for these incidental construction items with a Letter of Authorization (LOA).

An LOA will contain the following information:

- Reason for work
- Description of work
- Cost of work including a cost analysis

The following are the Resident Engineer's limitations on an LOA:

- The spending limit per incident is set at $15,000.
- The cumulative total of incidental construction items cannot exceed the amount programmed for the contract.
- Multiple LOAs cannot be written to cover the same issue, either the same thing multiple times or multiple LOA to achieve one goal.

Although an LOA is appropriate in directing the Contractor to accomplish incidental items of work, certain situations exist in which an LOA cannot be used. When an LOA is not used, a Change Order may be the appropriate process.

An LOA cannot be used:

- To grant time extensions.
- When the contract documents clearly state that the work is incidental to other items of work, or that no direct payment is made for certain work.
- When the contract documents clearly provide bid items to perform the work.
- For substantial revisions in geometric design, structural section, or revisions in the geometric design that do not conform to design standards.
- For significant changes on a major structure or pile bearing requirements.
- For changes in material specifications.
- For changes involving right-of-way limits or access control and changes that would abolish or nullify a right-of-way agreement or changes to proposed right-of-way work not covered by a prior right-of-way agreement.
- Changes allowing work outside contract limits or outside the right-of-way that are not covered by an agreement to which the state is a party.
- Changes that involve an agreement or contract with a government agency, utility, private or corporate agency, and the proposed change is not addressed in a previous agreement.
- Changes that affect property drainage, water, or other abutting property owner rights that may result in action against the state.
- Changes to the payment method to the contractor. This does not include Force Account or agreed prices that may be necessary to perform Extra Work, but does include changes in the method of measurement or adjustment of a unit bid price.
- Changes that involve settlement of a Contractor's claim.

Refer to Chapter 3 of the *AWP Documentation Manual* for an example of an LOA.

CONSTRUCTION FIELD CREWS

RESIDENT ENGINEER

- Develop LOA in accordance with Chapter 3 of the *AWP Documentation Manual*.
- Send draft of LOA to District Administration for review as needed.
- Sign/execute the LOA.

DISTRICT ADMINISTRATION

- Review draft of LOA as needed. (District Engineer, Assistant District Engineer)

CONSTRUCTION DIVISION

- N/A

FHWA

- N/A

OTHER NDOT DIVISIONS

- N/A

EQUIPMENT

The Resident Engineer is responsible for the operation, maintenance, inventory and upkeep of all equipment assigned to the Construction Crew.

Equipment includes but is not limited to:

- Lab trailers
- Vehicles
- Survey and testing equipment
- Computers

The type of equipment and associated costs dictate the policies and associated processes that will be followed to obtain the equipment.

ACQUISITION AND REPLACEMENT

Lab trailers. Lab trailers are assigned to each construction crew, follow a 20-year replacement cycle and are acquired in accordance with Transportation Policy (TP) 1-3-10 (Licensed Equipment and Replacement) and the Equipment Division's Policy 709.01. The Construction Division works with the Equipment Division to obtain and deliver the lab trailers in accordance with the replacement cycle. The Equipment Division delivers the new trailer to the location of the trailer being replaced. The District assigns the trailer to the respective crew.

Vehicles. Vehicles are assigned to each Construction Field Crew member and follow a replacement cycle in accordance with Transportation Policy (TP) 1-3-10 and the Equipment Division's Policy 709.01. The District and the Equipment Division coordinate all associated prioritization for replacement.

Survey and testing equipment. Equipment is assigned to each construction crew and are replaced at the discretion of the Assistant District Engineer and the Construction Division. (Refer to "Surveying" on page 3-1, "Sampling and Testing" on page 4-1, and the *Construction Survey Manual* for more information.) The Construction Division delivers the new equipment to the District, which assigns the equipment to the respective crew.

Computers. Computers are assigned to construction crews at the discretion of the District and in conjunction with the Information Technology Division Policies. Computers are replaced according to the Information Technology (IT) Division's replacement schedule.

BUDGET AUTHORITY

The budget for equipment varies by equipment type and is based on the Governor's biennial budget approved by the Legislature. The Construction Division, in coordination with the Assistant District Engineer, is responsible to generate the yearly budget requests for equipment exceeding $10,000, except for vehicles and lab trailers.

CONSTRUCTION FIELD CREWS

- Identify replacement needs.
- Maintain equipment inventory.

DISTRICT ADMINISTRATION

- Generate equipment requests based on replacement needs.
- Prioritize equipment for acquisition, assignment and/or replacement within the District.

CONSTRUCTION DIVISION

- Manage equipment procurement (lab trailers, survey and testing equipment).
- Maintain statewide inventory (lab trailers, survey and testing equipment).
- Manage statewide equipment budget (survey and testing equipment).

FHWA

- N/A

OTHER NDOT DIVISIONS

EQUIPMENT DIVISION

- Manage equipment procurement (vehicles, lab trailers).
- Maintain statewide inventory (vehicles, lab trailers).
- Manage statewide equipment budget (vehicles, lab trailers).

INFORMATION TECHNOLOGY DIVISION

- Manage equipment procurement (computers).
- Maintain statewide inventory (computers).
- Manage statewide equipment budget (computers).

SUPPLIES

The Resident Engineer is responsible for obtaining and managing all supplies required by the Construction Crew.

Supplies include but are not limited to:

- Personal Protective Equipment (PPE).
- Office and field supplies.
- Mobile electronic devices (e.g., phones, iPads, Wi-Fi hot spots).
- Lab trailer supplies.
- Other supplies as needed.

BUDGET AUTHORITY

The budget for supplies is generated by the Construction Division in conjunction with the Districts. The Construction Division is responsible for managing the statewide budgets for the construction crews, and the Districts manage the crews' expenditures.

The Resident Engineer is delegated expenditure authority from the District Engineer in accordance with the Department's Transportation Policy (TP) 1-1-4 (Authorized Signatures) and at the discretion of the District for expenditures less than $1,000. Any expenditure in excess of $1,000 requires the Assistant District Engineer's signature, and any expenditure in excess of $10,000 requires the Director's Office signature.

CONSTRUCTION FIELD CREWS

- Approve/sign request(s) for expenditures less than $1,000.
- Send request for approval and signature for expenditures exceeding $1,000.
- Maintain inventory for mobile electronic devices as needed.
- Maintain inventory for lab trailer supplies.

DISTRICT ADMINISTRATION

- Approve/sign request(s) for expenditures exceeding $1,000 (Assistant District Engineer).

CONSTRUCTION DIVISION

- For iPads:
  - Manage procurement.
  - Maintain statewide inventory.
  - Manage budget.

FHWA

- N/A

OTHER NDOT DIVISIONS

DIRECTOR'S OFFICE

- Approve/sign request(s) for expenditures exceeding $10,000.

INFORMATION TECHNOLOGY DIVISION

- Procure all mobile electronic devices.

HEADQUARTERS, EQUIPMENT DIVISION OR DISTRICT STOCKROOM

- Procure all supplies except mobile electronic devices.

