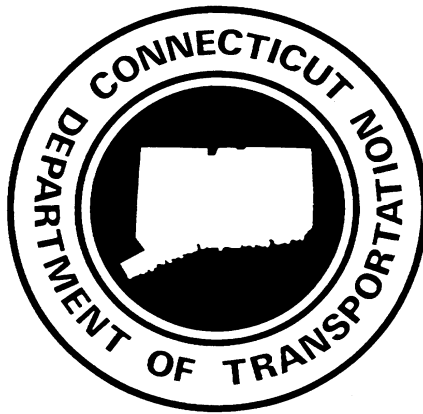


# **CONSTRUCTION ENGINEERING AND INSPECTION**

## **INFORMATION PAMPHLET FOR CONSULTING ENGINEERS**



### **CONNECTICUT DEPARTMENT OF TRANSPORTATION**

**BUREAU OF ENGINEERING AND  
HIGHWAY OPERATIONS**

**OFFICE OF CONSTRUCTION**

**~ August, 2008 ~**



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## INTRODUCTION

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This pamphlet is intended to establish the functions and responsibilities of Consulting Engineers as required by the Department of Transportation in carrying out the policies, procedures and practices as shown in the Connecticut Department of Transportation, Bureau of Engineering and Highway Operation's "Construction Manual" and other publications referred to in the Consultant Agreement and this pamphlet. The provisions of this pamphlet supplement those of the Construction Manual and other referenced publications. The provisions of the Consultant Agreement shall take precedence on all matters.



**CHAPTER I**  
**GENERAL INFORMATION**





## I.1 SCOPE OF WORK

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The Consulting Engineer providing construction engineering and inspection services to the Department shall perform all work under the direct control of the State's Project Engineer. The Consulting Engineer shall provide sufficient qualified staff to continuously inspect each of the construction contractor's principal operations (i.e. grading, drainage, structure, pavement, facilities construction, rail work) in accordance with the Department's established policies, procedures and practices as shown in the Connecticut Department of Transportation, Bureau of Engineering and Highway Operation's "Construction Manual" and other publications referred to in the Consultant Agreement and this pamphlet. In addition, the Consulting Engineer's staff (including home office personnel) shall provide any construction engineering services required for the project, including, but not limited to, the review of working drawings, rigging plans, change orders, substitutions, constructability issues or other issues that may arise and provide suitable engineering recommendations. The Consulting Engineer shall organize his staff to provide the required administrative functions associated with the construction project including, but not limited to, preparation of correspondence, construction orders, periodic payment estimates, quantity computations, material sampling and testing, EEO and DBE monitoring, final documentation, State and Federal reports, construction surveys, reviews and recommendations of all construction issues, claims analysis support and other project-related functions as directed by the State's Project Engineer.

## **I.2 GENERAL REQUIREMENTS**

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The Department has many general requirements and policies to be met by the Consulting Engineer. The following items are not meant to be an all inclusive list, but rather to call attention to several key items.

### **SUBMITTALS**

Prior to the start of construction engineering and inspection services, the Consulting Engineer is required to submit the following:

- Project Staffing Plan
- Personnel Policies and Procedures (including sick leave, vacation, overtime, holidays, etc.)
- Quality Management Plan
- Certificate of Insurance
- Documentation of any required certifications, degrees or licenses.

### **SUBCONTRACTING**

The Consulting Engineer must perform the major part, at least seventy-five (75) percent of the assignment with their own forces unless specifically authorized by the Office of Construction. Sub-consultant assignments will be permitted up to twenty-five (25) percent of the value of the assignment. If specialized work is required which results in subcontract values in excess of twenty-five (25) percent of the agreement value, the Prime Consultant shall obtain written approval from the Construction Administrator for the additional sub-consultant assignments.

Should the project have a DBE or SBE goal associated with it, the prime shall document their good faith efforts to provide opportunities for DBE firms to participate in accordance with the respective specification.

The Department of Transportation is committed to an effective implementation of a DBE Program as defined in Title 49, Code of Federal Regulations, Part 26 and SBE Program as defined in the Connecticut General Statutes. Implementation of the DBE/SBE Program is accorded the same priority as compliance with all other legal obligations incurred by the Connecticut Department of Transportation in its financial assistance agreements with the U.S. Department of Transportation.

