3-100 GENERAL

This section describes the processes necessary to administer a construction project.

At its most basic level, executing the state's transportation construction program means implementing—or constructing—a transportation project that addresses a need identified by the Department. NDOT designs these needed projects, either internally or through an engineering consultant. When a project is ready to be constructed, NDOT typically solicits construction bids from qualified contractors. The lowest responsible and responsive bidder is selected and the project is then constructed. Although NDOT has historically selected the lowest responsible and responsive bidder to construct projects, they may also use other procurement methods, such as design-build. Other project delivery methods, such as public-private partnerships, may be utilized.

During the design phase, the Construction Division provides support by bringing its knowledge and understanding of construction practices and the construction industry to the design. The Construction Division offers input and suggestions regarding:

- Means and methods
- Scheduling or sequencing of construction activities
- Limitations of construction operations
- Amount of working days needed to construct the project
- Establishing monetary liquidated damages, incentives, and disincentives
- Constructability
- Traffic control

The Design Division incorporates input from other divisions, including the Construction Division, and finalizes the design. The Department then advertises for bids and awards the project. At the time of award, the project is transferred to the District. The District oversees and administers the construction in accordance with NDOT policies and procedures.

3-200 HEADQUARTERS

As a project proceeds from concept to construction, the Construction Division plays a significant role. During the initial planning and preliminary design phases, the Construction Division assigns an engineer to serve on the project development team. This engineer uses knowledge of construction practices to provide input to improve the design.

The Construction Division collaborates with the District to develop a staffing plan for the construction phase of the project. The scope and complexity of the project strongly influence the staffing plan. Available NDOT personnel and project complexity are key considerations in assembling the project staff. Whether the staffing is with NDOT personnel or with consultants, the Construction Division ensures that the District Engineer has sufficient personnel to administer the project.

3-200.1 HUMAN RESOURCES

In addition to providing technical support and direction on construction-related policies, the Construction Division must ensure that it operates consistent with state and NDOT human resources policies and procedures. NDOT's Human Resources Division policies and procedures provide the framework for managing personnel. Refer to the state *Administrative Manual* and the NDOT *Transportation Policies and Procedures Manual* for human resources policies and procedures.

These policies and procedures guide how the Construction Division performs various functions, such as filling positions or transferring personnel. The Chief Construction Engineer has direct human resources responsibility for personnel assigned to the Construction Division. The District Engineer has direct human resources responsibility for construction field personnel assigned to the District. The Chief Construction Engineer is also responsible for ensuring statewide uniformity in human resource administration of construction field personnel. The Chief Construction Engineer coordinates the following administrative human resources functions for construction field personnel:

- Filling vacancies (initiates formal processing)
- New position requests
- Position upgrades/reclassifications
- Personnel transfers between Districts
- Relocation costs
- Training

The Construction Division follows human resources policies and procedures in the administration of personnel – in headquarters and in the field. When consultants are used, other state and NDOT administrative policies and procedures apply.

A Resident Engineer's crew typically consists of engineering technicians that perform the duties of inspecting, testing, surveying, and field office administration. Titles for these positions range from Engineering Technician I, the entry-level position, to Engineering Technician IV. Advancement from an Engineering Technician I to an Engineering Technician III requires satisfactory work performance evaluations and a request for promotion from the Resident Engineer. Advancement from an Engineering Technician III to an Engineering Technician IV requires 24 months of satisfactory NDOT work performance; successfully passing a written examination, ranking in the top five; and, a vacant Engineering Technician IV position to be filled. ...

To progress from an Engineering Technician I to an Engineering Technician II requires 18 months of satisfactory NDOT work performance. And, to progress from an Engineering Technician II to an Engineering Technician III requires an additional 12 months of satisfactory NDOT work performance. Therefore, to progress from an Engineering Technician I to an Engineering Technician III requires a total of 30 months of NDOT experience. The Chief Construction Engineer may grant an accelerated advancement, or an accelerated promotion, based on experience and education of the applicant. Regarding education, math and engineering classes are considered as credit for experience. 0.4 of each class credit is equal to one month of experience. Additionally, after converting credits to experience, the fraction of the month is discarded. For example, 32 class credits are converted to 12.8 months (32 x 0.4 = 12.8), which rounds to 12 months of credited experience. ..

To process a request for consideration of an accelerated promotion, the Resident Engineer must approve an employee's written request. If the Resident Engineer approves the request, the Resident Engineer forwards the request to the District Engineer for approval. After the District Engineer grants approval, the request, including supporting documentation such as transcripts, is then forwarded to the Chief Construction Engineer for approval. After the Chief Construction Engineer approves the request, processing of the promotion follows regular processing procedures. In submitting the request, the Resident Engineer should allow sufficient time to process the request. The Construction Division requires one week to review and process an approved accelerated promotion request.

3-200.2 CONSULTANTS

When the Construction Division confers with the District Engineer and Resident Engineer regarding the staffing of a construction project, they first assess the availability of NDOT personnel within the District. As part of the staffing evaluation, they determine any special knowledge or expertise that may be required for the specific project. The Construction Division uses the staffing analysis to determine if sufficient NDOT staff is available. If the staffing analysis concludes that sufficient NDOT staff or expertise is not available, the Construction Division may retain engineering consultants to fulfill particular needs.

NDOT may retain a consultant to support, or augment, a Resident Engineer's crew. The Resident Engineer may utilize one or more individuals, such as inspectors or testers. The Resident Engineer directs the activities of the consultants that augment the crew. Consultants are independent contractors of NDOT and are responsible for their own internal supervision and personnel requirements.

When an NDOT Resident Engineer and crew are unavailable for a project, NDOT retains a consultant to administer the construction project. The consultant staff includes an engineer licensed to practice in Nevada and all necessary support staff to oversee and monitor the project in conformance with NDOT policies and procedures. The consultant Resident Engineer works under the direction of the District Engineer or Assistant District Engineer.

The Construction Division may also retain consultants for work unrelated to field activities, such as special projects or an unusually high workload. The Construction Division typically retains consultants for specific assignments, such as support in evaluating claims from contractors, in analyzing project schedules, in resolving disputes, and in determining the constructability of a project.

The Construction Division retains consultants in accordance with procedures established by the NDOT Administrative Services Division. The Construction Division selects the consultant to fulfill the specific needs and requirements of the assignment based on the consultant's qualifications. Once they make a selection, the appropriate Construction Division staff and the consultant discuss the scope of work required of the consultant and the level of resources needed to accomplish the work. This discussion of the scope of work and level of resources is commonly referred to as negotiations. During the negotiations process, the Construction Division and the consultant discuss other issues such as the number and qualifications of staff, the amount and types of equipment, and payment method. NDOT and the consultant successfully complete negotiations when they agree on the major issues. Both parties then sign a contract or agreement.

When NDOT is ready for the consultant to begin work, the Construction Division authorizes the consultant to proceed. The Construction Division Administrative Engineer administers and manages the consultant agreement. If the consultant's assignment is to provide full administrative services, the District Engineer directs the consultant's work. If the assignment is to augment an NDOT Resident Engineer, the Resident Engineer directs the consultant's work. Regardless of the specific assignment or the party directing the work, the Construction Division approves all consultant invoices for payment.

3-201 PLANNING AND DESIGN PHASE

During the planning and design phases of a project, the Construction Division principally serves as a technical advisor on construction-related matters. Involvement of the Construction Division representative is in response to the NDOT project manager. The level of involvement depends on the complexity, size, cost, and scope of the project.

Because of the influence that construction means and methods may have on a project, the design project manager solicits input from the Construction Division. Construction methods can affect the design and the manner in which the project is constructed. Construction methods can influence material selection, staging and phasing, scheduling, and cost. Because of this influence, designers must consider constructability from the beginning of the design phase.

Most projects undergo a constructability evaluation. Consultants may perform constructability evaluations on major projects, with oversight from the Construction Division Constructability Section. The findings or recommendations of the constructability evaluation are incorporated into the plans and specifications. The constructability evaluation also provides the foundation for the Construction Division to determine the working days for the project. When the design is substantially complete, the design project manager coordinates with the Construction Division to finalize the plans and specifications.

The working days establish the length of time that a contractor has to complete construction of a project. The Construction Division also specifies the amount of liquidated damages, incentives, and disincentives to be included in the specifications. Liquidated damages are assessed when a contractor's operations delay a project's completion. Liquidated damages are a financial estimate of the administrative costs incurred by the Department because of the delay. Liquidated damages are not a penalty. Incentives and disincentives are financial estimates of costs to the traveling public.

During the design and planning phases of a project, the Construction Division and District Engineer support the development of the traffic control plan. The Construction Division, in consultation with the District Engineer, assists with developing the traffic control plan based on the anticipated sequence of construction operations that a contractor would likely use. In addition to controlling traffic, NDOT may limit or control the contractor's operations. The Construction Division limits the contractor's operations because of concerns for public health, safety, and convenience. The specifications describe the limitations placed on a contractor's construction operations.

The Chief Construction Engineer collaborates with the District Engineer to prepare a staffing plan when enough project information is available. Depending on available NDOT staff, the project may be assigned to an NDOT Resident Engineer, an engineering consultant, or a combination of both.

When the design is complete, NDOT advertises the project to solicit bids. On complex projects, NDOT holds Pre-Bid Conferences with prospective bidders. During the Pre-Bid Conference, NDOT representatives describe project details, and prospective bidders may ask questions to clarify understanding of the project. Bidder attendance at Pre-Bid Conferences may be mandatory to ensure that all bidders have equal access to information needed to prepare bids. The Bid Review and Analysis Team, which includes representatives from the Construction Division, analyzes the submitted bids to determine conformance with specifications. If the Bid Review and Analysis Team finds no irregularities, the Team recommends award of the project. NDOT then awards the project to the lowest responsible and responsive bidder.

The project then passes from the design project manager to the Resident Engineer. The project manager remains involved as a resource for design related issues. The project manager leads public outreach efforts, and monitors compliance with environmental, design, and right-of-way commitments.

3-202 CONSTRUCTION PHASE

After the project is assigned to the Resident Engineer, the Construction Division provides technical and administrative support to the Resident Engineer. The support includes answering questions and resolving issues regarding administration, quality assurance, constructability, and labor compliance. To establish and maintain a clear and consistent statewide construction program, the Construction Division has developed this *Construction Manual*.

This *Construction Manual* communicates the policies of the Construction Division and presents guidance to field personnel. The Chief Construction Engineer is responsible for maintaining a current *Construction Manual*. To maintain a current manual, the Chief Construction Engineer periodically issues updates. Updates will contain the revision date on each revised page. Users of the manual may request a revision to the manual by forwarding a written request to the Chief Construction Engineer. The Chief Construction Engineer will review the request and take appropriate action. Between manual updates, the Chief Construction Engineer may issue interim Construction Division policy memorandums that would be incorporated into the next manual update.

For projects with federal funding, the FHWA is available to provide support to the Construction Division. The role FHWA plays on a project may vary depending on the type, scope, and complexity of the project. However, for all federally funded projects, Title 23 of the United States Code of Federal Regulations (23CFR) governs and guides FHWA.

3-202.1 ADMINISTRATION

On a construction project, the Resident Engineer administers the project using Construction Division procedures. These procedures are uniform for each project throughout the state. The Construction Division Administration Section guides and serves as a resource for the Resident Engineer in setting up the administrative processes for records, inspection reports, testing reports, contract pay items, forms, correspondence, and other documentation for each project. Examples of these processes include the organization of the filing system, contractor payments, standard forms for contract change orders, typical letters to the contractor, and formats and organization of field books, most of which is addressed in the *Documentation Manual*. The Administration Section is available to the Resident Engineer to respond to questions relating to contract administration.

In addition to supporting the Resident Engineer's general administrative functions, the Administration Section plays an active role in processing contract change orders and contractor pay requests. A contract change order is a process in which NDOT and the contractor agree on a change in the scope of the project, such as character of the work, payment, or schedule. Following action by the Resident Engineer and District Engineer, the Administration Section processes the contract change order within the headquarters and FHWA.

The change order processing includes a review to ensure that all required elements of a change order are present, such as description of the change, method of measurement and payment, and analysis of costs. The Administration Section ensures that the necessary divisions review the change order. On projects that receive federal funds, the Administration Section provides the Chief Construction Engineer with guidance on whether the proposed contract change orders may be eligible for federal funding. The Chief Construction Engineer can recommend projects for federal funding participation to the FHWA; however, the FHWA makes the final determination on federal funding eligibility. The Assistant Construction Engineer coordinates with the FHWA regarding technical details of a change order. Additionally, if other funding sources are involved, approval of the change may require approval from the funding sources.