SERVICE PROVIDER PROCUREMENT

The Construction Division selects and retains service providers (formerly known as consultants) through Requests for Proposals (RFPs) in accordance with processes and procedures established by the Administrative Services Division's Step By Step Agreement Guide on the Agreement Services Division's SharePoint site. The selection of the service providers to fulfill the specific needs and requirements of the assignment/agreement are based on a qualifications-based selection process. Service providers for the Department are responsible for their own internal supervision and personnel requirements.

Full Administration. The Department may retain service providers to administer full construction projects. A Service Provider staff includes an engineer, licensed to practice in Nevada, to serve in the role of a Resident Engineer, and all necessary support staff to oversee and monitor the project in conformance with NDOT policies and procedures. This type of agreement is typically referred to as "Full Administration". A service provider provides sufficient staff possessing the experience, knowledge and character to perform the duties adequately and meet the agreement requirements. A service provider also provides the field office,

equipment, field labs, vehicles and supplies necessary to administer the project. A service provider administers a NDOT contract in the same manner as a NDOT field crew; however a service provider assuming the role of Resident Engineer does not have the authority to make financial commitments on behalf of the Department.

Augmentation. The Department may also retain service providers to support, or augment, a Resident Engineer's existing crew. This type of agreement is typically referred to as "Augmentation". The size and configuration of the Service Provider staffing on an augmentation are based on the needs of the Resident Engineer/Field Crew and specific project. They may include one or more individuals functioning in various roles such as inspectors, testers, field surveyors, office engineers, document control specialists, schedulers or Assistant Resident Engineers. Service providers may be retained for augmentations through either project specific RFPs or as part of the Construction Division's On-Call Agreement.

Other services. The Construction Division may retain service providers for services other than direct construction project management activities. Such services may include:

- Independent Assurance testing.
- Claims evaluation and support.
- Schedule analysis and training.
- Constructability review.
- Dispute resolution and training.
- Other special projects as necessary to fulfill the needs of the Department's Construction program.

CONSTRUCTION FIELD CREWS

- Coordinate with the Construction Division and District Administration to evaluate workload and possible needs for service providers.
- Provide management and oversight of augmentation and on-call service providers, including but not limited to:
  - Reviewing invoices for hours, equipment and deliverables.
  - Recommend the approval of staffing changes.
  - Forward signed invoices to the Construction Division.

DISTRICT ADMINISTRATION

- Coordinate with the Construction Division and Construction Field Crews to evaluate workload and possible needs for service providers.
- Provide management and oversight of full-administration service providers performing contract administration within the District, including the review of invoices.

CONSTRUCTION DIVISION

- Coordinate with District Administration and Construction Field Crews to evaluate workload and possible needs for service providers.
- Develop scope, negotiate and execute agreement with service provider.
- Complete final review of Service Provider invoices and process payment vouchers.
- Complete Closeout Process of service provider agreements.

FHWA

- N/A

OTHER NDOT DIVISIONS

ADMINISTRATIVE SERVICES DIVISION

- Manage the processes and procedures for procuring service providers.

PERFORMANCE MEASURES/BUDGETS

> ***Note:*** *The guidelines identified in this section may not necessarily apply for Design-Build projects.*

The Department is mandated by FHWA and the Nevada Legislature to effectively manage all budgets and track performance. The Construction Division and all Districts are responsible for managing the construction contract, overtime and operating budgets. Budgets can be met and performance measures can be achieved with successful management and fiscal responsibility across all levels.

Performance Measures. The Construction Division is responsible for reporting performance on construction contracts in the following areas:

- Budget: Projects completed within 10 percent of original programmed budget
- Change Orders: Projects completed with cost increase of less than 3 percent in Change Orders
- Schedule: Projects completed within 10 percent of original assigned working days
- Construction Engineering: Projects completed at or below the budget cost
- Testing Frequencies: Projects completed within 10 percent of minimum required frequencies
- Overall Target: 80 percent of Projects completed within budget, schedule, Change Order, construction engineering and testing frequency measures

The Resident Engineer is responsible to measure the performance of their construction contracts. If any budget or measure that is expected to be exceeded or cannot be met, timely notification to the Assistant District Engineer and the Construction Division's Assistant Construction Engineers is required. Funds need to be obligated to the contracts before the budget is exceeded.

Budgets. Resident Engineers are responsible to track their operating (supplies), travel (per diem) and overtime budgets. Budgets are allocated according to the NDOT fiscal year, July to June. The Chief Construction Engineer is responsible for generating and managing the budgets for the construction crews statewide; each District is responsible for its expenditures. The budget is generated with each District's input and recommendations, and it accounts for the statewide construction program. However it is important to note that the ultimate budget is determined by the funding allocated from the Governor's statewide budget and then distributed across the Department by the Director's Office.

The operating and overtime budgets cannot be exceeded in any given year. Upon approval from the Nevada Legislature, additional funding for the travel budget may be provided in order to effectively manage the construction contracts across the state.

CONSTRUCTION CREWS

- Monitor contract performance to meet stated measures.
- Track budgets to meet stated measures.
- Notify Construction Division of any budget or measure that is expected to be exceeded or cannot be met.

DISTRICT ADMINISTRATION

- Monitor contract performance to meet stated measures.
- Track budgets to meet stated measures.
- Notify Construction Division of any budget or measure that is expected to be exceeded or cannot be met.

CONSTRUCTION DIVISION

- Notify Financial Management Division of any budget that will be exceeded.
- Generate/send the Construction Division's annual performance measures to Performance Analysis Division.

FHWA

- Review the Department's annual Performance Management Report.

OTHER NDOT DIVISIONS

PERFORMANCE ANALYSIS DIVISION

- Incorporate the Construction Division's annual performance measures into the Department's annual Performance Management Report.
- Publish/distribute the Department's annual Performance Management Report to FHWA and the Nevada Legislature.

SURVEYING

This chapter contains the following sections:

OVERVIEW

Note: *Refer to "Conventions Used in This Manual" on page 1-3 "Conventions Used in This Manual" on page 1-3 for terminology used in this chapter and/or the order of precedence of contract documentation.*

Surveying is essential to all civil engineering projects. In transportation engineering, surveying is the single engineering function that links all the elements of a project from conception through design. Surveying provides the foundation and continuity for route location, design, land acquisition, and all other preliminary engineering. A survey sets up a basic framework of control, or positioning, that contractors and engineers use in constructing and inspecting construction contracts.

Within NDOT, both the Location Division and the Construction Crews perform surveys.

- The Location Division establishes permanent survey monuments and property lines. Per Nevada Revised Statutes (NRS), 625.040, a Nevada State Professional Land Surveyor is responsible for Location Division surveys. The Location Division is responsible to discern or set property lines and set/reset survey monuments disturbed during construction. Refer to the Location Division's *Special Instructions for Location Consultants* for more information
- The Construction Crews establish and maintain horizontal and vertical survey controls needed to construct a transportation contract. For information about construction surveying and staking, refer to the *Construction Survey Manual*. The Resident Engineer is responsible for surveys performed and the documentation of survey on a construction contract. The Resident Engineer's crew plans and coordinates all surveying efforts with the Contractor. Detailed information for construction surveying and staking is located in the *Construction Survey Manual*.