Note: Replacing DBE sub-consultants previously presented to the selection panel without providing sufficient cause to the Department will not be allowed without written approval of the administering unit.

### **I.3 PUBLICATIONS**

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The following is a listing of applicable publications which the Consulting Engineer should have available at all times at the project office. The Consulting Engineer's Resident Engineer shall ensure all personnel are familiar with the applicable sections of the publications involving the work being performed.

1. Personal Services Agreement for Project
2. Connecticut Department of Transportation Construction Manual
3. Contract Plans and Specifications
4. Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction
5. Pamphlet for Monitoring Performance and Payment Requests for Consultants
6. Schedule of Minimum Requirements for Sampling Materials for Test
7. Copies of all Safety Policy Statements and Memoranda
8. All Other Publications Provided to the Consulting Engineer by the Department.



**CHAPTER 2**  
**PERSONNEL**



## 2.1 PROJECT STAFFING

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The Consulting Engineer shall provide sufficient staff to properly inspect the contractor's operations. The Consulting Engineer is required to submit a detailed Project Staffing Plan that shows how the Consultant proposes to staff the project to meet the requirements of its agreement with the Department. The staff size and qualifications shall be approved by the District Engineer and the Consulting Engineer shall modify the size of the on-site staff as required by the construction contractor's operations and schedules with approval of the State's Project Engineer.

The Consulting Engineer's staff shall report to, accept and fulfill all orders, directives, and interpretations of the plans, specifications and special provisions as given by the State's Project Engineer. The State's Project Engineer will work under the supervision of the Transportation Supervising Engineer assigned to the project, who in turn will be supervised by the Assistant District Engineer. The District Engineer has overall responsibility for the work.

The Consulting Engineer shall provide a fully qualified Resident Engineer to supervise the Consulting Engineer's project organization in their administration and inspection of the work. Depending on project size and complexity, the Resident Engineer shall have under his or her supervision an inspection staff sufficient to continuously monitor the contractor's principal operations and to perform the administrative tasks associated with the construction project. On smaller projects, survey work will be performed by District personnel whenever possible. On projects which require a substantial effort, survey services may be provided by the Consulting Engineer or a Sub-consultant. Also, on smaller projects, various responsibilities may be combined under one classification (i.e., Office Engineer/Inspector) to economically provide the required service.

The Consulting Engineer shall also provide full or part-time clerical and administrative staff to promptly handle the preparation of all correspondence, construction orders, payment estimates, reports and project-related State and Federal forms. However, on small projects, clerical work (limited to typing only) may be performed by District Personnel whenever possible.

If at any time it is determined that the Consulting Engineer's project staff is inappropriate for the work being performed, the Project Engineer shall direct the Consulting Engineer to make appropriate adjustments to the staff.

During project shutdown periods, the Consulting Engineer is responsible for making certain that the project is appropriately staffed. On December 1<sup>st</sup> of each year of the agreement, the consultant shall provide a schedule of work and personnel assignments to the State's Project Engineer in order to verify that sufficient work exists to support the level of staffing proposed by the Consultant during the project shutdown period. Reduction of staff during the winter period may be required depending on the project status and work to be performed.

## 2.2 PERSONNEL PROCEDURES

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### ▪ **INITIAL ASSIGNMENTS**

Prior to assignment of any personnel to the project, the Consulting Engineer shall submit the following information to the District Engineer for approval: Name, position, current and proposed rate of compensation, benefit and overtime-exempt status, evidence of any required degrees, licenses or certifications, or, evidence that the individual has applied for the next scheduled certification examination must be provided. In no case will any personnel be assigned to a project without prior written approval by the State. The State reserves the right to require the replacement of any employee found not qualified, competent or suitable for the duties required of his or her position.

### ▪ **OVERTIME**

The Consulting Engineer shall obtain authorization, in writing, for any overtime performed on the project from the State's Project Engineer. Unless an emergency situation exists, the authorization shall be obtained prior to the overtime work being performed. If the situation develops where advance authorization cannot be obtained, the Consulting Engineer shall inform the State's Project Engineer of the need for the overtime as soon as practical after the fact. A copy of the Company's overtime policy must be provided to the State.