Based on the processing completed by the Administration Section, the Chief Construction Engineer transmits the change order to the Director's office for approval. The Director can delegate the authority to execute change orders to the Assistant Director of Operations. If the Assistant Director of Operations is not available, the Assistant Director of Engineering has authority to execute change orders. Only with the Director's approval is the construction contract modified in accordance with the change order. Section 3-403 gives guidance on change orders and other modifications to the construction contract.

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 two weeks and submits them electronically to the Administration Section. The progress payments are based on quantities documented by NDOT inspectors. The Administration Section reviews the quantities submitted by the Resident Engineer and forwards the progress payment request to NDOT's Accounting Division for payment.

During construction, the Administration Section may periodically review the documentation and record-keeping on a project. The purpose of the review is to assist the Resident Engineer in maintaining complete and consistent records. At the end of a project, a representative of the Administration Section will visit the field office to complete a final audit and collect the project records. The records are then delivered to NDOT's Administrative Services Division Central Records Section for storage.

3-202.2 QUALITY ASSURANCE

One of the principal functions of the Construction Division Quality Assurance Section is to provide technical support to the Resident Engineer, inspectors, and testers. The technical support relates to construction materials and construction techniques utilized by the contractor to complete the work. The Quality Assurance Section also provides technical support by providing specialized classes to train personnel and to establish competency and maintain uniformity among inspection and testing personnel. Additionally, the Quality Assurance Section is available to respond to informal questions or to provide on-the-job training. If a Resident Engineer is unfamiliar with a material or technique, the Quality Assurance Section is available to provide guidance on inspection and testing requirements.

Because specifications cannot address every situation that occurs during a construction project, the Resident Engineer must exercise judgment when interpreting specifications. Statewide, Resident Engineers may treat similar situations differently. The Quality Assurance Section provides guidance to Resident Engineers in interpreting specifications to maintain uniformity in enforcing the specifications.

The Quality Assurance Section performs periodic inspection audits. The audits provide an independent verification that the Resident Engineer is performing a thorough inspection of the contractor's operations. If opportunities exist to improve the inspection efforts or the quality of finished products, the Quality Assurance Section offers guidance and support.

The Quality Assurance Section directs the Independent Assurance testing program. Section 5-600 of the *Construction Manual* describes the Independent Assurance program. Generally, the Independent Assurance program verifies how tests are performed in the field by monitoring and auditing tests, and by conducting parallel tests on materials incorporated into a project. The Independent Assurance testers are located in each District office and are under the direct supervision of the Quality Assurance Section.

An important element of the field-testing program is the use of nuclear density testing equipment. Federal law requires a single individual be accountable for ensuring compliance with safety regulations. This individual is designated as the Corporate Radiation Safety Officer. Refer to Section 5-500, Nuclear Testing Program, of this *Construction Manual*.

3-202.3 CONSTRUCTABILITY

The Construction Division Constructability Section provides input in developing construction documents. Construction documents must be adequate for contractors to prepare reasonable bids and to construct the project. The Constructability Section provides guidance during the design process on issues relating to specifications, construction details, plan interpretation, payment methods, and traffic control. Additionally, the Constructability Section provides assistance during construction on issues relating to design, scheduling, and traffic control. The Constructability Section provides support in researching claims. If a dispute is not resolved at the initial stage and escalates to a construction claim, the Constructability Section provides support in defending or otherwise resolving the claim.

The Constructability Section assists the Resident Engineer during the review and approval process of the contractor's schedule. As construction progresses, the contractor must submit updated schedules that revise or modify the sequence and timing of construction operations. The Constructability Section is available to assist the Resident Engineer in assessing the impacts of the schedule changes, including the contractor's resources to meet schedule requirements of the specifications.

A project is typically designed with a sequence of operations and a traffic control plan that allows that sequence of operations. If a contractor proposes to construct the project differently from the design, the Constructability Section may support the Resident Engineer in reviewing the contractor's proposed traffic control plan and sequence of operations. If the contractor proposes revisions to the traffic control plan, the Constructability Section can assist in evaluating impacts and possible delays caused by the proposed revisions.

When the construction phase is complete, the project may be evaluated in a post-construction review to identify opportunities for improvement on future projects. The Constructability Section coordinates post-construction reviews, as described in Section 3-409, Post-Construction Review.

3-202.4 CONTRACT COMPLIANCE

The Construction Division Contract Compliance Section provides guidance and support in determining a contractor's compliance with the following:

- Conforming to legal, contractual, and regulatory requirements regarding subcontractors
- Paying prevailing wage rates, including appropriate overtime rates, to the contractor and subcontractors
- Providing proper documentation of payments to subcontractors and ensuring the subcontractors are paid promptly in accordance with state and federal laws
- Providing NDOT with proper documentation of contractor and subcontractor Equal Employment Opportunity and employment practices

Because NDOT is required to monitor contracts to ensure compliance with wage and labor regulations, the Contract Compliance Section provides guidance to field personnel. Principal programs in which the Contract Compliance Section provides support are as follows:

- Contractor/Subcontractor Requirements Ensuring that the contractor performs a majority of the work (51 percent or more), and that proper approvals are obtained for subletting work to subcontractors
- Employee Wage Requirements Ensuring that the contractor and all subcontractors pay employees at least minimum wage rates established by the contract documents
- Equal Employment Opportunity Requirements Ensuring that the contractor and subcontractors report required Equal Employment Opportunity and Affirmative Action information
- Disadvantaged Business Enterprise Program Ensuring contractors follow the Disadvantaged Business Enterprise program rules and regulations
- Title VI of the Civil Rights Act Ensuring that discrimination does not occur on the basis of race, color, or national origin in programs or activities receiving federal financial assistance

For each of the areas listed, the contractor must complete required federal and state forms, which the Resident Engineer reviews and verifies. The Contract Compliance Section assists the Resident Engineer in the verification process.

3-300 DISTRICT

The District Engineers are the principal administrators for the operations of NDOT. While many of the NDOT divisions in headquarters support the mission of the Department, the Districts implement the mission. The majority of each District's work deals with construction and maintenance of the state's transportation facilities.

With specific regard to construction functions, the District Engineer becomes involved when a project first becomes a concept. Because the District Engineer has an intimate knowledge of the roadways in the District and because of relationships with community leaders within the District, a District Engineer may initiate a project. Once a project is approved as a concept, it then moves into the planning and design phase.

3-301 PLANNING AND DESIGN PHASE

As the project moves through the planning and design phase, the design project manager maintains the leadership role. Several Divisions provide continuing input. The District Engineer's role is important in bringing an understanding of the project locality and of the community. This understanding and knowledge may include construction materials, historical maintenance, drainage and safety issues, and public concerns about the project. The District Engineer may assign a Resident Engineer to provide a local perspective.

At every stage of the design phase, the District personnel provide input. The District personnel are the primary resources for information on local factors that influence the project, such as the following:

- Drainage
- Safety
- Existing structural section
- Maintenance issues
- Traffic patterns
- Community concerns
- Special events during construction
- Localized weather patterns
- Short term local traffic impacts

The District Engineer provides information continuously during the project design and at several key milestones. The preliminary and intermediate design reviews are two important milestones during which the District Engineer provides input. The District Engineer's input is reflected in the plans and, more importantly, in the specifications. When the plans and specifications are substantially complete (typically at 90 percent), the District Engineer thoroughly reviews the project documents to ensure that local conditions are incorporated.

After review and comment by the District Engineer, the project documents are then finalized and the project is advertised to solicit bids. When the project is advertised for bids, the Resident Engineer typically receives the plans and specifications. If the Resident Engineer finds an issue of significant concern, the Resident Engineer notifies the Chief Construction Engineer for input and, if necessary, the Chief Construction Engineer requests a supplemental notice to the contract documents.

3-302 CONSTRUCTION PHASE

As a project enters the construction phase, the District Engineer becomes responsible for the successful completion of the project. An Assistant District Engineer commonly acts on behalf of the District Engineer on construction matters. The District Engineer's field representative to administer the project is the Resident Engineer. The District Engineer ensures that the Resident Engineer has sufficient staff, equipment, and supplies to administer the project in accordance with NDOT policies and procedures.

The District Engineer conducts periodic reviews during project construction. During the reviews, the District Engineer is a valuable asset by bringing a perspective that may be broader than that of the Resident Engineer. Typically, a District Engineer reviews safety considerations, inspection operations, materials testing, and traffic control. In addition to on-site reviews, the District Engineer reviews project records and documentation to monitor the progress and quality of the work.

For clarification regarding technical issues, the Resident Engineer confers with the Construction Division or other appropriate divisions. When interpretation of the plans and specifications escalates and becomes an issue, the Resident Engineer confers with the District Engineer to determine the appropriate action or decision. If the Resident Engineer's interpretation differs from that of the contractor, the Resident Engineer and contractor work to resolve the issue. If the Resident Engineer and contractor cannot resolve the issue, the District Engineer analyzes the situation and attempts to resolve the issue. If the issue is not successfully resolved, the District Engineer will confer with the Construction Division for evaluation and resolution. The contractor may initiate a formal claim at any time.

Disputes may be resolved with a change order that modifies the scope or character of the work, schedule, payment, or other element of the contract. Although every change order requires the approval of the Director, in certain situations, the District Engineer may authorize the contractor to proceed with work before the Director signs the change order. This authorization, or approval, is called a "prior approval." The prior approval must be in writing on NDOT form 040-002, "Record of District Engineer's Authorization to Proceed with Contract Revision," and signed by the District Engineer before the contractor starts work. Levels of authority are discussed in Section 3-403.5.

A Letter of Authorization, change order, or supplemental agreement can modify the contract documents. Section 3-403.5 describes Letters of Authorization, change orders, and supplemental agreements. The District Engineer has commitment authority to make contract changes using a prior approval. Although the District Engineer has commitment authority, it is limited as described in Section 3-403.5.

For prior approvals on changes outside of the District Engineer's authority, the Resident Engineer sends the request to the Construction Division. The Construction Division will prepare a prior approval for the Director's approval.

After construction operations are complete, the District Engineer performs a final field review. If the District Engineer determines that the project has been constructed in accordance with the project plans and specifications, the District Engineer will accept the project for maintenance. This acceptance is not to be confused with final acceptance. Only the Director is authorized to make the final acceptance. Refer to the Construction Division intranet site (SharePoint), http://sharepoint1/040/default.aspx, for an example of a District Engineer's relief of maintenance letter that is sent to the contractor.

3-400 FIELD

As NDOT's principal field representative, the Resident Engineer administers the construction project, ensuring the contractor completes the project as detailed in the plans and specifications. Directly supervised by the District Engineer, the Resident Engineer supervises an Assistant Resident Engineer, survey crew, inspectors, testers, and office personnel.

The Resident Engineer is also responsible for the professional development of the crew. Developing a technically proficient crew includes formalized training, on-the-job training, and mentoring. The Resident Engineer is responsible for maintaining each crew member's training records. A training matrix is available that shows recommended training for positions assigned to a field crew. To access the training matrix, refer to the following NDOT intranet site (SharePoint), http://trainsrv/Forms/defaultforms.asp. For other human resource forms, refer to the Human Resources Division intranet site (SharePoint), http://sharepoint1/077/default.aspx.

The Resident Engineer and field crew, supported by the Design Division and other NDOT divisions, oversee the contractor's construction of the project. Oversight requires knowledge of materials, construction techniques, safety, environmental practices, traffic control, right-of-way matters, and labor laws and regulations.

3-401 FIELD PERSONNEL

Initial staffing discussions take place between the District Engineer and the Chief Construction Engineer. Based on resource and staffing needs and availability, the District Engineer and Chief Construction Engineer determine if sufficient NDOT personnel are available or if an engineering consultant is required. If the project is staffed with an NDOT Resident Engineer, the Resident Engineer and District Engineer confer on the unique technical aspects of the project, complexity of the project, duration, and availability of NDOT personnel. NDOT personnel, engineering consultants, or a combination of both can administer the project.

3-401.1 CREW ORGANIZATION

Certain functions and tasks of administering a construction project are common to all NDOT projects. The basic organization of a field crew accomplishes these functions and tasks. The number of personnel may increase based on the size and type of the project, but the basic organization remains constant. A typical field crew is comprised of approximately 12 people, as follows:

- 1 Resident Engineer
- 1 Assistant Resident Engineer
- 1 Office person
- 1 Survey crew chief
- 8 Inspectors, testers, and surveyor crew

While a typical field crew may consist of 12 people, the variety of project sizes and types requires flexibility in staffing within a crew and among crews within the District. As the Construction Division assigns projects to the Resident Engineer, project-staffing needs may require the District Engineer, in consultation with the district Resident Engineers, to optimize the allocation of staff by temporarily transferring personnel from one Resident Engineer to another. The District Engineer transfers staff to ensure sufficient contractor oversight or to provide technical expertise during certain construction activities.