LOCATION DIVISION SURVEY

The Location Division frequently performs location surveys several years before construction begins. To eliminate extensive surveys during construction, location surveys establish permanent horizontal and vertical construction control points where they are least likely to be disturbed or destroyed. These construction control points, or reference points, are semi-permanent and are stamped with a unique name or number. Control points provide the basis for the development of design plan alignments and the surveying during construction.

The Location Control sheets list information for each control point established. The Location Control sheets are contained in the construction contract plans. If control points are found in the field, but not listed in the location control sheets, the control point should not be used, unless approved by the Location Division. When control sheets are not available, the Resident Engineer requests the Location Division to establish control.

Location control sheets list the coordinates using the Nevada State Plane Coordinate System, which means these coordinates are Northings (identifiers in the north-south direction) and Eastings (identifiers in the east-west direction). Nevada is divided into three geographic zones:

- East Zone: Clark, Elko, Eureka, Lincoln, and White Pine counties
- Central Zone: Lander and Nye counties
- West Zone: Carson City, Churchill, Douglas, Esmerelda, Humboldt, Lyon, Mineral, Pershing, Storey and Washoe counties

PRESERVING MONUMENTS AND MARKERS

Before or during construction activities, the possible loss or destruction of control points or other survey monuments may be unavoidable. In most cases, the survey control sheets of the plans provide direction on the proper treatment of the monuments. When control points or survey monuments need to be perpetuated, the Location Division or a professional land surveyor (PLS) will perform the perpetuation after construction activities have ended. State law prohibits the willful damage or destruction of survey monuments set by a PLS.

CONSTRUCTION SURVEY

Section 200, "Construction Stakeout", of the Standard Specifications, defines the Department and Contractor responsibilities for construction survey requirements. In all cases, the Contractor surveys bridge structures; additional survey requirements are identified in the Special Provisions.

Surveys for construction contracts generally consist of the following operations:

- Staking in preparation of earthwork and structure construction
- Making initial measurements to provide the basis of payment for items of work
- Establishing construction limits and construction easements
- Pilot lining (or "Marking for pavement striping")
- Establishing centerline
- Staking drainage structures
- Establishing control points
- Obtaining cross sections
- Setting slope stakes
- Setting grade stakes
- Setting clearing stakes
- Preserving monuments and markers
- Staking fence line

The common sequence of survey activities on a construction contract is:

1. Establish horizontal and vertical control points
2. Survey the roadway alignment
3. Take cross sections for quantity verification
4. Establish slope stakes

The Contractor's operations dictate surveying activities during construction. Several survey activities can be started and completed before the Notice to Proceed. When the Contractor begins operations, coordination between the survey crew and the Contractor allows work to progress uninterrupted and without delaying construction.

The Resident Engineer should allocate sufficient time to prepare survey documentation before stakeout. Survey documents are also available to the Contractor. In accordance with the Standard Specifications and Special Provisions, either the survey crew chief or Contractor then completes the following tasks:

- Compute and print alignment and slope stake data based on the original design information as defined in the plans
- Prepare grade documentation (grade book) in accordance with the *Construction Survey Manual*.

Preliminary surveying should take place prior to the Contractor beginning work and should start with stakeout of the beginning activities for the Contractor.

Several survey tasks can be completed using information contained in preliminary plans. To reduce possible delays, surveyors should complete as much work as possible before the Contractor begins work. Once the Contractor begins work on the project, surveying should be completed in a timely manner.

The Resident Engineer or survey crew chief examine the data and spot check it for accuracy. If the calculated data is incorrect or otherwise unusable, coordinate resolution with the Project Coordinator.

After construction is complete, the survey crew chief reviews all survey reports and documents for accuracy and completeness. Transfer the final survey documents and reports to the Construction Division. Include notations or corrections made during field stakeout. The survey is performed and documented to provide information for others to reproduce the survey; documentation becomes part of the permanent records.

The Resident Engineer and/or Contractor may request material quantities be surveyed to resolve discrepancies on final quantities in accordance with the applicable section(s) of the Standard Specifications.

CONTRACTOR SURVEY

The Resident Engineer assigns NDOT personnel to oversee and cross-check the work of the Contractor's surveyors. The Resident Engineer checks and verifies the Contractor's survey. It is the responsibility of the Contractor to provide the Resident Engineer with complete survey documentation compatible with Department software.

SURVEY EQUIPMENT, STANDARDS

The procurement and inventory of survey equipment is managed by the Chief Construction Engineer. The Construction Crew is responsible to keep an accurate inventory of survey equipment and provide it to the Construction Division annually. To effectively manage the Department's survey equipment, the Resident Engineers and Assistant District Engineers coordinate with the Construction Division to prioritize a replacement schedule for budgetary consideration.

The Chief Construction Engineer oversees a Survey Committee, comprised of Construction Division, Location Division, and Construction Crew personnel.

- *Construction Survey Manual*
- Applicable sections of the Standard Specifications (105.06 and 200)
- Standardization of equipment and technologies
- Recommendations for replacement schedules
- Standardization, development and implementation of a training program for Construction Crew personnel.

SAMPLING AND TESTING

This chapter contains the following sections:

OVERVIEW

Note: *Refer to "Conventions Used in This Manual" on page 1-3 "Conventions Used in This Manual" on page 1-3 for terminology used in this chapter and/or the order of precedence of contract documentation.*

This chapter provides a high-level overview of the Department's Quality Assurance Program. Refer to the *Field Testing Guide* for specific project field testing and IA procedures.

Sampling and testing on roadway construction projects ensures that materials and construction methods conform to plans and specifications. Consistent sampling and testing procedures are necessary to ensure quality materials and construction techniques are provided to the Department. The Contractor and Resident Engineer should discuss the appropriate corrective actions when materials or construction methods do not conform to the plans or specifications.

In accordance with Title 23 Code of Federal Regulations (CFR) 637B, the Department maintains a Quality Assurance Program for materials incorporated into a contract. The components of this FHWA-compliant QA program are:

- Quality Control.
- Acceptance.
- Independent assurance.
- Tester qualifications.
- Lab certification.
- Dispute resolution.

The Contractor defines its Quality Control program relating to the production of the material. The Department's Quality Assurance Program assures specification material to the taxpayer by utilizing an owner (taxpayer)-tester acceptance method. The program also defines the acceptance testing process, the Independent Assurance (IA) Program, tester qualifications, lab certification and the dispute resolution process.

QUALITY CONTROL

Subsection 106.04, "(Control of Material) Samples and Tests", of the Standard Specifications, defines the materials on which the Contractor is required to perform quality control testing. All Contractor testing is considered "pre-testing" to ensure that the material meets specifications. Although NDOT inspectors and/or field testers can monitor and observe Contractor tests, they cannot perform tests for the Contractor. The test results must be submitted daily to the Resident Engineer. If materials originate from a commercial source, the Contractor furnishes test results performed during production of those materials.