There may be times when the contractor is working during periods that would be outside of an inspector's normal work shift (i.e.: Saturday, Sunday, Holiday, etc.). Under these situations, an inspector may be assigned to come in to cover the contractor's operations. Except in emergency circumstances, advance approval from the State's Project Engineer is required for all overtime.

Administrative and survey work do not require overtime coverage, except in emergency cases or situations where it is more economical to complete the work than to return the following day. Individuals must receive approval of the responsible Project Engineer or District Supervisory personnel

### ▪ **SHIFT DIFFERENTIAL**

The Consulting Engineer shall provide the initiating unit with a copy of their company's policies and procedures at the project assignment meeting. No negotiations may take place until these policies and procedures have been received. Shift differential cannot be reimbursed unless it is a part of the Consulting Engineer's policies and procedures at the time of negotiations. A shift differential no greater than the amount currently allowed in the State's P-4 Engineering Contract and subsequent P-4 Engineering Contracts will be reimbursed.



## 2.2 PERSONNEL PROCEDURES

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### ▪ **SALARY ADJUSTMENTS/PROMOTIONS**

Any adjustment to salaries after initial approval of an individual's rate shall be submitted to the District Engineer for approval. The submittal shall contain the following information: Employee name, job classification, current and proposed rate of pay, rate of pay and job classification one (1) year prior to the proposed increase, and effective date of the proposed increase.

The maximum amount an employee can receive as an annual salary adjustment shall not exceed the terms specified in the Consultant Agreement. The promotion of an individual on the Consulting Engineer's staff will only be allowed for the purpose of filling a vacant position. The individual must meet the minimum requirements for the position to which they are being promoted. Promotions will only be recognized based on job classifications within the agreement.

In general, a salary increase based on a promotion shall not exceed the mean rate of pay range for the position class the employee is promoted to, as shown in the agreement. Consultants may request a higher increase in exceptional cases, but in no case will the salary exceed the maximum rate negotiated for the classification in the agreement.

Requests for approval of salary adjustments must be submitted at least 21 days prior to the effective date of the adjustment. Retroactive approval of salary rates will not be made and the effective date of any adjustment made without prior submission, shall be 21 days after submission of the request to the District Engineer.

The Department reserves the right to limit the amount of any increase based upon the Department's appraisal of an individual's performance. If the Department reduces the amount of the increase proposed by the Consulting Engineer, the reason for the reduction will be provided in writing to the Consulting Engineer.

## 2.3 QUALIFICATIONS

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### A. HIGHWAY, FACILITIES, OR RAIL CONSTRUCTION:

The Consulting Engineer shall provide sufficient staff experienced in highway, facilities or rail construction practices and procedures to perform construction engineering and inspection services as directed by the State's Project Engineer. The experience and qualifications listed throughout this section are guidelines only and approval of personnel shall be at the discretion of the District Office. Interviews and/or additional information may be required to determine the suitability of any potential candidates. Additionally, there may be the need for Specialty Inspectors whose qualifications will be determined on a case by case basis.

A Bachelor of Science Degree in a relevant field may be substituted for two (2) years of the employment experience requirement, while an Associate of Science Degree in a relevant field may be substituted for one (1) year of the employment experience requirement.

- **RESIDENT ENGINEER 3 (Highly complex Projects; typically exceeding \$20 million)**

Experience: Not less than twelve (12) years employment in civil, highway or relevant engineering field of which six (6) years must have been in a supervisory capacity of highway, bridge, facilities or rail construction activities as required by the project, and at least six (6) years of which shall have been in field inspection activities. Individual must have considerable knowledge of highway, bridge, facilities or rail construction practices and procedures as required; ability to prepare correspondence, reports and recommendations concerning construction issues; demonstrated ability to deal effectively with others; supervisory ability; ability to establish and maintain project records.

Licensing: Possession of a current Professional Engineer's License registered in the State of Connecticut is required.