Often, the Construction Division assigns several projects to a Resident Engineer, requiring crew members to work on multiple projects. Typically, a Resident Engineer assigns each inspector to a specific project. The remaining staff, testers, survey crew, and office staff, may work on several projects. Again, the Resident Engineer's crew size depends on the size, type, and number of projects administered by the Resident Engineer.

3-401.2 USE OF CONSULTANTS

The Construction Division, District Engineer, and Resident Engineer determine the most appropriate way to fulfill staffing needs. If the staffing need is fulfilled with a consultant, the consultant will provide support staff to work directly for an NDOT Resident Engineer (construction engineering-augmentation), or will provide a field crew consisting of a Resident Engineer and field staff (construction engineering-full administration).

If a consultant is retained to administer a construction project, the Construction Division retains the consulting firm, including negotiation and execution of a consulting agreement. The administration, oversight, and supervision of the consultant depend on the role that the consultant is fulfilling.

When NDOT retains a consultant to support NDOT's construction program, the consultants are agents of NDOT and perform the same tasks as NDOT crews. The consultant uses knowledge and experience to perform duties, as though an NDOT employee. The difference between an NDOT employee and a consultant is NDOT may terminate a consultant at any time, with or without a reason.

3-401.2.1 AUGMENTATION

Augmentation of NDOT construction crews includes providing individuals to perform construction inspection, testing, surveying, and contract documentation for projects administered by the NDOT Resident Engineer. The consultant's role may range from supplying one tester, including all required testing equipment and vehicles to perform assigned duties, to supplying several testers, inspectors, office personnel, and survey crew. Consultants may also provide people with specialized expertise, such as scheduling, fabrication inspection, and structural construction techniques.

When an NDOT crew retains a consultant to augment a project, the Resident Engineer directs the consultant's work activities. The Resident Engineer administers and monitors the consultant's performance, consistent with the terms of the consultant agreement. The Resident Engineer must also review the competency of individuals proposed by the consultant to work on the project. Regarding individuals that the consulting firm proposes to assign to the project, the Resident Engineer has the authority to accept or reject an individual, or to reassign an individual's duties. The Resident Engineer also has authority to remove an individual assigned to the project.

3-401.2.2 FULL ADMINISTRATION

Full administration consists of providing a Resident Engineer (a professional engineer licensed to practice in Nevada), an Assistant Resident Engineer, and a sufficient number of individuals to perform inspection, testing, surveying, and contract documentation. A consultant administers an NDOT project in the same manner as an NDOT field crew. The consultant provides sufficient staff possessing experience, knowledge, and character to perform the duties adequately and meet the agreement requirements. The consultant also provides the field office, equipment, vehicles, and supplies necessary to administer the project.

Under a full administration assignment, the District Engineer and Chief Construction Engineer review the competency of individuals proposed by the consultant to work on the project. The consultant's staff must possess knowledge and experience to monitor the various activities of the construction project. Individuals proposed by the consultant must become familiar with NDOT policies, procedures, and standard practices.

The consultant's administration of the field office must comply with NDOT's *Construction Manual* and *Documentation Manual*. Additionally, field personnel, including inspectors, testers, and survey crew, must perform duties in accordance with NDOT documentation procedures.

An NDOT Resident Engineer or Assistant District Engineer monitors the consultant Resident Engineer and serves as a resource for the consultant, providing guidance and assistance with NDOT standard practices and procedures. For issues relating to the administration of the construction project, the consultant Resident Engineer commonly confers with the Assistant District Engineer.

Unlike NDOT Resident Engineers, consultant Resident Engineers do not have access to NDOT's financial computer system to process contractor progress payments. Therefore, consultant Resident Engineers prepare a contractor pay request and transmit this information to the NDOT Resident Engineer for input into the NDOT financial system. Additionally, consultant Resident Engineers do not have authority to make financial commitments on behalf of the Department, nor may the consultant use Department letterhead.

3-401.2.3 INVOICE PROCESSING

Consultants submit invoices to NDOT for payment. On augmentation projects, the consultant sends the original invoice with supporting documentation to the Resident Engineer. On full administration projects, the consultant sends the original invoice with supporting documentation to the District Engineer or the District Engineer's designee. The consultant also sends a copy to the Administrative Services Division. The Administrative Services Division logs the date of receipt and forwards the invoice to the Construction Division.

The Resident Engineer or Assistant District Engineer reviews the invoice for accuracy and consistency with the consultant agreement. In reviewing the consultant's original invoice, the following items must be included:

- A summary sheet for the invoice
- A detailed breakdown of costs
 - Labor (positions, hours, and agreed rates)
 - Overtime (dollars and hours)
 - Overhead and fixed fee, or direct rates
 - Direct expenses (listed by category)
 - If the consultant is working on more than one project, the detailed breakdown must be provided separately for each project
- For agreed price items, the line item must include the quantity of items being invoiced this period, the price per item, and the total dollars
- For invoiced items, supporting documentation must be provided, such as a copy of the invoice, subconsultant invoice, or receipt
- The consultant's original signature

After reviewing the invoice, the Resident Engineer has three options: (1) recommend payment, (2) recommend payment with exceptions that the consultant is directed to correct with the next invoice, and (3) return the invoice to the consultant to be revised and resubmitted. If the Resident Engineer does not return the invoice to the consultant, the signed and approved invoice is sent to the Construction Division with payment recommendation. If the invoice is returned to the consultant, the Resident Engineer notifies the Construction Division of the invoice status.

If the Resident Engineer's review finds no problems, the Resident Engineer signs the consultant's invoice with blue ink to approve the invoice and submits the invoice to the Construction Division. If the Resident Engineer's review identifies errors, three options are available. For minor errors, the Resident Engineer may contact the consultant for an explanation or correction of the errors. Secondly, the Resident Engineer can document the error, notify the consultant, and have the consultant make the correction on the next invoice. The third option is to return the invoice to the consultant for correction and resubmission. If the Resident Engineer addresses errors in the consultant invoice, the Resident Engineer must notify the Construction Division of the error on the invoice and the manner in which it is being corrected.

The relationship between NDOT and a consultant is a professional relationship that has ethical and legal obligations. Consultants provide professional services in good faith, and in return, NDOT must not delay the processing or payment of consultant invoices. State law also places strict time constraints on NDOT to process payments to consultants. The consultant agreement also contains time constraints on payment of the invoice. If NDOT does not pay invoices within prescribed time constraints, NDOT may incur monetary penalties. Therefore, they should make every effort to process invoices in a timely manner.

3-402 FIELD OFFICE

The Resident Engineer's office is commonly referred to as a field office. The project records are maintained in the field office. Also maintained in the field office are copies of personnel records for the personnel assigned to the Resident Engineer.

After the project is assigned to the Resident Engineer, the Resident Engineer begins preparing project records. The Resident Engineer also begins reviewing the plans, specifications, and special provisions, which are specifications unique to the project. When the design process begins, the Chief Construction Engineer, with input from the District Engineer, assigns a Resident Engineer. The Resident Engineer's input during design improves the quality of the plans and specifications. During the review, the Resident Engineer may see opportunities to improve the project or correct problems. Initiating communications with the Design Division establishes a positive relationship for the duration of the project.

In reviewing the plans and specifications, the Resident Engineer should look for items that may delay construction, create disputes during construction, or significantly affect traffic. Examples of such items are constructability issues, insufficient information to construct, conflicting information, and traffic control deficiencies.

3-402.1 PROJECT RECORDS

For every NDOT construction project, records are organized in accordance with the Construction Division *Documentation Manual* and related policies and procedures. These policies and procedures provide 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 and submittals. Records also include field books, which are organized in a consistent manner. Field books document three principal activities or functions: (1) quantities incorporated into the project, (2) survey information, and (3) materials test log. Field books are permanent project records. Do not use loose-leaf books for permanent records, except as provided for in the Construction Division *Documentation Manual*. The project field office also maintains daily diaries and inspector reports.

The Construction Division *Documentation Manual* describes the organization of the project records. The Construction Division Administration Section can provide additional guidance.

3-402.2 AGREEMENT ESTIMATE BREAKOUTS

Every project requires preparation of a "Preliminary Agreement Estimate," which is an estimate of the construction cost. This estimate allows proper budgeting for the project. Several sources may fund a project. The most common funding sources are the State Highway Fund and the Federal Highway Fund. Examples of other funding sources are city and county governments and private parties, such as utility companies and land developers.

When a project is funded from sources other than the state or federal government, NDOT prepares an agreement with the third party. The agreement identifies the scope, location, and estimated costs of the improvements. The improvements funded by the third party may be all or only a portion of the entire construction project. Likewise, federal funds may only apply to certain items in the project depending on the funding source. For example, funding for bridges apply only to a bridge or several bridges on a project. The estimated cost of these improvements is listed in a document referred to as an "Agreement Estimate Breakout."

During the project startup phase, the Resident Engineer receives a copy of the Agreement Estimate Breakout, which lists the following information:

- Unique Agreement Estimate Breakout number for each funding source
- Beginning and ending stations of the work for each funding source
- Bid item number
- Bid item description
- Bid item quantity
- Total cost of the work

Because the Resident Engineer must monitor the work and costs within a project and because a project may have multiple funding sources, field books are organized by bid items, accounting for different Agreement Estimate Breakouts. The field books provide the documentation for payment from the funding source. Because project funding is based on actual construction costs for specific breakouts, it is important to assign quantities accurately and costs to the appropriate breakout. Additionally, because a breakout may be associated with an agreement between NDOT and other parties, changes to the work within a breakout must be coordinated with the Construction Division. Even apparent minor changes may cause significant impacts to the project funding.

3-402.3 PRELIMINARY SURVEYING

Several survey tasks can be completed using information contained in preliminary plans, and 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. Refer to Section 4-303 of this *Construction Manual* for additional information.

3-402.4 CONTRACTOR SUBMITTALS

Once a project is awarded, the Administrative Services Division sends a letter, called a Notice to Proceed, to the contractor stating the date to begin construction. The Resident Engineer also receives a copy of the Notice to Proceed. With receipt of the Notice to Proceed, the Resident Engineer schedules the pre-construction meeting, commonly called a Pre-Construction Conference.

Before the Pre-Construction Conference, the specifications require the contractor to submit various documents, such as the following:

- Preliminary progress schedule
- Initial traffic control plans
- Erosion control and river diversion plans
- Pollution control plans
- Safety plans
- Environmental and other permits
- Name and qualifications of contractor's traffic control supervisor
- Names, and certification and qualification numbers of contractor testing personnel
- Contractor representatives that have signatory authority

The Resident Engineer should review the specifications to determine job-specific required submittals.

3-402.5 PROJECT PROGRESS SCHEDULE

A project schedule is a planning tool used to document, measure, and monitor a contractor's progress in completing the project on time. The project schedule identifies activities, durations, logic ties between activities and the critical path. Critical path is the consecutive sequence of activities in a project whose cumulative time requirements determine the minimum total project time. Delay in critical path activities will delay the entire project if other steps are not compressed.

The first schedule that the contractor must submit to the Resident Engineer for approval is the Preliminary Progress Schedule. The specifications require the contractor to submit the schedule to the Resident Engineer at least seven days before the Pre-Construction Conference. The Preliminary Progress Schedule must identify the activities for the first 30 working days of the project. The purpose of the Preliminary Progress Schedule is to describe the sequence of the contractor's activities to complete the project within the specified time. The specifications describe requirements for Preliminary Progress Schedules. Because of the diversity of projects and complexity of schedules, the specifications must be thoroughly reviewed to determine schedule requirements. Copies of all progress schedules must be submitted to the Construction Division.

After the Preliminary Progress Schedule has been accepted by the Resident Engineer, the specifications require the contractor to provide the Progress Schedule that represents all working days with the activities required to complete the project. This progress schedule is the baseline schedule and provides the basis to monitor the contractor's progress and performance throughout the project. This schedule also serves as an analytical tool for evaluating delays, identifying potential claims, and preparing recovery options. The specifications describe requirements for progress schedules.

The Resident Engineer saves, or archives, the progress schedule in electronic format and places a paper copy in the project files. Consult with the Construction Division to determine if a copy of the electronic format should be forwarded to the Construction Division prior to acceptance. 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.