QUALIFICATIONS

The Contractor's testers are required to be NAQTC- and/or WAQTC-qualified per Subsection 106.04 of the Standard Specifications. Testers must provide proof of qualifications to the Resident Engineer. Tests performed by non-qualified personnel will be considered invalid and will not be included in the required minimum frequency.

RECORDS

The Contractor is required to complete daily reports of test results for each day the associated work is performed. The Contractor is not required to use NDOT test report forms, but all applicable test report data must be included on their form. The Contractor's lab shall maintain copies of all field test reports. The Contractor shall submit test results to the Resident Engineer on a daily basis. The Resident Engineer will review the test reports and return any report with errors or omissions to the Contractor for corrections. The Resident Engineer will maintain a file of contractor test results and will submit the test results to the Construction Division's Quality Assurance Section.

EQUIPMENT AND LAB CALIBRATION

For the required tests, Contractor labs shall have equivalent equipment to NDOT field labs. Deviations from equivalent testing equipment must be coordinated in advance with the Construction Division's Quality Assurance Section. The Contractor is required to calibrate their lab once a year or any time the lab is moved. Documentation of the calibration shall be kept in the lab for review by the Resident Engineer.

QUALITY ASSURANCE PROGRAM

The Department's Quality Assurance Program is overseen by the Construction Division's Quality Assurance Section. The two major sampling and testing components that comprise the program are project acceptance and independent assurance.

PROJECT ACCEPTANCE TESTING

Project acceptance testing (field testing) is performed on the materials during the progress of construction to ensure that material quality and consistency are being maintained for materials to be permanently incorporated into the contract. In addition, some materials are accepted by the Department by submission of Certificates of Compliance from the contractor and/or producer of the material or products listed on the Qualified Products List (QPL).

The Department is responsible for all acceptance testing; with few exceptions, contractor test results are not used for acceptance. Project acceptance tests are performed by the Construction Crew Testers and/or the Materials Lab. The tests are to be conducted at the appropriate locations and times, using methods as defined in the specifications. The incorporation of untested and unaccepted materials without approval or written permission can be deemed unacceptable and unauthorized, and payment can be withheld/withdrawn in accordance with Subsection 106.04, "(Control of Material) Samples and Tests", of the Standard Specifications.

In the event acceptance tests reveal materials that do not comply with the specifications, the Resident Engineer may have the material retested. The purpose of the first retest of the unaccepted material is to determine if the sampling and testing methods were correctly performed. The retest must be taken from the same acceptance point and on the same material. The Resident Engineer will ensure the contractor has taken corrective action before any additional retests are completed. The Resident Engineer will ensure the Contractor is making constructive efforts to correct the processing of their material. Repetitive testing of the same material in order to get the material to pass will not be allowed..

INFORMATIONAL TESTING

Some materials will require informational testing outside the regular project acceptance testing frequencies. Informational testing is performed after the Contractor has submitted their test results to the Resident Engineer.

The following are examples of informational testing conducted by NDOT testers including but not limited to:

- Aggregates produced for stockpile.
- Moisture content of aggregates.
- Hydrated lime in marinated aggregate.
- Cement treated base mixtures.
- Concrete cylinders other than the 28-day curing period.
- Material taken outside the specified acceptance point.

MATERIAL CERTIFICATIONS

Certifications are required for all materials for which field testing cannot be performed.

CERTIFICATES OF COMPLIANCE

Subsection 106.05, "(Control of Material) Certificates of Compliance", of the Standard Specifications, allows certain materials to be incorporated in the work if accompanied by a Certificate of Compliance. Material should not be incorporated into the work without submission of an acceptable Certificate of Compliance. A manufacturer produces and signs a Certificate of Compliance, indicating that the material meets the specification requirements of each corresponding section of the Standard Specifications (e.g., Section 703, "Bituminous Materials").

Certificates of Compliance are sent to the Materials Division's Lab Services Section. The Resident Engineer will provide a copy of the Certificate of Compliance to inspectors overseeing the item being incorporated into the work. The Certificate of Compliance is retained in the field office records. The manufacturer should also provide the Resident Engineer with any warranties, guarantees, instruction sheets or parts lists for products incorporated into the work.

'BUY AMERICA' CERTIFICATION

For construction contracts using federal funds, the federal government requires that steel and iron materials used in the project be manufactured in the United States. This requirement is called "Buy America." In accordance with Subsection 106.12, "(Control of Material) Buy America", of the Standard Specifications, the Contractor must follow to comply with provisions of "Buy America." The Resident Engineer must request a "Buy America" certificate from the contractor. The "Buy America" certificate states that the steel and iron materials were manufactured in the United States.

"Buy America" requirements do not apply to minimal quantities of foreign iron and steel materials incorporated into the work. The specifications will state the quantity limits of foreign materials that may be incorporated into the work. If the Contractor plans to incorporate foreign iron and steel materials, the Resident Engineer documents the quantities of foreign material incorporated into the work to verify that the value of foreign iron and steel does not exceed the maximum amount allowed by the specifications.

The Resident Engineer will include a discussion of the "Buy America" requirements in the Pre-construction Conference for federal-aid projects.

QUALIFIED PRODUCTS LIST

The Qualified Products List (QPL) is a list of manufactured products that the Department has evaluated and determined suitable for use on NDOT projects. Products listed on the QPL can be used only as listed on the QPL and installed only as recommended by the manufacturer. The QPL applicable to a contract is the one published at the time of contract advertising.

The Contractor's use of a product from the QPL does not preclude the material from having to meet acceptance testing or certification requirements. The contractor may use the products listed on the QPL, or the contractor may request to use an equivalent product not on the list.

> ***Note:*** *Non-QPL items must go through the submittal/approval process prior to use.*

NUCLEAR TESTING PROGRAM

The information in this section provides important information relating to the Department's Nuclear Testing Program and is not inclusive of all policies and procedures required for use of nuclear testing devices. Proper training and qualifications are required before operating, storing or transporting nuclear density gauges. The Resident Engineer is responsible for ensuring compliance with the program when nuclear gauges are in use for the contract.

The Nevada Radiation Control Program enforces NRS 459.010, 459.290 and NAC 459, and it is the state radiation regulating and control agency that provides the Department with its radioactive materials licenses (Carson City, Las Vegas, Reno and Elko).

The Construction Division's Quality Assurance Section is responsible for policies and procedures that are specific to the Department's radioactive materials licenses. The Corporate Radiation Safety Officer (CRSO), located in the Construction Division headquarters, is responsible for maintaining the policies and procedures mandated by each license. The District Radiation Safety Officer (DRSO), located in each District, is responsible for enforcing the program's policies and procedures.

The DSRO assigns Troxler nuclear density gauges to construction crews on an as-needed basis. The Resident Engineer is responsible for security, use, transportation and care of this equipment during the assignment period. Follow all rules when handling this equipment, especially while transporting it.