## 2.3 QUALIFICATIONS

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- **RESIDENT ENGINEER 2 (Moderately complex Projects; typically between \$5 and \$20 Million)**

Experience: Not less than ten (10) years employment in civil, highway or relevant engineering field of which five (5) years must have been in a supervisory capacity of highway, bridge, facilities or rail construction activities as required by the project, and at least five (5) years of which shall have been in field inspection activities. Individual must have considerable knowledge of highway, bridge, facilities or rail construction practices and procedures as required; ability to prepare correspondence, reports and recommendations concerning construction issues; demonstrated ability to deal effectively with others; supervisory ability; ability to establish and maintain project records.

Licensing: NICET Level IV Certification in Transportation/Highway Construction is required, except for those persons possessing a current Professional Engineer's License registered in the State of Connecticut (PE).

- **RESIDENT ENGINEER I (Low Complexity Projects; typically under \$5 Million):**

Experience: Not less than eight (8) years employment in civil, highway or relevant engineering field of which three (3) years must have been in a supervisory capacity of highway, bridge, facilities or rail construction activities as required; at least four (4) years of which shall have been in field inspection activities. Individual must have considerable knowledge of highway, bridge, facilities or rail construction practices and procedures as required; ability to prepare correspondence, reports and recommendations concerning construction issues; demonstrated ability to deal effectively with others; supervisory ability; ability to establish and maintain project records.

Certifications: NICET Level IV Certification in Transportation/Highway Construction is required, except for those persons possessing a current Professional Engineer's License registered in the State of Connecticut (PE).

## 2.3 QUALIFICATIONS

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- **CHIEF INSPECTOR:**

Experience: Not less than six (6) years employment in civil, highway or relevant engineering field of which two (2) years must have been in a supervisory capacity of highway, bridge, facilities or rail construction activities as required; at least two (2) years of which shall have been in field inspection activities. Individual must have considerable knowledge of highway, bridge, facilities or rail construction practices and procedures as required; ability to prepare correspondence, reports, and recommendations concerning construction issues; demonstrated ability to deal effectively with others; supervisory ability; ability to establish and maintain project records.

Certifications: NICET Level III Certification in Transportation/Highway Construction is required, except for those persons possessing a current Professional Engineer's License registered in the State of Connecticut (PE).

- **CHIEF INSPECTOR (MEP):**

Experience: Not less than six (6) years employment in mechanical, electrical, plumbing (MEP) or relevant engineering field of which two (2) years must have been in a supervisory capacity of mechanical, electrical or plumbing construction activities; at least two (2) years of which shall have been in field inspection activities. Individual must have considerable knowledge of MEP construction practices and procedures, as they relate to facilities or rail construction as required; ability to prepare correspondence, reports, and recommendations concerning construction issues; demonstrated ability to deal effectively with others; supervisory ability; ability to establish and maintain project records.

Degree: Bachelor of Science Degree in a relevant field.

- **OFFICE ENGINEER 2 (Projects in excess of \$20 million)**

Experience: Not less than eight (8) years employment in construction projects (Highway, Facilities or Rail), maintaining project records of which two (2) years must have been in a supervisory capacity; at least one (1) year of which shall have been in field inspection activities.. Ability to prepare change orders, material testing reports, filing and considerable knowledge in establishing and maintaining project records; ability to use applicable software and record keeping methods.

Certifications: NICET Level III Certification in Transportation/Highway Construction is required, except for those persons possessing a current Professional Engineer's License registered in the State of Connecticut (PE) or a Bachelor of Science Degree (BS) in a relevant field.

## 2.3 QUALIFICATIONS

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- **OFFICE ENGINEER I (Project under \$20 million or as an assistant to an Office Engineer 2 on a highly complex Project)**

Experience: Not less than four (4) years employment in construction projects (Highway, Facilities or Rail), maintaining project records. Ability to prepare change orders, material testing reports, filing and considerable knowledge in establishing and maintaining project records; ability to use applicable software and record keeping methods.

Certifications: NICET Level II Certification in Transportation/Highway Construction is required, except for those persons possessing a current Professional Engineer's License registered in the State of Connecticut (PE) or a Bachelor of Science Degree (BS) in a relevant field.

- **SENIOR INSPECTOR**

Experience: Not less than four (4) years employment in civil, highway or appropriate engineering field of which at least two (2) years shall be in field inspection activities. Considerable knowledge of construction materials, methods; ability to maintain field and office records; ability to perform complex quantity and engineering computations; ability to read and interpret plans and specifications; ability to deal effectively with people.