On projects that are over 120 working days in duration, monthly updates to the progress schedule are required. The specifications describe the requirements for the monthly updates. If the contractor fails to submit an updated schedule as required by the specifications, the Resident Engineer may withhold all or a portion of a progress payment. Before withholding a contractor progress payment, the Resident Engineer must notify the contractor in writing. If the project is determined to be behind schedule, the contractor must submit a Supplemental Progress Schedule as described in the specifications.

A schedule that is developed by the contractor with NDOT input is a more effective planning tool. While developing a schedule through collaboration is beneficial, the Resident Engineer is cautioned not to direct the contractor on how the contractor should schedule the work.

The following items should be discussed with the contractor as they relate to the progress schedule submittal requirements:

- Project complexity
- Critical activities applicable to the completion of the project
- Schedules for all participating organizations
- Durations of physical work
- Limitations
- Project duration

The following are guidelines in reviewing the required schedules:

- Preliminary Progress Schedule
 - Format is established
 - Notice to proceed is identified
 - Material order and delivery information may be identified
 - Submittal timelines are provided
 - 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
- Progress Schedule
 - The schedule includes all items necessary to complete the project and they are identified clearly
 - Submittal, procurement, fabrication and delivery timelines each carry their own identification and meet all limitations
 - Mobilization is included as an activity
 - All durations for activities appear reasonable
 - Logic ties are complete and in order
 - Calendars have been defined and applied to meet limitations
 - Schedule completes all required activities within the provided working days
 - Schedule meets all required limitations
 - Artificial limitations or constraints are included in the schedule that may alter the critical path
 - Critical path is easily identified and includes all activity descriptions, durations, and logic for the correct progression of work
 - Identify those activities that are near the critical path to prepare for possible delays
 - Schedule provides correct flow of work activities
 - All concurrent work is achievable
 - Schedule does not have excessive amount of work concurrently

NOTE: Projects with accepted progress schedules showing the completion of the project prior to the contract working days will be subject to change order reducing the contract working days to match the progress schedule.

Monthly Updates

- Schedule matches the actual work being done
- Schedule reflects all delays and critical path has been adjusted
- Schedule meets all limitations
- Is a supplemental schedule required

3-402.6 PRE-CONSTRUCTION CONFERENCE

The conference establishes a mutual understanding of project requirements, provides a forum to discuss key elements of the project, and identifies key project personnel. The Resident Engineer coordinates with the Assistant Construction Engineer to schedule the Pre-Construction Conference. The Assistant Construction Engineer typically invites headquarters divisions and the FHWA, as appropriate for the project. The Resident Engineer invites the contractor and local stakeholders, such as representatives from other state agencies, local governments, utility companies, or other concerned parties.

The Assistant Construction Engineer designates a moderator to conduct the Pre-Construction Conference. The Assistant Construction Engineer may serve as the moderator or may designate the District Engineer, Assistant District Engineer, or the Resident Engineer to be moderator. The Resident Engineer arranges the meeting location, ensuring that sufficient space is provided for all attendees to take part in the discussion. The Resident Engineer prepares the agenda and distributes it to attendees. During the Pre-Construction Conference, the moderator completes the necessary information required on the agenda. The completed agenda is submitted to the Construction Division. The Construction Division Contract Compliance Section representative records the entire meeting and makes complete audio copies available to participating parties. Refer to the Construction Division intranet site (SharePoint), http://sharepoint1/040/default.aspx, for a standard Pre-Construction Conference agenda.

Because the Resident Engineer is in charge of the project, the contractor will likely ask the Resident Engineer specific project-related questions. If the Resident Engineer can not 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.

Discussions at the Pre-Construction Conference relate mostly to the project's construction details and compliance with labor laws and regulations. The Construction Division Contract Compliance Section provides the contractor with a subcontractor packet shortly after the project is awarded. The following section describes Contract Compliance requirements before construction.

3-402.7 CONTRACT COMPLIANCE

At the project level, the Resident Engineer monitors the contractor's compliance with FHWA and NDOT labor laws and regulations. Section 108 of the specifications lists contractor requirements. The specifications for a specific project also contain FHWA and NDOT contract compliance requirements. The Resident Engineer should be familiar with the labor compliance requirements for the project.

After NDOT awards the contract, the Construction Division Contract Compliance Section, sends the contractor an information packet. This packet contains information on payroll requirements, subcontracts, labor law and regulation compliance provisions, and state and federal notices for posting. The Resident Engineer also receives a copy of the information packet, without the required postings.

The contractor must place the required postings on the jobsite in a place easily accessible to all workers, including those of subcontractors. The contractor typically posts the information on a bulletin board erected on the jobsite. Some projects, such as signal systems, preclude the erection of a bulletin board because of limited space on the jobsite. In these cases, the information may be posted at the contractor's local office.

The contractor must complete NDOT form 052-023, "Request to Sublet," and submit it to the Resident Engineer for all first, second, and third tier subcontractors on the project. Before sending the form to the Contract Compliance Section, the Resident Engineer verifies the following items:

- Correct bid item number
- Quantities listed reflect bid plan quantities (Exceptions are allowed for partial performance of a bid item, expressed as a percentage of the work)
- Item description
- Unit price, which must reflect contractor's unit bid price
- Total dollar amount to be subcontracted

Until authorized and approved by NDOT, subcontractors are not allowed to perform work on the project. Occasionally, a contractor needs the services of a company for a small item of work or for work not specifically related to a particular contract bid item, such as miscellaneous asphalt saw cutting, pavement profile grinding, and street sweeping services. In this situation, the contractor submits NDOT form 052-061, "Request to Utilize Service Provider."

After approval of the Request to Sublet, the Contract Compliance Section sends the Resident Engineer copies of the approval. The Resident Engineer then forwards the approval to the contractor and reminds the contractor to submit two copies of all subcontract agreements for Contract Compliance Section review. The Resident Engineer reviews the subcontract agreements to make sure the subcontractor signed the form, "Inclusions of Contract Provisions in Subcontracts," and attached it to the subcontract agreement. Additionally, Disadvantaged Business Enterprise (DBE) subcontractors must show unit prices in the subcontract agreement.

3-403 PROJECT ADMINISTRATION

After the Pre-Construction Conference and after the Resident Engineer submits and accepts the required documents, the contractor begins work on the project. Preliminary surveying should allow the contractor sufficient information to begin various activities. Inspectors and testers should be prepared to monitor contractor operations, having coordinated with the contractor's staff.

During the life of the construction project, inspectors and testers observe and monitor the contractor's activities to verify that materials and techniques conform to the requirements of the plans and specifications. The Resident Engineer is responsible for forwarding test results to the contractor in a timely manner, typically as soon as the test results are complete but no later than 24 hours after the Resident Engineer receives the results. Every two weeks, the Resident Engineer prepares a contractor progress payment based on acceptable work completed during the preceding two weeks. The Construction Division processes the estimate and pays the contractor. This process occurs throughout the life of the project, and inspectors and testers play significant roles.

3-403.1 INSPECTION AND TESTING

As the principal NDOT representative at the project level, the Resident Engineer significantly influences the successful completion of the project. In addition to administering the project and supervising the NDOT field crew, the Resident Engineer oversees and directs project-wide issues.

Communication is an important responsibility of the Resident Engineer, inspector, and tester. Not only is communication necessary among the Resident Engineer, inspector, and tester, but with the contractor. Sharing information is important to everyone involved with the project. Sharing information facilitates making and implementing effective decisions. Timely communication among project personnel can avoid delays and costs. For example, the Resident Engineer should communicate test results immediately to the contractor so that the contractor can make adjustments as necessary, reducing costly project delays and improving quality of the work.

Inspectors and testers are involved in every aspect of the contractor's activities. Inspectors monitor the construction techniques, means, and methods to verify the work conforms to the requirements of the specifications and that the work is completed with quality. Similarly, testers monitor the quality of materials incorporated into the work and make sure that the materials conform to the requirements of the specifications.

Inspectors and testers must have a thorough knowledge of the plans and specifications relating to the materials and activities being inspected. Additionally, Section 5, Sampling and Testing, and Section 6, Construction, of this *Construction Manual* provide guidance on most construction activities and materials encountered on NDOT construction projects. For field testers, an additional resource is the Independent Assurance testing staff assigned to work in the District. For insight and guidance, inspectors and testers can always consult the Resident Engineer, experienced coworkers, and the Construction Division Quality Assurance Section. In addition to resources relating to construction details, the Construction Division *Documentation Manual* provides information on proper documentation.

At the most basic level, inspectors do the following:

- Observe progress of work
- Check the quality of work performed
- Document work activities, observations, site visitors, and conversations

To carry out these tasks effectively, inspectors do the following:

- Communicate with the contractor's foremen on a regular basis
- Provide information on matters relating to line, grade, dimensions, test results, and quality of work
- Confer with the Resident Engineer regarding unsatisfactory work
- Communicate with the Resident Engineer on disagreements with contractor staff
- Document pay quantities in field books according to the NDOT Documentation Manual

Field testers working on NDOT projects must be qualified by the Nevada Alliance for Quality Transportation Construction (NAQTC), or Western Alliance for Quality Transportation Construction (WAQTC) and American Concrete Institute (ACI). Refer to Section 5-300, Tester Qualification Program, of this *Construction Manual* for additional information. Field testing on NDOT projects must conform with the *Synopsis of Materials Division Testing Manual for Field Testing* and with Table 5.1, "Minimum Required Samples and Tests – Project," in Section 5, Sampling and Testing, of this *Construction Manual*.

NDOT field testers must be NAQTC qualified. Consultants retained by NDOT to perform field testing must be either NAQTC, or WAQTC and ACI qualified. The contractor's testers performing quality control testing on NDOT projects, including testing of aggregate production, must have one of the following qualifications: NAQTC – Aggregate Module, or WAQTC – Aggregate Module and Embankment and Base Module. Contractor personnel sampling asphalt at the hotplant must have the following qualification: NAQTC Specialized Test, AASHTO T-40. Because each qualification program consists of multiple modules for various materials, a field tester must be qualified in the specific module for the material being tested.

Field testers check that the field lab and testing equipment are in acceptable operating condition. Refer to Sections 5-405.2, Field Laboratories and Testing Equipment, and 5-405.3, Equipment Repair, Maintenance, and Replacement, of this *Construction Manual*.

3-403.2 REQUESTS FOR INFORMATION

As questions arise about the plans or specifications, a contractor may submit a Request for Information (RFI) to obtain written clarification. When the contractor submits an RFI to the Resident Engineer, the Resident Engineer must respond as quickly as possible so that the project is not delayed. After the contractor submits an RFI, the Resident Engineer logs the RFI and either responds or coordinates a response from the appropriate party.

If the Design Division receives RFIs from contractors during the bidding phase, the Design Division provides all such RFIs and responses to the Resident Engineer. The Resident Engineer then has a complete record of all RFIs received on the project.

3-403.3 SUBMITTALS

The contractor is required to submit various forms, certificates, and other documents before and during the construction phase. The specifications describe these documents and the times when the contractor must submit them. Before construction begins, most submittals relate to labor regulations, permits, and schedules. Another required submittal may be a contractor traffic control plan. During construction, submittals relate to construction materials, details, and processes.

Maintaining traffic safely through a work zone is a goal of the Department. Policy 07-02 on Work Zone Safety and Mobility addresses roadway safety and mobility. On significant projects, traffic control plans are included in the plans and specifications. On other projects, the specifications require the contractor to prepare a traffic control plan and to submit the plan to the Resident Engineer for review and acceptance. For guidance on contractor traffic control plan submittals, refer to Section 6-624 of this *Construction Manual*.

On large or complex projects, logging and tracking submittals is critical to maintaining clear communications and reducing delays caused by incomplete records and documents. Many submittals are organized and managed using computer software. Refer to the Construction Division intranet site (SharePoint), http://sharepoint1/040/default.aspx, for a comprehensive list of submittals common to most NDOT projects.

3-403.3.1 MATERIALS

The quality of the project depends on the quality of the materials used. All materials are subject to the requirements of the project plans and specifications. Section 106 and Section 700 of the specifications describe material requirements. The project's special provisions address unique construction materials, techniques, or technologies. The specifications describe the methods used to determine a material's compliance with the specifications.

Aggregate material sources must undergo testing before the material is used on the project. The process of testing the material and determining the material's acceptability is called "Source Acceptance." Refer to Section 6-101, Aggregate Sources, of this *Construction Manual* for additional information on source acceptance.