TRAINING AND QUALIFICATIONS

Every year, Resident Engineers receive a list of personnel whose certification will be expiring and a posting of the next training class. The Resident Engineer is responsible for deciding who to send for certification/re-certification. All certified operators and transporters are required to have current monitoring badges.

TRANSPORTATION CERTIFICATION (YELLOW CARD)

Individuals must maintain the following minimum requirements to transport the nuclear density gauges:

- Attend a 4-hour Nuclear Gauge Safety /HAZMAT class every 3 years.
- Pass a Safety Exam.

OPERATION AND TRANSPORTATION CERTIFICATION (WHITE CARD)

Each first-time candidate for qualification and certification and anyone with an expired certification card must complete the following minimum requirements:

- Attend a 40-hour training class.
- Pass a safety exam.
- Pass an operation and safety exam.
- Qualify through the Nevada Field Sampling and Testing Qualification Program (NFSTQP).

To maintain qualification, the individual must:

- Attend a 4-hour Nuclear Gauge Safety/HAZMAT class every 3 years before certification expires.
- Pass a safety exam.
- Maintain NFSTQP certification.

OPERATION

The Department uses Troxler Nuclear Density Gauge Models 3440, 3450 and the 4640-B for conducting density and moisture tests. Find the directions for operating the gauge and taking tests in Nevada Test Methods as defined in the Construction Division's *Synopsis of Materials Division Testing Manual for Field Testing*.

> ***Important:*** *Only qualified personnel may operate the gauges. Field testers will comply with operating instructions as provided by the NDOT qualification training.*

The Department provides radiation monitoring badges quarterly to all personnel qualified to transport and operate the gauges. Qualified personnel that are not assigned a quarterly monitory badge will be assigned a visitor badge, when needed, by a DRSO to transport the gauges.

GAUGE REPAIR, MAINTENANCE AND CALIBRATION

Transporters and operators are not authorized to provide any maintenance or repairs to the gauges. Operators will keep the gauge and gauge box clean, free of construction material and dry. Under no circumstances will the field testers try to fix a gauge.

For repair and maintenance, nuclear density gauges require special handling by trained individuals. If the gauges require maintenance or repair, immediately contact a DRSO to determine the repair level.

PERIODIC PREVENTIVE MAINTENANCE SCHEDULE

To be completed by the DRSO:

- Inspection and inventory: Twice a year (November and May)
- Leak tests: Annually (November)
- Calibration: Every 2 years, even if currently being used on an active project
- Source rod inspections: Every 4 years, or when gauge repairs are required

INSPECTIONS

The Nevada Radiation Control Program enforces the proper use, storage and transportation of nuclear devices. It will periodically inspect the program at any time and in any location, both announced and unannounced, and it may inspect field testers on the job.

For contract site inspections:

- Expect the Radiation Control Program inspector to visually observe from a distance and then approach the tester to ask detailed questions to confirm that the tester is following all rules, laws and regulations.
- Give full cooperation to the inspector.

- Ask the inspector for a business card and identification from their authority.
- Notify the DRSO immediately after the inspection is completed.

A DSRO will also conduct inspections in the lab trailer and on the contract.

GAUGE PROCUREMENT

The gauges are permanently stored in the District storage area. When a construction crew needs a gauge, it contacts a DRSO to coordinate required duration and specific needs. A DRSO will then transfer the gauge to the construction crew and complete the proper paperwork.

When the construction crew is finished with the gauge, it returns the gauge with the required transport documents to a DRSO. The Resident Engineer is responsible for picking up and dropping off the gauges to a DRSO.

TESTING PERFORMED BY OTHER DIVISIONS

MATERIALS DIVISION

Testing performed by the Materials Division can be either project control or source acceptance, depending on the material and tests run, in accordance with the applicable section(s) of the Standard Specifications.

When submitting samples and/or material certifications to the Materials Division, verify that they are accompanied by a completed form for the appropriate transmittal. (Incomplete/inaccurate transmittals will result in delayed test results.) Go to the Construction Division SharePoint site's Forms library [https://nevadadot.sharepoint.com/sites/040/FormServerTemplates/] for transmittal forms.

AGGREGATE LAB

- Borrow, select borrow, aggregate base, backfill, granular backfill, MSE backfill, drain backfill, riprap, riprap bedding, top soil, screenings, de-icing sand, plantmix bituminous surface aggregates, Portland cement concrete aggregates

BITUMINOUS LAB

- Dense-graded and open-graded plantmix bituminous surface mix designs, dense-graded plantmix bituminous surface behind the paver samples

STRUCTURAL LAB

- Concrete cylinders, reinforcing steel, metal fence posts, guideposts, chain link fence, corrugated metal pipes, tensioning strand, concrete aggregates, slurry backfill, concrete cores

ASPHALT LAB

- Refinery samples, asphalt cement, bituminous emulsion, bituminous cutback

CHEMICAL LAB

- Paint, traffic beads, water, hydrated lime, guideposts, metal fence posts, chain link fence, sign posts, corrugated metal pipe, wire mesh, fly ash, cement

PAVEMENT ANALYSIS SECTION

- Final concrete pavement samples of Portland cement concrete pavement

GEOTECHNICAL LAB

- Borrow, select borrow, aggregate base, granular backfill, MSE backfill

STRUCTURES DIVISION, NON-DESTRUCTIVE TESTING SECTION

- Structural steel: Inspection and testing during fabrication, welding, erection and/or paint application
- Post tensioning: Strand installation and testing, grouting

TESTING DISPUTES, RESOLUTION

CONTRACTOR

There may be instances when the contractor does not agree with the Department's test results. All Department personnel will strive to resolve test disputes quickly to ensure the quality of materials. Subsection 106.04, "(Control of Material) Samples and Tests", of the Standard Specifications, describes a procedure for the Contractor to follow when disputing the Department's test results.

If the Contractor requests independent testing or any other testing, an NDOT representative must be present during sampling and testing. If the Contractor provides independent testing, the Resident Engineer will notify and consult the Materials Division.

For contracts subject to PWL (Percent Within Limts) specifications, Nev. Test Method T344 must be invoked prior to or during the pre-construction conference. All requirements per Nev. Test method T344 must be met prior to any production of Plantmix Bituminous materials on the subject contract, including the Field Trial Mixture.

INDEPENDENT ASSURANCE PROGRAM

The Independent Assurance (IA) Program is a "System Based Approach". This includes but is not limited to:

- Certify 90% of all Active testers every calendar year with a performance exam.
- Auditing field lab equipment with a Side-by-Side, Direct Split or Visual audit.
- IA frequencies are 1 Per Crew, Per Year, Per Test Method.

The program will provide an independent check on the sampling and testing procedures along with the testing equipment associated with NDOT contracts.The Construction Division manages and runs the IA Labs, which are located in each District facility. To ensure an independent check on the field crew testing procedures and testing equipment, the District IA Lab and its testers are not associated with any field crew testing personnel. IA Lab test results are not used for acceptance testing on any contract nor to determine the quality and acceptability of the materials and workmanship directly.