Certifications: NICET Level II Certification in Transportation/Highway Construction is required, except for those persons possessing a current Professional Engineer's License registered in the State of Connecticut (PE) or a Bachelor of Science Degree (BS) in a relevant field.

- **SENIOR INSPECTOR (MECHANICAL, ELECTRICAL, PLUMBING)**

Experience: Not less than four (4) years employment in mechanical, electrical, plumbing or appropriate engineering field of which at least two (2) years shall be in field inspection activities. Considerable knowledge of construction materials, methods; ability to maintain field and office records; ability to perform complex quantity and engineering computations; ability to read and interpret plans and specifications; ability to deal effectively with people.

Degree: Bachelor of Science Degree in a relevant field.

## 2.3 QUALIFICATIONS

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### ▪ **INSPECTOR:**

Experience: Not less than three (3) years employment in civil, highway or appropriate engineering field of which at least one (1) year shall be in field inspection activities. Considerable knowledge of construction materials, methods and procedures; ability to maintain field and office records; ability to perform complex quantity and engineering computations; ability to read and interpret plans and specifications; ability to deal effectively with people.

Certifications: NICET Level II Certification in Transportation/Highway Construction is required, except for those persons possessing a current Professional Engineer's License registered in the State of Connecticut (PE) or a Bachelor of Science Degree (BS) in a relevant field.

### ▪ **ENTRY LEVEL INSPECTOR\*:**

Experience: None required.

Certifications: NICET Level I Certification in Transportation/Highway Construction is required, except for those possessing a Bachelor or Associate of Science Degree in a relevant field. Persons possessing a NICET Level I Certification must have a high school diploma and demonstrate a proficiency in math and science.

- This position may only be used on projects over \$10 million. Entry level inspectors must be directly supervised by more senior employees and may only be used with the written approval of the Department.

### ▪ **SCHEDULER**

Experience: Not less than six (6) years of relevant experience in preparation, interpretation and modification of Critical Path Method (CPM) construction schedules.

### ▪ **BUILDING INSPECTOR:**

Experience: Not less than six (6) years employment in facilities construction projects. Individual must have considerable knowledge of construction practices and procedures for facilities construction and extensive knowledge of all relevant building codes and regulations.

Licensing: Possession of a current Assistant Building Official License registered in the State of Connecticut is required.

## 2.3 QUALIFICATIONS

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- **SURVEY PARTY CHIEF:**

Experience: Not less than four (4) years of construction survey experience of which at least three (3) years shall have been as an instrument person or survey party chief. Considerable knowledge of principles and methods of land surveying; knowledge of principles and practices of highway engineering; ability to keep and reduce field notes; ability to determine construction quantities and amounts on completed projects; ability to supervise the layout of limits of work and grades, ability to check contractor's survey layout for accuracy; ability to layout foundations, rail track layouts, abutments, culverts and pipe lines; ability to re-establish boundary lines and stake-taking lines; ability to prepare as-built plans and other related duties as required.

Licensing: The Survey Party Chief shall be currently licensed as a Land Surveyor in the State of Connecticut or shall be working under the direct supervision of a member of the Consulting Engineer's staff who is so licensed as a Land Surveyor in the State of Connecticut.

## 2.3 QUALIFICATIONS

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### B. BRIDGE PAINTING

#### ▪ **RESIDENT ENGINEER/CHIEF INSPECTOR:**

Experience: Not less than eight (8) years experience in construction inspection of paint removal and application projects, of which four (4) years must have been in a supervisory and administrative capacity in field inspection activities related to coatings. Individual must have considerable knowledge of highway and bridge construction practices and procedures; ability to prepare correspondence, ability to deal effectively with others; supervisory ability; ability to establish and maintain project records.

Certifications: Either NACE Coating Inspector Certification (must have completed sessions I, II, III, and Peer Review) or SSPC – BCI Level 2 is required.

#### ▪ **INSPECTION STAFF:**

Experience: Considerable knowledge of highway and bridge construction practices and procedures; materials and methods; coatings containment practices and procedures; lead monitoring; lead health and safety procedures; ability to prepare correspondence, reports, and recommendations concerning construction issues; demonstrated ability to deal effectively with others; supervisory ability; ability to establish and maintain project records.