During the project, there are three methods of determining material acceptance: (1) field testing, (2) sampling, and (3) Certificates of Compliance. Some materials may require more than one method of acceptance. The Materials Division sends the Resident Engineer a "Materials Sampling and Testing Checklist" and a "Certificate of Compliance" form. Although the Resident Engineer may forward copies of the form to the contractor, most manufacturers use their own certificate. The checklist describes the method of acceptance—required samples, tests and Certificates of Compliance—for material incorporated into the work. Although not all materials may be included in the checklist, all materials incorporated into the project must meet the requirements of the plans and specifications. An example of a "Materials Sampling and Testing Checklist" can be found at the Construction Division intranet site (SharePoint), https://sharepoint1/040/default.aspx.

3-403.3.1.1 MATERIAL SAFETY DATA SHEET

Before beginning work, the contractor must submit Material Safety Data Sheets (MSDS) for any hazardous material that will be used on the project. Contractors typically submit MSDS sheets before the pre-construction conference. The contractor must have MSDS sheets readily available on the jobsite, which is a required component of the contractor's safety plan.

3-403.3.1.2 MIX DESIGNS

NDOT projects incorporate several types of composition materials, such as plantmix bituminous pavement and portland cement concrete. These materials are combinations of other construction materials. The specifications describe the type and amount of the materials. The specific combination, or mix, of materials is called a "Mix Design." Three major products require an approved mix design before they are used on the project: Plantmix bituminous pavements, portland cement concrete pavement, and portland cement concrete. The mix design for each product and each component of the mixture must conform to requirements described in the specifications. The Resident Engineer must approve the components of a mixture before submitting the mix design to the Materials Division for review and approval.

3-403.3.1.2.1 Plantmix Bituminous Surface

The development of a plantmix bituminous mix design begins with the contractor submitting the component materials (aggregate and asphalt) to the Resident Engineer. The Resident Engineer verifies the asphalt is the type specified in the plans and specifications. The Resident Engineer's testers confirm that the aggregate sample is representative of the stockpiled material and that the aggregate conforms to the specification requirements. If the aggregate meets specifications, the aggregate and asphalt are sent to the Materials Division, with copies of the test results, for testing and mix design development. If the aggregate fails to meet specifications, the Resident Engineer immediately notifies the contractor.

The Materials Division tests the samples to verify compliance with the specifications, then designs a bituminous mixture using the contractor's requested aggregate proportioning. The Materials Division prepares several test mixtures and selects a mixture that complies with the specification requirements. The Materials Division sends the mix design to the Resident Engineer, who forwards the mix design to the contractor. If the mix design fails to meet specifications, the Materials Division notifies the Resident Engineer.

Because mix design specifications are broad, the Materials Division mix design represents one of many designs that could meet specifications using the aggregates supplied by the contractor. The broad range of values allowed by the specifications could result in variability in the mixture. Therefore, to obtain a uniform mixture, the contractor proposes a mixture based on the Material Division's mix design, but with single target values instead of ranges of values. Although the contractor establishes the target values, the specifications state the required range of operating tolerances for each target value. This mixture is called the "Job Mix Formula."

The contractor submits a proposed Job Mix Formula to the Resident Engineer. The Resident Engineer reviews the contractor's Job Mix Formula, makes any necessary changes, and then establishes the approved Job Mix Formula that the contractor will use on the project. An example of a Resident Engineer's Job Mix Formula letter to the contractor can be found at the Construction Division intranet site (SharePoint), http://sharepoint1/040/default.aspx. Instead of requesting a new plantmix bituminous mix design, a contractor may request to use a mix design developed by the Materials Division within the last year. The Resident Engineer verifies that the mix design is not older than one year. The contractor's request to use a previous mix design requires approval of the Materials Division. For additional information, refer to Section 6-400, Surface Treatments and Pavements, of this Construction Manual.

3-403.3.1.2.2 Portland Cement Concrete

A portland cement concrete mix design consists of combining four major components: water, aggregate, portland cement, and admixtures. All components must conform to the specifications. The contractor, based on the requirements stated in the specifications, submits a concrete mix design. The contractor's proposed mix design must be designed by a lab with an accreditation acceptable to the Materials Division. The mix design submittal must include data from the preparation and testing of portland cement concrete trial batches.

Reports on the trial batches and associated test results must contain information required by the specifications. An official of the firm performing the mix design must sign the reports. If the portland cement concrete mixture has been used recently on a construction project other than an NDOT project, the contractor may submit certified test results of the other project in lieu of producing trial batches.

The mix design must meet the requirements of the specifications. In the submittal, the contractor must state the class of concrete for which the mix design is being submitted. The contractor may choose to submit a mix design for a higher quality mixture than the specifications requires. 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 disapproves the mix design and notifies the Resident Engineer.

A concrete mix design submittal is required for small quantities of concrete, such as fence posts; curb, gutter and sidewalk less than 100 feet long; small permanent ground-mounted signs; and other minor placements under 1.3 cubic yards. The Resident Engineer may approve mix designs for minor placements. The Resident Engineer may waive trial batch test requirements; however, aggregates must still come from approved sources. The Resident Engineer may also waive any or all field tests relating to minor placements based on visual inspection of the quality of the delivered concrete.

3-403.3.1.3 MATERIAL CERTIFICATION PROCESS

A manufacturer produces a Certificate of Compliance, indicating that the material meets the specification requirements of each corresponding section of the specifications. For example, bituminous materials must be in accordance with Section 703 of the specifications. A generic Certificate of Compliance form is available through the Materials Division and is sent to the Resident Engineer with the Materials and Sampling Checklist. Most manufacturers will have their own certificate form. A manufacturer's representative must sign and date the Certificate of Compliance, and the certificate must be legible. An original certificate is preferred, but the department may accept a copy or fax. The Resident Engineer can discuss questions about the certificate with the Materials Division. Certificates are sent to the Materials Division using NDOT form 020-018, "Transmittal for Test Samples and Certifications." The Resident Engineer should provide a copy of the certificate to inspectors overseeing the item being incorporated into the work. The certificate 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.

3-403.3.1.4 BUY AMERICA CERTIFICATION

For transportation projects 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." Specifications will state requirements that 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 "Buy America" program should not be confused with the "Buy American" program. The "Buy American" and "Buy American" programs are separate and distinct Federal Highway Administration (FHWA) programs. The "Buy American" program was created in 1933 and establishes requirements for all direct federal procurements. "Buy American" affects federal agency procurement of approximately 100 products. The "Buy America" program was created in 1982 and establishes requirements for incorporating iron and steel products into federal-aid highway projects. The two programs have different requirements and processes.

The Resident Engineer should include a discussion of the "Buy America" requirements in the preconstruction conference for federal-aid projects.

3-403.3.1.5 QUALIFIED PRODUCTS LIST

The Qualified Products List is a list of manufactured products that NDOT has evaluated and determined suitable for use on NDOT projects. The contractor must use products listed on the Qualified Products List or products that meet specifications. Products listed on the Qualified Products List can be used only as listed on the Qualified Products List and installed only as recommended by the manufacturer.

The contractor may use the products listed on the Qualified Products List, or the contractor may request to use an equivalent product not on the list. The Resident Engineer must approve products not on the Qualified Products List before the contractor incorporates them into the work. Such approval may require additional time for review and approval by other divisions. The Materials Division's "Materials Sampling and Testing Checklist" may be used for guidance as to the testing requirements to gain acceptance on the Qualified Products List. All products from either the Qualified Products List or an approved equal require Certificates of Compliance. The contractor must submit the Certificate of Compliance to the Resident Engineer. The submittal process for Certificates of Compliance is described in Section 3-403.3.1.3, Material Certification Process.

3-403.3.2 SHOP DRAWINGS

The plans and specifications describe the quality of the product that the contractor must incorporate into the project. When the product is complex or has significant public safety implications, NDOT actively monitors the techniques and processes that the contractor will use. In these situations, the contractor may use interim designs or drawings. NDOT review 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. Following are common shop drawing submittals and 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 reinforcing steel details conform to the plans and specifications. For all other shop drawings, the Resident Engineer forwards the drawings to the Structures Division for review and approval. The appropriate sections of the 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 must 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; therefore, all personnel must provide ample time to adequately 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.

3-403.4 REQUIRED CORRESPONDENCE

NDOT policies and procedures require the Resident Engineer to complete certain types of correspondence. The following list represents letters that the Resident Engineer sends to the Construction Division relating to key project milestones: :

- Work Begins The Resident Engineer notifies the Construction Division of the date the contractor begins work on the project. If this date is after the date stated in the Notice to Proceed, the Resident Engineer's letter must state the Notice to Proceed date, the date that work started, and the working day represented by the start date.
- Suspension If unsuitable weather or other conditions prohibit work on the project, the contractor may submit a written request to suspend work. If the Resident Engineer approves the request, the Resident Engineer submits a standard suspension letter, with the contractor's request, to the District Engineer. After the District Engineer concurs with the suspension, the District Engineer forwards the letter to the Chief Construction Engineer, who must also concur. If the suspension occurs during a winter shutdown as may be provided in the specifications, this correspondence is not required.
- Resumption The Resident Engineer notifies the contractor in writing when the reasons for the suspension no longer exist. The Resident Engineer's letter should state the date when working days will resume. Because of an extended work suspension due to weather, the Resident Engineer should give the contractor sufficient time (typically 10 days) to reorganize labor and equipment. The Resident Engineer notifies the Construction Division using the standard letter for resumption of work. The letter is processed in the same manner as the suspension letter.
- Completion When the contractor completes work on the project, the Resident Engineer sends a letter to the District Engineer with a copy to the Construction Division stating the completion date and informing them that the project is ready for final inspection. The Construction Division then notifies all appropriate parties of the completion date.

3-403.5 LETTERS OF AUTHORIZATION, CHANGE ORDERS, AND SUPPLEMENTAL AGREEMENTS

The principal elements of the contract documents are the contract, plans, and specifications. During the construction phase, each of these legal documents can be changed with Letters of Authorization, change orders, or supplemental agreements. This section describes each of these methods of changing the contract documents.

3-403.5.1 LETTERS OF AUTHORIZATION

Occasionally, minor construction items that are not anticipated in the original scope must be completed on a project. These minor construction items are incidental construction items, which do not have bid items under the original plans and specifications. A Letter of Authorization is a means to compensate the contractor for incidental construction items for which no bid item is included in the plans and specifications. The Resident Engineer can pay for these incidental construction items with a Letter of Authorization. The Letter of Authorization must contain the following information:

- Contract number and project number
- Letter of Authorization number (numbered consecutively beginning with 1)
- Date of approval
- Reason for work
- Description of work
- Cost of work
- Cost justification for work
 - The Resident Engineer prepares a cost analysis independent of the contractor's cost estimate. The Resident Engineer compares cost analysis with the estimate prepared by the contractor. Any significant differences are resolved with the contractor. Refer to Item 5. Estimate of Cost in Section 3-403.5.2 Change Orders for additional information on preparing a cost analysis.
- Cumulative total of incidental funds used on project, expressed as a dollar amount
- Cumulative amount of incidental funds used compared to incidental funds budgeted, expressed as a percentage
- Signature of contractor and Resident Engineer

The Resident Engineer and contractor must sign Letters of Authorization before the work begins. After signing, the Resident Engineer sends copies to the District and to the Construction Division.

Following are the Resident Engineer's limitations on Letters of Authorization:

- The spending limit per incident is set at \$10,000.
- The cumulative total of incidental construction items cannot exceed \$40,000 or 1 percent of the original contract bid price, whichever is greater. In no case is the cumulative total of incidental construction items to exceed \$150,000.
- A Letter of Authorization cannot grant time extensions.
- A change order is not required for work performed under a Letter of Authorization.

- When the plans or specifications clearly state that the work is incidental to other items of work, or that no direct payment is made for certain work, payment is not made under a Letter of Authorization.
- When the plans or specifications clearly provide bid items to perform the work, a Letter of Authorization is not used
- On state-funded minimum overlay projects, guardrail improvements are not performed under Letters of Authorization.
- Letters of Authorization cannot be used for the following:
- 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 Section 101.03 of the specifications for the definition of "Major Item.")
- 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.

The Construction Division intranet site (SharePoint), http://sharepoint1/040/default.aspx, contains an example of a Letter of Authorization.

Although a Letter of Authorization is appropriate in directing the contractor to accomplish incidental items of work, certain situations exist in which a Letter of Authorization cannot be used. When a Letter of Authorization is not used, a change order or supplemental agreement may be the appropriate process. The following sections discuss change orders and supplemental agreements.