District IA Labs will perform an independent check. IA testers stay informed of the work on each contract with close coordination with the field crew testers and organize their work efficiently. The Resident Engineer shall keep the District IA Lab informed of any schedule changes and coordinate testing requirements throughout the duration of the contract.

REPORTING REQUIREMENTS

The crew field lab shall provide their completed test reports on visual, side-by-side and/or direct split samples to their District IA Lab within 24 hours of test completion. Audit results shall be reported by the IA Lab within 14 calendar days of receiving each sample.

Refer to the *Field Testing Guide*, Table 1: IA Audit Tolerances for audit tolerances for all visual, side-by-side and/or direct split samples.

SAMPLING AND TESTING FREQUENCIES

Every material incorporated into the project must be tested and accepted based on a sampling frequency for testing in order to ensure quality materials are incorporated into the work and to meet federal requirements. These frequencies have been established based on what is necessary to help ensure consistency of the quality materials. If these frequencies are not met, federal funding for the project could be withheld. Processes to assist the Resident Engineer in meeting the required frequencies are handled by the Materials Division and the Construction Division.

The Materials Division prepares and sends the Resident Engineer a Materials Sampling and Testing Checklist, which should include all materials required for sampling and identifies products and/or materials that may be accepted by a Certificate of Compliance for each contract.

The Construction Division's Quality Assurance Section receives the Materials Checklist Letter and generates the Acceptance Testing Summary Sheet (ATSS), which defines the minimum required number of tests for each material defined on the Materials Checklist. Both of these documents are generated and will be distributed to the Resident Engineer before construction begins. The ATSS is a working document and shall be filled out monthly by the Resident Engineer until the contract is completed. For more information, refer to the ATSS process memo located in the Quality Assurance Documents library on the Construction Division SharePoint site [https://nevadadot.sharepoint.com/sites/040/QAQC%20Section/].

The *Minimum Samples and Tests: Project* and *Minimum Required Samples and Tests: Independent Assurance (IA)* frequency tables define the requirements for sampling and testing of materials. Sampling frequencies shown are the minimum requirements. The sampling frequency may be increased to ensure adequate control and may vary on some projects according to unique conditions.

Except as provided in Subsection 106.05, "(Control of Material) Certificates of Compliance", of the Standard Specifications, all materials are inspected and/or tested for acceptance before incorporating into the work.

> ***Important:*** *Any changes to the frequencies defined in the ATSS must be discussed with the Quality Assurance Engineer prior to making changes. The Resident Engineer must address the reason for not meeting the Minimum Required Tests on the ATSS appropriately in the notes to address why the testing was not performed (e.g., small quantity).*

There may be cases in which the Resident Engineer may accept the material on substantial compliance and not require the minimum frequency be met due to a small quantity. A small quantity is defined as the material being 10 percent or less of the Minimum Required Tests for that particular material.

Example:
Bit Ratio is required every 1,000 tons: 1000 x .10 = 100 tons
If the project quantity is less than 100 tons, the minimum required frequencies can be waived by the Resident Engineer.

TESTER QUALIFICATION PROGRAM

In accordance with 23 CFR 637B, NDOT testers performing work on a contract shall be certified under an approved program. The Department utilizes the following programs:

- NFSTQP - Four (4) people minimum are required to hold new certification class. Each class will have a maximum of 8 people per calendar year.
- NCQP - Four (4) people minimum are required to hold the new certification class.

"Active" tester is defined as a tester that has taken the annual performance exam and will be testing in the field lab for the calendar year.

"Back-up" tester is defined as a tester that has taken the annual performance exam and can test for the calendar year but may not be assigned permanently to the field lab during the calendar year.

"Certified" tester is defined as a tester who has taken the 5-year certification/re-certification written and performance exam and could potentially be deemed as an active or back-up tester at some point in the calendar year.

The NDOT qualification program(s) for new certification and/or re-certification include a written and performance examination. Employees must successfully complete the entire qualification program(s) to become a certified tester. These certifications are valid for 5 years. This 5-year new certification/re-certification will allow the testers to meet the active tester qualification for that calendar year.

Active testers and back-up testers will be required to complete an annual performance exam to perform tests during a calendar year.

Every year, Resident Engineers will receive a list of certified personnel who they will deem as an active or back-up tester for the calendar year. The Resident Engineer decides who to send for the annual performance certification. It is the Resident Engineer's responsibility to ensure adequate staffing to perform the necessary testing for their assigned contracts. Names of NFSTQP and NCQP qualified technicians are listed on SharePoint in the Construction Division Training Database.

All qualifications carry inherent rights and responsibilities. These responsibilities include performing and reporting test results with accuracy and precision in accordance with the required NDOT test procedures outlined in the *Synopsis of Materials Division Testing Manual for Field Testing*. Each tester will sign the "NDOT Responsibilities Agreement for Field Testing" document when qualifying for NFSTQP and NCQP certification. Failure to follow the testing requirements may result in suspension from testing duties or other penalties.

Consultants and Contractors qualify/certify their testers under the following programs:

- NAQTC
- WAQTC

FIELD LAB FACILITIES AND EQUIPMENT

The field labs belong to the Equipment Division and are assigned by the Construction Division to each individual Construction Crew. The lab trailers are on a 20-year replacement program through the Equipment Division. The Equipment Division, the Construction Division and the Architecture Division work closely to ensure that an acceptable lab facility is procured through the Equipment Division's Annual Budget.

The Resident Engineer uses and is responsible for maintaining these lab trailers and the equipment assigned to the lab. Only appropriate materials and equipment are authorized in the field lab. The Resident Engineer is responsible for enforcing this policy. The District Engineer is responsible for the security of the field lab when stored by the District. The Contractor is responsible for the field lab security at the job site.

The Construction Division also has spare labs for the crews to use if needed. The Construction Division is responsible for all the equipment and use of the spare labs; any requests for availability and/or to utilize these spare labs are made through the District IA Lab.

LAB EQUIPMENT PROCUREMENT

A list of approved equipment utilized in a field lab can be found on NDOT form 040-020 (Inventory of Testing Equipment). Equipment listed on this form that has a * next to it is provided by the Construction Divisions Quality Assurance Section. If there is not a * next to the equipment, the Crew is to procure the equipment through using the Construction Stock Catalog Master and a 51 through your local Stockroom.

The Construction Division is responsible for procuring the required lab equipment. If the equipment exceeds $5,000, it is requested on the annual budget and distributed accordingly. If it is under $5,000, the Construction Division procures the necessary lab equipment and distributes it accordingly. For testing equipment under $1,000 and certain testing supplies (such as wheelbarrows, shovels, pliers, screwdrivers, cylinders, wrenches, etc.), the Resident Engineer submits Form 072-002 (Combination Request for Supplies, Equipment and Shipping Record, or "Requisition 51") to the Assistant District Engineer Engineer to sign. Then the RE submits the request to the Equipment Division's Headquarters Stockroom or the applicable District Stockroom. For any equipment that is not available through the stockrooms, request the equipment from the District IA Lab or the Construction Division's Quality Assurance Section.