Certifications: Either NACE Coating Inspector Certification (must have completed sessions I, II and III) or SSPC – BCI Level I is required.



## 2.4 CERTIFICATIONS

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- **AMERICAN TRAFFIC SAFETY SERVICES ASSOCIATION (ATSSA)  
TRAFFIC CONTROL SUPERVISOR (TCS)**

Consulting Engineers performing construction engineering and inspection services on limited access expressway projects are required to have one (1) person certified under the American Traffic Safety Services Association (ATSSA) or other program acceptable to the Department as a Traffic Control Supervisor (TCS).

- **AMERICAN CONCRETE INSTITUTE (ACI)**

Consulting Engineers performing any field sampling or testing of Portland Cement Concrete (PCC) must be currently certified as an ACI Field Testing Technician – Grade I. For each assignment, the consultant will be required to provide a minimum of one ACI Field Testing Technician – Grade I. Concrete field sampling and testing shall be performed by certified personnel only. Some projects may require additional certified personnel due to multi-shift operations or other testing needs.

For project assignments with no concrete items, the ACI requirement will be waived.

- **NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING  
TECHNOLOGIES (NICET)**

Consulting Engineer personnel are required to be NICET certified at the appropriate level in accordance with requirements of Section 2.3 – Qualifications, of this pamphlet. NICET Certification requirements are waived for persons possessing a current Professional Engineer's License registered in the State of Connecticut (PE) or a Bachelor of Science Degree (BS) in a relevant field.

- **NATIONAL ASSOCIATION OF CORROSION ENGINEERS (NACE)**

- **SOCIETY FOR PROTECTIVE COATINGS (SSPC)**

Consulting Engineer personnel performing the inspection of bridge painting projects must be either NACE or SSPC - Bridge Coating Inspector (BCI) certified in accordance with the requirements of Section 2.3 – Qualifications, of this pamphlet.

## 2.4 CERTIFICATIONS

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- **NEW ENGLAND TRANSPORTATION TECHNICIAN CERTIFICATION PROGRAM (NETTCP)**

The Department requires personnel utilized on construction engineering and inspection assignments to have been certified under the NETTCP program or under another acceptable program. Currently, the NETTCP certification program is the only program acceptable to the Department for meeting this requirement. The NETTCP certifications required on CONNDOT construction engineering and inspection assignments include Concrete Inspector (CI) and HMA Paving Inspector (HMAPI). For each assignment, the consultant will be required to provide a minimum of one CI and one HMAPI (the same individual may possess all certifications). Concrete field tests and HMA field tests shall be performed by certified personnel only. Some projects may require additional certified personnel due to multi-shift operations or other testing needs.

For project assignments with no concrete items, the CI requirements will be waived. Likewise, on projects with no HMA pavement installation, the HMAPI requirement will be waived. NETTCP requirements do not apply to non-NHS municipal projects.

- **NUCLEAR DENSITY**

Consulting Engineers performing nuclear density testing must possess any certifications required by the Nuclear Regulatory Commission (NRC) in accordance with the provisions of their NRC license, as applicable.

**CHAPTER 3**  
**CONSULTING ENGINEER RESPONSIBILITIES**



### **3.1 ROLES AND RESPONSIBILITIES**

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The Consulting Engineer's Resident Engineer shall be responsible for the overall administration and construction inspection supervision of the project. The Resident Engineer shall ensure the inspection staff is thoroughly familiar with the plans and specifications for the work. The Consulting Engineer shall also ensure that staff properly documents the work performed in accordance with the Department's record keeping procedures.

The Consulting Engineer shall work under the general supervision and direct control of the State's assigned Project Engineer. The Consulting Engineer shall perform all tasks, functions and operations described in the Department's "Construction Manual" including, but not limited to:

#### **INSPECTION OF CONTRACT WORK**

The Consulting Engineer shall inspect all construction within project limits to ensure that the work conforms to the project plans and specifications. They shall monitor and document all work performed by public utility companies, railroads and governmental agencies within the project limits or for work being billed to the project. The Consulting Engineer's staff shall become thoroughly familiar with the plans. They shall perform measurements necessary for periodic payments to the contractor and shall document the contractor's daily operations in accordance with established Department procedures.