3-403.5.2 CHANGE ORDERS

NDOT has the right to modify a project. Modifications may be required to address changes to plans after the construction contract is signed, to address conditions in the field, or to add items not originally anticipated during the design. Contract change orders are used to make changes to a construction project. Change orders must have four essential elements: description of the work to be performed, cost of the work, time to complete the work (effect on project schedule), and method of payment.

The specifications define a contract change order as "A written order to the Contractor, covering changes in the plans, specifications or quantities, within the scope of the contract, and establishing the basis of payment and time adjustments for the work affected by the changes."

After the Director executes a change order, it becomes part of the construction contract between the contractor and NDOT. Just as the original plans and specifications describe the scope, terms, and conditions of work to be done, the change order is also a formal agreement describing the scope, terms, conditions of work to be done, and funding used by the Department for payment of the work.

Because a change order is legally binding to the contractor and to NDOT, the change order must be prepared with care. The required elements of a change order must be clear, concise, and unambiguous. A change order must be prepared so that a person not familiar with the work can readily interpret scope, terms, and conditions of the work. In the event of a claim or lawsuit, a vague document that requires verbal explanation is no better than a verbal agreement.

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

- 1. Revision of geometric design (main road, ramps, frontage roads, or crossroads).
- Revision of structural section. Localized corrections to the base due to pockets of unsuitable material do not require a change order. Revision to base thickness is considered a major change in design and requires a change order.
- 3. Revisions involving addition, deletion, or relocation of major structures.
- 4. Any change in planned access provisions. (On the Interstate system, changes in planned access require FHWA approval and should be submitted well in advance. These changes include, but are not limited to, such minor revisions as relocating a locked gate to fit an existing road. A sketch showing the original and revised conditions must accompany the order.)
- 5. Any change that alters the scope of the contract (including deletion or addition of contract items).
- 6. Any change related to type or quality of materials to be furnished.
- 7. Changes in specifications or specified construction techniques.
- 8. Changes resulting in adjustment of bid unit prices or in establishing agreed unit prices for items not contained in the original contract.
- 9. 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 resulting from field stakeout.
- 10. Payment for materials stockpiled out of state, unless otherwise stated in the specifications. The change order requires the address or a description of the stockpile location.
- 11. Acceptance of material or work that does not conform to the specifications.

In certain situations, routine maintenance may require a change order. If a change order is required to direct the contractor to perform maintenance, limitations on the eligibility for federal funding may apply to maintenance costs. Confer with the Construction Division Administration Section for guidance on federal funding eligibility relating to maintenance activities.

Work provided for in any change order should not begin until the Director approves the order, except when a prior approval has been granted. Refer to Section 3-403.5.2.1, Prior Approvals. If the contractor begins change order work before the Director executes the change order, or without a prior approval, the contractor risks receiving no payment for the work. Because of the reviews required to process a change order, change orders should be submitted well before actual requirements. If FHWA approval is required, additional time may be needed to process the change order.

Occasionally, issues arise between NDOT and a property owner. The issue may be a purported verbal agreement between the property owner and NDOT, or it could involve right-of-way matters. Because a construction contract is between NDOT and the contractor, the property owner is not party to the contract; therefore, a separate written agreement is needed between NDOT and the property owner. If additional work is necessary, two documents are required: (1) An agreement or other document between NDOT and the property owner describing the agreement of both parties, and (2) a change order between NDOT and the contractor directing the contractor to perform the work. On projects receiving federal funding, appropriate agreements or other supporting documentation must accompany change orders addressing right-of-way issues.

When a change order is prepared for work contained in an agreement between NDOT and a property owner, but the work was inadvertently omitted in the plans and specifications, the change order must reference the original agreement. Because of the legal nature of change orders related to right-of-way and property owners, change orders related to right-of-way matters are processed only after all required documents are executed and accompany the change order. No work is allowed outside NDOT right-of-way without proper permanent or temporary easements. Easements describe the limits of the work and the type of work allowed. Section 108.04 of the specifications typically list easements. The Resident Engineer can contact the Right-of-Way Division with questions about easements.

The Resident Engineer should always discuss contemplated changes with the District Engineer and, when appropriate, with representatives of the Construction Division. The Resident Engineer should also discuss changes with FHWA representatives during their regular project inspections.

Changes typically require the Resident Engineer to coordinate with other NDOT divisions for guidance and recommendations. When an NDOT division requests a change, the requesting division submits the request in writing to the Construction Division. The Construction Division reviews the request and, if the Construction Division concurs in the request, forwards it to the Resident Engineer. The Construction Division also sends a copy of the request to the District Engineer. This procedure ensures that all persons involved with the change are informed.

Use NDOT form 040-001, "Contract Change Order" to prepare contract change orders. The Construction Division intranet site (SharePoint), http://sharepoint1/040/default.aspx, contains a checklist to assist in preparing a contract change order. Following is a discussion of the important features of the change order and instructions for preparing the change order.

- 1. Heading. Fill in this portion of the form completely to identify the project properly. The spaces provided on the form for numbering the sheets of the change order should include all sheets that are part of the order. This includes sheets such as estimate of costs, drawings, revised structure, or guardrail lists. Include prior approvals, analysis of force account, and memos requesting the change order, but do not number them. As an example, a change order directs the contractor to perform certain work. Accompanying the order is an estimate of cost, two sheets of detailed drawings, and a revised guardrail list. The change order form, in the space provided, shows "Sheet 1 of 5 sheets," which is the total number of sheets included in the order.
- 2. Contract Change Order Number. Consecutively number the orders, beginning with number 1, for each contract. Occasionally, it will be necessary to amend a previously submitted change order. An amended order is not a new order, but an addition, deletion, or modification to a portion of the original order. All provisions of the original order, except the amended section, remain in effect. Any quantities changed by an amended order should reflect only the net change to the original order, and not the net change to the original planned quantity. An amended change order is designated with an "A" after the number, such as "CCO No. 23A." If a second amendment is necessary, it is designated with a "B". When the Construction Division returns a change order to the Resident Engineer for modification before the Director signs it, the same order is resubmitted after the Resident Engineer modifies it. If a change order is voided at the project level after it has been assigned a number, and the number is not later reassigned to a new order, the Resident Engineer should notify the Construction Division in writing to ensure accurate record keeping. The same is true if a number is inadvertently skipped.
- 3. Change Requested By. Indicate who requested the change. The Resident Engineer, District Engineer, contractor, Design Division, or someone outside NDOT may have requested the change order. Fill in the "Change requested by" space on the form with the individual's name and title.
- 4. Text. In the body of the form, clearly describe the scope of the change, including location and limits. Include the payment method, such as bid prices, Force Account, or Agreed Prices. If the scope of the change has multiple elements, describe each element separately. If more than one sheet is necessary, use NDOT form 040-001A (non-signature sheet) and NDOT form 040-001 (signature sheet). If more than one payment method is used, clearly define how each portion of the work is to be paid.
- 5. Estimate of Cost. Indicate how the work to be performed is paid, such as contract bid items, agreed unit prices, force account, or a combination of all. Extra Work is not a payment method; it is any work outside the scope of the contract that is essential to the satisfactory completion of the project. If more than one item or operation is to be provided under Extra Work on the same order, list and define each item or operation separately. Use as many sheets as necessary. When preparing a cost estimate for a change order, the Resident Engineer should follow these guidelines:

 Indicate the payment method for the Extra Work. An analysis is required for each force account or agreed price used.

If equipment is included, list the manufactured year and the Rate Adjustment Factor used, as described in Section 109.03 of the specifications. For equipment not listed in the "Rental Rate Blue Book," the Resident Engineer should contact the Construction Division for guidance.

When preparing estimates for force account or agreed prices, use Section 109.03 of the specifications to determine applicable markups. When preparing a cost analysis for Agreed Prices, the Resident Engineer should base the analysis on the following:

- The average prices, or historical bid prices for similar work, listed in the Construction Division's "Engineer's Estimate of Reasonable Unit Bid Prices."
- Pricing information provided by other NDOT divisions.
- Written independent price quotes from other subcontractors or suppliers.
- Other industry documents can be used in unique circumstances and only after coordinating with the Construction Division.
- The cost analysis must include invoices or quotes for materials.
- If a change order allows payment for items without an item number, such as Force Account or Agreed Price items, an item number must be created and assigned to each item. For Force Account items, the item number begins with FAO, followed by a dash or space, and a four-digit number, beginning with 0001, such as FAO-0001. For Agreed Prices, a similar numbering system is used, for example, APO-0001. Item numbering is sequential within each change order. If subsequent change orders create more FA or AP items, start a new numbering sequence for each change order.

Pay all Rent Construction Signs or Barricade items on a prorated basis and code them with PRO as the first three digits in the item number. A prorated item created at an Agreed Price is assigned a PRO number, such as PRO-0001.

Show the total estimated cost of the Extra Work and the applicable agreement estimate breakout. On all projects, show the agreement estimate breakout for each item of work on the "Estimate of Cost" sheet. If an item of work is in more than one breakout, list it separately for each breakout. If an appropriate breakout is not available, request anew breakout from the Construction Division Administration Section.

Payment for Extra Work can be made in three ways, listed below. Each of these payment methods may provide advantages over the others depending upon the circumstances.

- a. FORCE ACCOUNT Use Force Account when all parties:
 - i. Cannot accurately estimate the cost of the work
 - ii. Can clearly separate the work from other portions of the work
 - iii. Cannot agree on the payment method

Note: The force account methodology described in the specifications cannot be modified.

- b. AGREED UNIT PRICE Use Agreed Unit Prices when all parties:
 - i. Can accurately estimate costs
 - ii. Cannot separate the work performance from other portions of work contained in the change order
- AGREED LUMP SUM PAYMENT Use Agreed Lump Sum Payment when parties cannot separate work performance from other work and when parties cannot apply agreed unit prices to any definable items
- Total Cost of Change. This space shows the total dollar amount of the change, indicating whether the change is an increase or decrease because of the change order. If there is no change, insert the word "None.".
- 7. Time Extension. If additional working days are justified, provide the justification for additional working days in the text of the order and on the "Estimate of Cost" sheet. Allow additional time only if the additional work extends the original contract time. Regardless of the time required to perform a given change, additional time is not allowed if the completion of the project is not affected. Time extensions are based on impacts to the project completion date, not the duration of the given change. Clearly state if the change order deducts, adds, or does not change the contract time. When a schedule analysis is performed, include the analysis with the change order.
- 8. Contractor's Signature. Submit all change orders for the contractor's acceptance and signature. Note the date of acceptance in the space provided. If the contractor refuses to sign a change order, fully explain the refusal reason in the Resident Engineer's Cover Letter.
- 9. Cover Letter. The Resident Engineer's letter of transmittal, or Cover Letter, is an essential element of processing any change order. The transmittal letter gives complete details and provides justification for the change. If an attempt has been made to renegotiate prices, it must be documented in the transmittal letter. The letter should substantiate in detail any additional working days and explain reasons for the Extra Work. If a prior approval was issued for a change order, the transmittal letter must reference the prior approval. The transmittal letter also indicates who is monetarily responsible for the change order, for example, federal, city, county, or developer. Clear and complete information in the transmittal letter enables the Construction Division to act promptly on the change order request and obtain the necessary approval.

On projects with full federal oversight, the FHWA reviews and approves change orders. Generally, the FHWA does not approve orders involving changes in the 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.

NDOT policy and FHWA regulations require that work necessitating a change order shall not begin until: (1) The change order has been fully executed, or (2) a written Prior Approval authorizing the work to proceed has been granted.

3-403.5.2.1 PRIOR APPROVALS

Change order processing and approval can be expedited and completed in just a few days, especially if change order processing could delay the project's progress or could create an unsafe situation. A prior approval commits the Department to changes and payments for work that the contractor has not accepted or agreed to and the Director has not authorized. Therefore, a prior approval is requested or authorized only after change order preparation is substantially complete

Use prior approvals sparingly. Immediately after a prior approval is authorized, submit the change order for processing. In most situations, the time between prior authorization and a change order submission to the Construction Division should not exceed 30 days.

Prior approvals are not issued for Value Engineering proposals. If the character of the change order requires approval from another division, prior approvals must have the concurrence of the appropriate division.