LAB REMOVAL AND SETUP

Due to the nature of projects across a vast geographic area, the periodic relocation of lab trailers may be warranted to provide for more efficient sampling and testing of materials.

For assistance or more information, contact the District IA Lab or the Construction Division's Quality Assurance Engineer.

RESIDENT ENGINEER

- Prepare the lab trailer to move to the next location for the next project. This includes but is not limited to securing all equipment inside the lab trailer from falling and breaking during the move.
- For Lab trailers older than 2017, contact the Equipment Division Superintendent with sufficient notice and cc: the Construction Division's Quality Assurance Engineer and the District IA Lab. Include in the request any shed(s), cargo container(s) and stairs that need to be moved to the new lab location.

- For lab trailers 2018 and newer, contact your local District Shop with sufficient notice and cc: the Construction Division's Quality Assurance Engineer and the District IA Lab. Include in the request any shed(s), cargo container(s) and stairs that need to be moved to the new lab location.
- Ensure that the local equipment shop is notified that the lab is being moved and that a safety check of the trailer is needed to verify it has working brakes, brake lights, tires etc., before the transport driver arrives.
- Remove and disconnect the power, water, portable holding tank, and remove the updraft blowers from the roof either by the Contractor in accordance with Section 628, "Mobilization", of the Standard Specifications, or District Services, before the transport driver arrives.
- Ensure that all equipment, stairs, jack-stands, tie downs, etc., outside of the lab trailer are moved to the new lab location prior to the transport driver arriving.
- Meet the transport driver at the existing lab trailer location and follow the transport driver to the new lab trailer location, assisting the transport driver to verify the lab trailer is delivered to the correct location.
- After the lab trailer has been removed from the former location, ensure that all garbage and construction material has been disposed of properly, leaving the old lab site in the same or better condition than it was found, while satisfying any stormwater requirements.
- Once the transport driver delivers the lab trailer to the new location, set up the lab trailer. This includes but is not limited to:
  - Placing the jack stands in the appropriate locations, leveling the lab trailer and securely tying down the lab trailer with tie-downs. (If commercial movers are used, this task is their responsibility.)
  - Placing the stairs so they are level and flush with the lab trailer.
  - Setting up all the lab equipment in the appropriate places inside and outside of the lab trailer.
- Ensure that the lab trailer has water, gas, electricity and the updraft blowers attached to the roof.

CONTRACTOR

- In accordance with Section 628 of the Standard Specifications, provide a level and secure facility with utilities, potable water and a waste water holding tank for the lab trailer.
- Lab trailers can be requested to be moved, leveled, braced and utilities hooked-up by the Prime Contractor. A commercial mover can be hired on any active project and paid for under 628 of the Standard Specifications. If a Commercial mover is hired and used, all necessary permits are required for tear down and set-up of the field lab trailer.

EQUIPMENT DIVISION

- Schedule the move using Department movers.

CONSTRUCTION DIVISION'S QUALITY ASSURANCE SECTION

- Maintain an inventory of field lab locations.

LAB CALIBRATION

The Materials Division is responsible for conducting the annual equipment calibration of the field labs.

Annually or any time a lab trailer is moved, the Resident Engineer is responsible to contact the Materials Division's Lab Services Section via e-mail (Cc: Quality Assurance Engineer and the local IA Lab personnel) to calibrate the lab trailer equipment. Request the calibration 30 days in advance of the beginning of testing.

The lab trailer must be setup with water and power, fully equipped, clean and operational before the scheduled calibration. Failure to setup the lab trailer properly will result in the calibration being rescheduled. Lab Services will e-mail you NDOT Form 020-097 (Field Lab Verification Request Form). Once this form is completed and returned, Lab Services will email you NDOT Form 020-

098 (Field and IA Lab Pre-Calibration Checklist). This form will need to be completed and returned to them one week prior to the lab calibration.

Ensure all lab equipment is in the lab trailer and available for the scheduled calibration.

Once the calibration is complete, a report will be sent to the Resident Engineer, Independent Assurance Lab, Assistant District Engineer, and the Construction Division's Quality Assurance Section. If applicable, any equipment not passing calibration will be noted on the calibration report and removed from the lab trailer. The IA Lab will be notified of equipment needing to be replaced or repaired.

LAB EQUIPMENT REPAIR, MAINTENANCE AND REPLACEMENT

The Resident Engineer is responsible for maintaining a clean and safe lab facility. For any necessary structural or mechanical repairs on the lab trailers, contact the local District Services via phone, e-mail, or local work order process. For repair or replacement of equipment, contact the District IA Lab.

INVENTORIES

An inventory of all testing equipment for each lab trailer is performed by July 1 of every calendar year by the Resident Engineer assigned to the lab trailer and reported on NDOT form 040-020 (Inventory of Standard Testing Equipment - Construction Field Labs). Equipment assigned to the lab trailer will not be transferred to another lab trailer without permission from the District IA Lab.

For equipment greater than $5,000, the District IA Lab will schedule and complete inventories for the Equipment Division once a year.

AGGREGATE SOURCES

Aggregate materials for a project come from a material source, commonly called a pit. The material source can be either privately owned or publicly owned. During project development, Materials Division staff locates material sources that most economically meet the project needs.

On most NDOT construction projects, the material sources are designated in the plans and specifications. In some situations, the contractor may want to use an alternate site, or expand the limits or boundaries of an approved site. When this situation occurs, the Resident Engineer must confirm that the material is acceptable for use on the project. Source acceptance is determined by the Materials Division, based on test results of aggregate samples collected by the Resident Engineer. The Contractor shall allow at least 30 days for completion of the additional sampling and testing. For sampling and testing guidance, refer to the Materials Sampling and Testing Frequencies page on the NDOT Internet site. The Contractor shall comply with the requirements stated in the Standard Specifications for furnishing materials from a source not identified in the contract documents. Fulfilling the requirements for an alternate source may require additional time that the Contractor must consider so that the project is not delayed.

The contract documents list the Contractor's requirements regarding the material supply. Refer to Section 106, "Control of Materials", of the Standard Specifications for information relative to material sources, state-furnished materials, material storage and defective materials.

A Contractor may process and stockpile aggregate before incorporating the material into the work. When this happens, the contractor may request payment of the stockpiled material. The Resident Engineer's Survey Crew Chief measures the stockpile,

documents the measurement, and the Resident Engineer completes NDOT form 040-015 (Request for Payment for Materials on Hand). The Resident Engineer processes the request for payment only if the contractor's informational test results show conformance with specifications. For additional guidance on measurement and payment of stockpiled material, refer to Subsection 109.06, "(Measurement and Payment) Partial Payment", of the Standard Specifications, and Chapter 24, Progress Payments, of the *AWP Documentation Manual*.