The Director, the District Engineer, or the Resident Engineer may authorize prior approvals. Prior approval authorization must be on the appropriate NDOT form before the work begins. The appropriate forms are as follows:

- Director: Record of Director's Authorization to Proceed with Major Contract Revision on State-Funded or Certification Acceptance Projects (NDOT form 040-002A)
- Director: Record of Authorization to Proceed with Major Contract Revision (FHWA form FHWA-1365)
- District Engineer: Record of District Engineer's Authorization to Proceed with Contract Revision (NDOT form 040-002)
- Resident Engineer: Record of Resident Engineer's Authorization to Proceed with Contract Revision (NDOT form 040-002B)

Both the Resident Engineer and the District office retain copies of the form, and the Construction Division keeps the original. The commitment authority of the District Engineer and Resident Engineer are as follows:

- District Engineer
 - Projects over \$5,000,000: Prior Approval commitment authority: \$100,000
 - Projects under or equal to \$5,000,000: Prior Approval commitment authority: \$50,000
- Resident Engineer
 - Projects over \$5,000,000: Prior Approval commitment authority: \$50,000
 - Projects under or equal to \$5,000,000: Prior Approval commitment authority: \$25,000

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

- 1. Substantial revisions in geometric design, structural section, or revisions in the geometric design that do not conform to design standards.
- 2. Significant changes on a major structure or pile bearing requirements.
- 3. Changes in material specifications of a Major Item. (Refer to Section 101.03 of the specifications for the definition of "Major Item.")
- 4. Changes involving right-of-way limits or access control.
- 5. 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.
- 6. 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.
- 7. 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.
- 8. 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.
- 10. Changes that involve settlement of a contractor's claim.

The Construction Division must request prior approval to proceed with changes that are outside the scope of the District Engineer's authority, as listed above. The Resident Engineer should first review the situation with the District or Assistant District Engineer and, if they decide that the proposed change is outside the District Engineer's authority, they will contact the Construction Division.

Carefully prepare cost estimates for prior approvals, and monitor the cost of the change order work as the work proceeds. If it is apparent that the actual cost will overrun the original estimated cost of the prior approval by 25 percent or \$25,000, whichever is the lesser amount, submit a revised prior approval. A revised prior approval will have the letter "R" following the change order number associated with the prior approval. For example, if Change Order No. 3 had a prior approval and the prior approval had to be revised, the revised prior approval would be numbered Prior Approval No. 3R.

Construction Division staff will review the proposed change with the appropriate division, and, if the change is deemed necessary, the Construction Division will issue written prior approval. The FHWA must authorize approval on all full federal oversight projects and changes relating to environmental and right-of-way issues on federally funded projects. The FHWA delegates authority to NDOT to authorize prior approval on federally funded projects. The Construction Division reviews and coordinates proposed changes with the FHWA, when appropriate.

When preparing a prior approval, the following information is required:

- A description of the work to be performed and reason the work is deemed necessary. The reason
 or justification for the change must be clear and concise, allowing a person unfamiliar with the
 project to understand the issues and the need for the change.
- The name and title of the person requesting the change, such as District Engineer, Resident Engineer, or contractor.
- The change order number that will be assigned to the work.
- An estimate of cost and proposed payment method, for example, bid items, force account, or agreed prices. The rationale and reasoning for the estimated cost and for the proposed method of payment must be included.

In cases of extreme emergency, when immediate action is required and the Resident Engineer does not have time to contact the District office or Construction Division, the Resident Engineer may proceed with changes. Immediately following the action taken, the Resident Engineer must notify the District office and Construction Division with a complete explanation of the actions taken.

3-403.5.3 SUPPLEMENTAL AGREEMENTS

A supplemental agreement is a written agreement between the contractor and NDOT for work not included in the current project limits or for conditions specifically stated in the specifications as requiring a supplemental agreement. After the contractor and NDOT approve and execute a supplemental agreement, it becomes part of the contract. The Governor executes supplemental agreements, similar to the original contract between NDOT and the contractor. For this reason, supplemental agreements are coordinated with the Administrative Services Division. If a supplemental agreement involves federal funding eligibility, the Construction Division consults with FHWA.

Change orders and supplemental agreements have one key difference. A change order is for work that NDOT has the right, under the specifications, to order performed. In contrast, a supplemental agreement addresses work that NDOT cannot require the contractor to perform under the contract. A supplemental agreement is a negotiated instrument, while a contract change order is a direct order. Any work outside the project limits requires a supplemental agreement. A supplemental agreement is assigned a change order number to facilitate payment under NDOT's accounting system.

After a decision is made to enter into a supplemental agreement, the Construction Division initiates the preparation of the agreement. The Resident Engineer will negotiate prices to be included in the agreement. The Resident Engineer assigns a change order number to the supplemental agreement for processing purposes only. Each force account or agreed price used requires an analysis or justification.

3-403.6 DISPUTES AND CLAIMS

During a construction project, disputes may arise between the contractor and the Resident Engineer. Since litigation and lawsuits are often the most time-consuming and resource intensive ways of resolving disputes, NDOT encourages using alternative dispute resolution methods such as the following:

- Partnering is a process used by NDOT to build an environment of open communication between the contractor and NDOT.
 - 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.
 - o Formal partnering is conducted by a facilitator who leads quarterly partnering meetings.
- Dispute Resolution Team (DRT) consists of third-party experts selected by NDOT and the contractor that assist in resolving disputes on specific projects.
- NDOT establishes a Contract Claims Review Board after a formal claim is submitted by a contractor.

The foundation of partnering is to resolve disputes at the lowest level of authority. If the dispute is not resolved at one level, the dispute is elevated to the next higher level of authority. The process of elevating disputes to subsequent levels of authority is discussed during the Pre-Construction Conference.

At the Pre-Construction Conference, the contractor and NDOT each designate an individual at each level of authority who is authorized to resolve disputes. Each level of escalation should have different contractor and NDOT representatives than the previous level. The Resident Engineer completes the "Conflict Resolution Ladder" form that identifies each person at each level of authority. On projects that have a formal partnering process, the "Conflict Resolution Ladder" is completed at the partnering meeting instead of the Pre-Construction Conference. To document a dispute and track the resolution process, the Resident Engineer uses a "Conflict Resolution Form." Both forms are included in the example of a Standard Pre-Construction Conference Agenda contained in the Construction Division intranet site (SharePoint), http://sharepoint1/040/default.aspx.

The Resident Engineer should create an environment in which the contractor and NDOT maintain a cooperative working relationship, mutually resolving conflicts at the lowest possible level. Solving issues at lower levels, keeps them engaged, and gives them a "sense of ownership" on a project. This environment fosters cooperation and trust, which reduces disputes, produces a high-quality product, and expedites completion of the project.

The contractor and NDOT must equally commit to a cooperative relationship, either through an informal or formal process. A partnering workshop among major project participants and stakeholders can help establish a formal cooperative relationship.

A Dispute Resolution Team, which encourages the contractor and NDOT to resolve disputes, may be established on large, complex projects. The Dispute Resolution Team is comprised of three members: one selected by NDOT and approved by the contractor, one selected by the contractor and approved by NDOT, and the third, which serves as the chair of the team, is selected by the first two members and approved by NDOT and the contractor. The first two members should be acknowledged experts in the type of construction related to the project.

If the contractor and NDOT cannot resolve a dispute, the Dispute Resolution Team provides an unbiased audience. The Dispute Resolution Team's recommendations are not binding on the contractor or NDOT. However, any records associated with the Dispute Resolution Team, such as written recommendations, and resumes of the members, are admissible as evidence in a formal claim process.

If the contractor is not satisfied with the informal resolution processes, the contractor may proceed with a formal claim, as described in the specifications. The Construction Division notifies NDOT's Administrative Services Division of the contractor's intent to file a claim, and the Administrative Services Division assigns a staff member to be the claim board chairperson. The chairperson will then begin to assemble a board to review and hear the claim. They will also assemble the appropriate documents and supporting documentation for the formal hearing. The Contract Claims Review Board's findings and recommendations are forwarded to the Director, who may accept, reject, or modify the Board's recommendations.

3-404 SAFETY

The Resident Engineer is responsible for the safety of NDOT employees. The Resident Engineer supplies required personal protective equipment, such as hard hats, safety goggles, hearing protection, respiratory protection, and reflective vests, to NDOT personnel. Personnel must use the appropriate safety equipment as required by specific work conditions and current policy. The Resident Engineer can refer to the Human Resources Division Safety Section, for guidance on safety matters. When an accident occurs on an NDOT project, or when an NDOT vehicle is involved in an accident, an "Accident Scene Observations for Counsel" form is completed and submitted to the NDOT's Chief Counsel. Note that no copies are made of the completed form. The NDOT employee having information relating to the accident completes the form.

The contractor is responsible for the safety of his or her employees, including subcontractors and vendors. The contractor must 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 must submit a project-specific safety plan to the Resident Engineer before project work begins. At least once during each construction season, the contractor must 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 an NDOT representative.

Both the Resident Engineer and the contractor are responsible for safety on the worksite. The contractor should hold weekly jobsite meetings with all project personnel to discuss work safety issues. The Resident Engineer should designate a representative to attend the contractor's weekly safety meetings.

Safety is every person's responsibility, and all jobs can be completed safely. On roadway construction projects, personnel regularly handle and move materials and equipment. Therefore, everyone on the project must be alert to all movements—equipment, people, and materials. By being aware of surroundings, you reduce the chances of being struck by a moving vehicle, construction equipment, or the traveling public. Being aware also reduces the risk of placing yourself in an unsafe situation, such as falling into open trenches or other excavations.

Accidents involving equipment and materials on the jobsite are not the only safety concerns. Asphalt hotplants, concrete mixing plants, steel fabrication facilities, and concrete prestressing yards are areas where material and processing temperatures are dangerously high, hoisting operations are ongoing, and chemicals are being used.

3-405 ENVIRONMENTAL

Federal, state, and local agencies establish environmental regulations, and NDOT and its contractors must comply with these regulations. The requirements that relate to water quality, wetlands, endangered species, 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.

During construction, the Resident Engineer monitors compliance with the environmental requirements, as violations of these regulations can result in civil penalties, criminal penalties, or both. Violations of environmental regulations can also cause construction delays. Resident Engineers should be familiar with the environmental requirements described in the project plans and specifications. The Environmental Services Division is available for guidance on environmental issues. To increase the contractor's awareness of environmental requirements, the Resident Engineer should do the following:

- Include a pre-construction conference agenda item to discuss NDOT's environmental commitments
- Discuss NDOT's and the contractor's environmental mitigation commitments and obligations at weekly contractor meetings

The Resident Engineer should devote special attention to verify the contractor's activities take place on NDOT property or right-of-way. The Resident Engineer must contact the Environmental Services Division to describe the activities and location, and to confirm that no additional environmental permits or clearances are required. Additionally, if any project changes are proposed that would take place on undisturbed land – either within or outside of NDOT right-of-way – the Resident Engineer must contact the Environmental Services Division for guidance.

NDOT has environmental 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 Section 6-211, Erosion Control, of this *Construction Manual*. For temporary pollution control measures during construction, refer to Section 6-637, Pollution Control, of this *Construction Manual*.

3-406 CONTRACT COMPLIANCE

During the construction phase of the project, the contractor submits various forms required by state and federal regulations. Information contained in the forms helps the Resident Engineer and the Construction Division Contract Compliance Section monitor the contractor's compliance with labor laws and regulations. Contractors must certify that information contained in these forms is accurate. The format of the certification may change from form to form.

Specifications and state law require that all contractors working on NDOT projects submit two copies of certified payrolls on a monthly basis. To comply with Nevada law (NRS 338.060 and 338.070), contractors must submit all certified payrolls for the preceding month to the Resident Engineer by the fifteenth of the following month. Failure to comply with this submittal schedule will result in assessment of monetary penalties against the contractor.

The contractor may use NDOT form 052-009, "Certified Payroll" to provide payroll information, but this form is not required if the contractor uses computer-generated certified payrolls. A signed and dated "Statement of Compliance" must accompany each payroll. The Resident Engineer must date stamp the certified payrolls on the date they are received from the contractor.

When the Resident Engineer receives the certified payrolls, each payroll is checked to verify that all information required by the special provisions is included for each employee. Additionally, the hourly wage stated on the payroll must meet or exceed the minimum wage rate specified in the contract special provisions. The wage rate is the total of the base pay, vacation pay, and fringe benefits. The Resident Engineer documents payroll discrepancies with a letter to the contractor describing the discrepancies. The contractor must make payroll corrections before the Resident Engineer submits the payroll to the Contract Compliance Section. The contractor uses NDOT form 052-031, "Resident Engineers Payroll Transmittal" to transmit all payrolls. The Resident Engineer should sequentially number the payrolls received, even though this number may differ from the contractor's numbering system. Sequentially numbering the payrolls and cross-referencing the weekending date allows accurate payroll tracking.