STATE-PROVIDED SOURCES

After the contractor proposes a material source, the Resident Engineer will consider the following:

- Source location and access roads
- Right-of-way limits of source
- Haul routes on city or county roads and related requirements, such as weight restrictions
- Improvements that need to be removed, reset, adjusted, or protected, such as power lines or fences
- Slopes to maintain
- Conformance with environmental restrictions
- Avoidance areas

The Contractor shall produce and stockpile materials before incorporating into the work in a manner that reduces segregation or degradation of the materials. When stockpiling different aggregate types in the same general area, the Contractor must provide a means to separate the stockpiles. Walls may be used to separate aggregate types.

The following are common stockpiling methods:

- Construct stockpiles at the end of production belts.
- Haul the produced material from production belts to stockpiles.

The Contractor typically constructs stockpiles as follows:

- Stockpile Area: Before starting production, the contractor levels the storage or stockpile area and, if necessary, spreads and compacts a leveling course of the material to be stockpiled. This provides a uniform surface on which to place the stockpile material. If the contractor plans to request payment for stockpiled materials, the Resident Engineer's Survey Crew Chief establishes elevations on the stockpile storage surface before stockpile construction.
- Stockpile Placement: When stockpiling material as it leaves the production belt, the Contractor shall minimize material handling with equipment. When using a dozer for spreading, the repeated abrasive action may segregate and degrade the material. When transporting material to the stockpile, the Contractor shall unload it so that the spreading equipment at the stockpile location will mix the material. For example, "belly-dump" vehicles are unloaded parallel to each other and the dumped loads are leveled before dumping a second layer of material. "End-dump" vehicles are unloaded in a similar manner. "End-dump" vehicles should only be unloaded on horizontal surfaces, not on the stockpile edge, to reduce excessive material segregation.

The Contractor may request stockpile payment for materials produced. The Resident Engineer's Survey Crew Chief measures the stockpile and documents the measurement, and the Resident Engineer completes NDOT form 040-015, (Request for Payment for Materials on Hand.) The Resident Engineer processes the request for payment only if the Contractor's informational test results show conformance with the contract documents. For additional guidance on measurement and payment of stockpiled material, refer to Subsection 109.06, "(Measurement and Payment) Partial Payment", of the Standard Specifications, and Chapter 24, Progress Payments, of the *AWP Documentation Manual*.

COMMERCIAL SOURCES

At a commercial source, the material supplier shall test the material being produced to verify conformance with the requirements of the contract documents and provide copies of the test results to the Resident Engineer. Concrete aggregate sources must undergo annual testing to confirm that they are acceptable for use on NDOT contracts. This sampling and testing process is called "source acceptance." The Resident Engineer consults with the Materials Division to confirm that the material source proposed for use by the Contractor has received source acceptance approval.

The Contractor may request stockpile payment for material at a commercial source. The stockpile must be separated from other stockpiles and clearly labeled for the NDOT contract. The Resident Engineer's Survey Crew Chief measures the stockpile and documents the measurement, and the Resident Engineer completes NDOT form 040-015 (Request for Payment for Materials on Hand). The Resident Engineer processes the request for payment only if the Contractor's informational test results show conformance with the contract documents. For additional guidance on measurement and payment of stockpiled material, refer to Subsection 109.06, "(Measurement and Payment) Partial Payment", of the Standard Specifications, and Chapter 24, Progress Payments, of the *AWP Documentation Manual*.

INSPECTION

This chapter contains the following sections:

OVERVIEW

Note: *Refer to "Conventions Used in This Manual" on page 1-3 "Conventions Used in This Manual" on page 1-3 for terminology used in this chapter and/or the order of precedence of contract documentation.*

Inspection provides the oversight and documentation to ensure compliance and quality of work being performed and materials incorporated for the satisfactory completion of construction contracts.

Refer to the following sections of the Standard Specifications for more information:

- Subsection 105.11, "(Control of Work) Duties of the Inspector"
- Subsection 105.12, "(Control of Work) Inspection"

CONSTRUCTION ACTIVITIES

Resident Engineers will understand the skill sets and/or availability of their respective staff and assign inspectors to construction activities accordingly.

The following sections in Chapter 2 of the *Field Inspection Guide* provide guidelines for inspection of specific construction activities:

- Overview
- 201 - Clearing and Grubbing
- 202 - Removal of Structures and Obstructions
- 203 - Excavation and Embankment
- 206 - Structure Excavation
- 207 - Backfill
- 209 - Drain Backfill
- 211 - Erosion Control
- 212 - Landscape and Aesthetics
- 213 - Irrigation Systems
- 214 - Mailbox Systems
- 302 - Aggregate Base Courses
- 304 - Portland Cement Treated Base
- 305 - Roadbed Modification
- 307 - Shouldering Material
- 401 - Plantmix Bituminous Pavements: General
- 402 - Plantmix Bituminous Surface
- 403 - Plantmix Bituminous Open-Graded Surface
- 404 - Cold Recycled Bituminous Surface and Premixed Bituminous Paving Material
- 405 - Tack Coat
- 406 - Prime Coat
- 407 - Seal Coat
- 408 - Surface Treatment
- 409 - Portland Cement Concrete Pavement

- 410 - Concrete Pavement Resurfacing
- 418 - Micro-Surfacing
- 496 - Polymer Concrete
- 501 - Portland Cement Concrete
- 502 - Concrete Structures
- 503 - Prestressed Concrete and Precast Members
- 504 - Lightweight Concrete for Structures
- 505 - Reinforcing Steel
- 506 - Steel Structures
- 508 - Driven Piles
- 509 - Drilled Shaft Foundations
- 601 - Pipe Culverts: General
- 603 - Reinforced Concrete Pipe
- 604 - Corrugated Metal Pipe and Metal Arch Pipe
- 605 - Plastic Pipe
- 606 - Structural Plate Culverts
- 607 - Underdrains
- 608 - Downdrains
- 609 - Inlets and Manholes
- 610 - Riprap
- 611 - Concrete Slope Paving
- 613 - Concrete Curbs, Gutters and Sidewalks
- 614 - Painting
- 616 - Fencing
- 617 - Cattle Guards
- 618 - Guardrail
- 619 - Object Markers and Guide Posts
- 621 - Monuments
- 623 - Signals, Lighting and Intelligent Traffic Systems
- 624 - Accommodations for Public Traffic
- 625 - Construction Signs
- 627 - Permanent Signs
- 632 - Permanent Painted Pavement Markings
- 633 - Pavement Markers
- 634 - Pavement Marking Film
- 635 - Temporary Pavement Striping Tape
- 636 - Temporary Painted Pavement Marking
- 637 - Temporary Pollution Control
- 640 - Retaining Walls
- 641 - Vehicular Impact Attenuators
- 642 - Mechanically Stabilized Earth Walls
- 643 - Ground Anchors
- 644 - Soil Nail Retaining Walls
- 646 - Dampproofing, Waterproofing, Sealing and Membranes
- 660 - Pneumatically Placed Concrete Mortar