Once a contractor begins work on the project, the contractor must submit payrolls monthly. If a contractor works on the project, the contractor must submit a certified payroll weekly. If the contractor does not work on the project for a week or more, the contractor must submit NDOT form 052-005, "Non-Performance Payroll Report." Sequentially number non-performance payrolls in the same order as the weekly payrolls. A non-performance payroll may cover more than one week. For example, a contractor began work and submitted two weekly payrolls (Payroll #1 and Payroll #2), and did not work again for four weeks. The entire four-week period may be covered by one non-performance payroll (Payroll #3). The next working weekly payroll would be Payroll #4. To comply with state law, submit non-performance payrolls every month.

NDOT form 052-065, "Fringe Benefit Statement," lists fringe benefits paid to the contractor's employees, which are submitted by each contractor working on the project. This statement lists the hourly dollar amount of fringe benefit for each labor classification employed on the project. This document is used for checking weekly certified payrolls and for calculating force account work. Some contractors pay fringe benefits directly to their employees instead of contributing to a qualified plan; however, paying fringe benefits directly to the employee does not eliminate the Fringe Benefit Form requirement. A contractor may also submit, or be asked to submit, NDOT form 052-062, "Itemized Contributions/Deductions." This form lists itemized deductions for each employee. For information on checking certified payrolls, refer to the NDOT Construction Division's *Documentation Manual*.

The Contract Compliance Section provides self-addressed, postage-paid post cards to the Resident Engineer, who makes them available to every contractor employee working on the project. If a contractor employee believes the wage rate they are being paid is incorrect, the post card may be completed and mailed to the Contract Compliance Section. This card provides an effective means of reporting wage complaints to NDOT.

Subsection 109.08 of the specifications requires the contractor to submit to the Resident Engineer a monthly report of subcontractor payments. This submittal is a federal requirement from Title 49, Code of Federal Regulations, Part 26. The contractor should complete, sign, date, and submit NDOT form 052-060, "Contractor's Monthly Report of Payments to Subcontractors" to the Resident Engineer.

Some federally funded projects contain a bid item called "Training." This item has a unit price and number of hours set by NDOT. When a contractor employs a trainee or an apprentice, the certified payroll identifies the employee as a trainee or apprentice. The trainee's name, classification, employer, and number of hours worked in a particular week are reported on NDOT form 040-042, "Weekly Trainee Report." The contractor must submit a copy of the apprenticeship agreement provided by the Nevada Labor Commissioner's office for each trainee. This Weekly Trainee Report form becomes the source document for the contractor's bi-weekly pay estimate.

Contractors working on federally funded projects must complete an annual manpower utilization report for the United States Department of Labor, federal form PR-1391. Any contractor or subcontractor actively working on the project during the last payroll period in July must complete form PR-1391 and submit it to the Resident Engineer by August 15. The Resident Engineer must forward the form to the Contract Compliance Section by August 30. If a contractor worked during this period and any of the subcontractors did not work during this period, the Resident Engineer must provide the Contract Compliance Section with a notice listing the subcontractors who did not work and stating that they are not required to submit a report.

3-407 FINAL PROJECT INSPECTION

Near the completion of the project, the Resident Engineer conducts a preliminary final inspection. The Resident Engineer should verify that all bid items were constructed or installed according to the plans. If a bid item was not used, the Resident Engineer prepares an explanation of why it was omitted.

During the Resident Engineer's preliminary final inspection, the Resident Engineer prepares a list of deficiencies related to items of work and areas that the contractor must clean up. This list is commonly called a "punch list." The Resident Engineer must provide the contractor with the comprehensive punch list as soon as possible. On large or complex projects, maintaining an ongoing punch list benefits both the Resident Engineer and the contractor, as it reduces the level of effort required to develop a list at the end of the project.

Typically, the Resident Engineer charges working days until all contract bid items are complete. If questions exist regarding whether to charge working days, the Resident Engineer should confer with the District Engineer. The specifications allow time for the contractor to complete final clean up. The count of the clean up days begins at the end of the working day count.

Before the Resident Engineer requests the final inspection, the Resident Engineer must inspect the site used as the aggregate source 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 must 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 used an NDOT-furnished material source, the Resident Engineer must 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 must correct the deficiencies and notify the BLM official in writing after the material site work is complete.

After all bid item and clean-up work is complete, the Resident Engineer notifies the District Engineer in writing 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 the following:

- 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 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 relieved of maintenance responsibilities. The District Engineer's field acceptance is not final acceptance, which only the Director can determine. Final acceptance occurs after completion of project closeout.

3-408 PROJECT CLOSEOUT

At the end of a project, the Resident Engineer reviews and organizes the project records. After the Resident Engineer organizes the project records as described in the Construction Division's *Documentation Manual*, the Construction Division Administration Section is notified that the project records are ready for final review. A representative of the Administration Section will visit the field office to complete a final review and collect the project records. Checklists used by the Administration Section for the project final review are at the Construction Division intranet site (SharePoint), http://sharepoint1/040/default.aspx.

After checking the project documents, the Construction Division will determine the final pay quantities and the Resident Engineer will package the project records for storage. The Construction Division sends the final pay quantity document, called a "Final Report," to the contractor and the Resident Engineer. The Resident Engineer reviews and signs the Final Report. The Resident Engineer then forwards the Final Report to the District Engineer for review and signature. After signing, the District Engineer returns the Final Report to the Construction Division.

After the contractor and Resident Engineer agree on the final quantities, the Construction Division prepares the final payment, including the retention. Before the Construction Division authorizes final payment, they must receive the following documents:

- Acceptance Test Summary Sheet
- Materials Division Clearance
- Construction Division Contract Compliance Clearance
- District Engineer's Project Acceptance Letter
- Final Payroll Letter
- As-Built Plans
- Confidential Past Performance Report
- Letter of Explanation
- Material Source/Property Owner Release
- Material Deposit Usage Report (NDOT form 040-087), except for commercial or private material sources
- Survey Notes (Electronic, field books, and field notes binder)
- Guardrail Inventory

The records are then delivered to NDOT's Administrative Services Division Central Records Section for storage.

If the contractor has not submitted all certified payrolls or material certifications, NDOT cannot make final payment. After NDOT makes final payment to the contractor, the Construction Division provides the Resident Engineer with a Final Report. The document becomes a part of the project records that NDOT retains for three years.

3-408.1 LETTER OF EXPLANATION

At the end of a project, after final measurements are taken and computations are completed, a letter of explanation may be required to explain cost overruns or underruns. Following are the conditions under which a letter of explanation is required:

- Contract Bid Item: Changes resulting in an increase or decrease of over 10 percent and \$25,000 (must exceed both) of a contract bid item.
- Change Order Item: Changes resulting in an increase or decrease of over 10 percent and \$25,000 (must exceed both) of a change order item.

Items that overrun an amount requiring a letter of explanation will show up on the Bi-weekly Pay Estimate with a double-asterisk. The double-asterisk alerts the Resident Engineer that an item is overrunning and may require a letter of explanation. A letter of explanation must include the item number, item description, percent over/under, quantity over/under, dollar amount of the change, and a complete explanation.

3-408.2 CONTRACT COMPLIANCE

When the project is complete, the Resident Engineer submits to the Contract Compliance Section a letter listing the final payroll number in the payroll sequence, and the corresponding week-ending date for the contractor, subcontractors, and service providers. Refer to Chapter 24 of the NDOT Construction Division's *Documentation Manual* for an example of this letter.

3-409 POST-CONSTRUCTION REVIEW

As a project nears completion, the Construction Division Constructability Section determines whether the project will undergo a construction evaluation—also known as a 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 will schedule the post-construction review. Invitees will include representatives from the FHWA and NDOT divisions who had a substantial role in the project, which may include the following:

Division	Title	Responsibilities
Construction	Assistant Construction Engineer Constructability Section representatives	Schedule meeting location, time, and date. Distribute invitation list. Conduct meeting and record discussion. Participate in discussions. Prepare report for each review that includes findings and recommendations.
District	Resident Engineer Assistant Resident Engineer Senior project staff Maintenance Representative	Provide a list of significant project recommendations with accompanying brief explanations. Submit this list to the Constructability Section at least five days before the post-construction review. Review draft project post-construction report.
Design	Specifications Engineer Senior Design Engineer Designer Senior Hydraulics Designer	Provide input on significant findings. Review and implement process changes based on post-construction review recommendations.
Materials & Testing	Roadbed Design Engineer Geotechnical Engineer	Provide input on significant findings. Review and implement process changes based on post-construction review recommendations.
FHWA (federal- aid projects)	Operations Engineer Area Engineer	Provide recommendations on significant findings.

In addition to the project 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.

3-410 CONTRACTOR'S PAST PERFORMANCE RATING

When a project is complete, the Resident Engineer completes NDOT form 040-044, "Resident's Engineers' Confidential Past Performance Report," and the District Engineer completes NDOT form 040-043, "District Engineers' Confidential Past Performance Report" for the contractor and each major subcontractor. A major subcontractor is any subcontractor performing at least 15 percent or \$50,000 of the original contract amount of work on the contract.

3-500 FEDERAL HIGHWAY ADMINISTRATION

3-500.1 GENERAL

The Federal Highway Administration (FHWA) is charged with efficiently and effectively managing entrusted public funds while ensuring that federal highway programs are conducted in compliance with federal laws, regulations, and policies. The FHWA may delegate project approval authority to NDOT on federally funded projects. Approval authority is delegated by FHWA to NDOT through a Stewardship Agreement that describes the roles and responsibilities of NDOT and the FHWA.

3-501 FEDERAL STEWARDSHIP

Federal law establishes the FHWA's level of involvement on federally funded projects, and the Stewardship Agreement describes this involvement. Federally funded projects are categorized as "full oversight" or "non-full oversight."

Following are characteristics of full oversight projects:

- The FHWA does not delegate its authority to NDOT.
- This designation is typically reserved for interstate projects, large or complex projects, and other unique projects described in the Stewardship Agreement.
- The FHWA representatives conduct site visits, approve all contract changes, and actively participate in the project.
- During the design phase, a project is identified as having full federal oversight.

Following are characteristics of non-full oversight projects:

- The FHWA delegates authority to NDOT, requiring NDOT to comply with federal requirements.
- The FHWA reviews and audits NDOT processes and procedures.
- The FHWA retains oversight authority on environmental and right-of-way issues because of the potential for significant impacts.

On full oversight projects, FHWA representatives actively participate in the project, in contrast to non-full oversight projects, in which NDOT performs the FHWA's role. Because of the FHWA's active participation, communication on significant issues or issues that could reasonably become significant—such as change orders or claims—must include the FHWA. For NDOT field personnel on federally funded projects, no difference exists between full oversight and non-full oversight projects. Compliance with federal requirements remains the same for both types of federal oversight. For additional information on contract administration by FHWA, refer to FHWA's core curriculum and reference guide on the internet at http://www.fhwa.dot.gov/programadmin/contracts/core01.cfm.

3-502 NDOT STEWARDSHIP

Just as the Stewardship Agreement between NDOT and the FHWA provides for delegation of the FHWA's authority to NDOT, NDOT also enters into similar stewardship agreements with local agencies. Under NDOT stewardship agreements, local agencies, such as county and city governments, have the authority and responsibilities to comply with regulatory requirements, including federal requirements. A condition of the agreement between a local government and NDOT is that the local government must certify that it complies with federal and state requirements. Not only does the local government certify compliance, but NDOT maintains the responsibility for compliance by the local government. For specific quidance, refer to NDOT's *Stewardship Manual*.

When a local entity project is identified as a stewardship project, NDOT's stewardship coordinator serves as the project manager. The stewardship coordinator develops a stewardship agreement between NDOT and the local entity and coordinates with NDOT divisions that would participate in the particular project. After the stewardship agreement is fully executed, the District Engineer monitors the project.

The District Engineer then assigns the stewardship project to a Resident Engineer. The Resident Engineer is NDOT's representative to monitor conformance with the stewardship agreement. NDOT's responsibility is for oversight only. The local entity is responsible for inspecting, testing, surveying, and other contract administration. The purpose of NDOT oversight is to ensure the efficient and effective management of federal funds entrusted to NDOT.

During the construction phase of a stewardship project, principal requirements of the agreement focus on proper posting of notices for employee and public review, compliance reviews of construction contractor operations and payroll accounting, and compliance with equal employment opportunity requirements. The Resident Engineer is urged to review specific requirements of the stewardship agreement relating to the project. The NDOT *Stewardship Manual* also contains specific record-keeping and documentation. Upon completion of the project, the Resident Engineer must check that the local entity completes and submits required forms and other documentation. The Resident Engineer and District Engineer are also required to complete documentation and forward the documentation to the stewardship coordinator.