#### **CONSTRUCTION SURVEY**

The Consulting Engineer shall perform all construction survey work, if required, and negotiated as part of the agreement, with the exception of that included in the construction contract to be done by the Contractor. They shall check layout staking performed by the contractor; perform survey work and measurements required for determination of quantities (cross sections of earth, rock structure, excavation, etc.); survey required for as-built plans; surveying and construction staking for the accurate installation of fencing; verification of the highway line and the non-access taking line; and other project-related survey work as directed by the State's Project Engineer.

#### **MATERIALS TESTING**

The Consulting Engineer shall sample all materials to be incorporated into the work as required by the State's material testing requirements. Sampling shall be performed in a timely manner so that materials can be tested prior to use. The Consulting Engineer shall prepare the Requests for Material Test (MAT-100) and shall maintain the testing logs in the project records. All sampling and field testing shall be performed in accordance with established DOT procedures.

Any field testing equipment required including, but not limited to, slump cone, air meter, nuclear density gauge, etc, shall be provided by the Consulting Engineer.

### **3.1 ROLES AND RESPONSIBILITIES**

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#### **PROJECT RECORDS**

The Consulting Engineer shall perform all administrative functions associated with the project in accordance with "Construction Manual", including but not limited to:

1. Establish and maintain project quantity records.
2. Establish and maintain daily project diaries and inspector's daily reports (CON-134).
3. Review and monitor contractor EEO, DBE and training compliance; prepare associated periodic reports; notify Project Engineer of deficiencies and problems.
4. Preparation of Construction Orders; Semi-monthly and monthly estimates.
5. Preparation of Cost Plus Records; Utility Work Records (CON 40 and 41)
6. Timely preparation of correspondence, memorandums and reports. Turn around time should be within five (5) working days of receipt unless substantial investigation and/or review is required.
7. Review, analysis and recommendations for contractor claims, proposals, extra work, time extensions, etc.
8. Establish and maintain shop drawing file.
9. Preparation of periodic reports and forms as required by the Department.
10. Record minutes and prepare reports of all project-related meetings, within three (3) days of the meeting, for approval by the Department's Project Engineer.
11. Prepare project final documents (final estimate, construction order, as-built plans, construction report and other related final documents).

#### **TRAFFIC CONTROL**

The Consulting Engineer shall monitor contractor compliance with the Maintenance and Protection, Limitation of Operations and Traffic Control sections of the plans and specifications and shall promptly report any corrective actions necessary to the Contractor. In the event that the contractor fails to rectify the situation, the Consulting Engineer shall notify the State's Project Engineer and/or District Office immediately.

#### **COORDINATION AND LIAISON**

The Consulting Engineer shall assist in the coordination and liaison between all parties affected by the project. They shall conduct coordination and progress meeting as required, establish and maintain liaison with the State Agencies, Municipalities, Utilities and Contractor affected by the work. The Consulting Engineer shall identify and clearly define any issues, concerns or problems as they arise and promptly report such to the State's Project Engineer. It is the responsibility of the Consulting Engineer to facilitate the resolution of such issues, or in the alternative, to recommend appropriate solutions to the Engineer.

### **3.1 ROLES AND RESPONSIBILITIES**

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#### **PLAN REVIEW**

The Consulting Engineer shall review the construction plans and notify the Project Engineer of potential problems as soon as they are noted. They shall review alternatives and recommend solutions to construction issues as requested by the State's Project Engineer.

#### **ENVIRONMENTAL MONITORING**

The Consulting Engineer shall be aware of the environmental concerns related to the project and shall monitor contractor compliance with the environmental controls and report to the Project Engineer if deemed necessary. It shall be the Consulting Engineer's responsibility to prepare all reports required by environmental permits or Department procedures (i.e., project site environmental inspection report).

In addition to the items detailed above, the Consulting Engineer shall perform all duties and tasks outlined for inspectors in the Department's "Construction Manual". The Consulting Engineer's staff shall also perform any other special tasks related to the construction contract as directed by the State's Project Engineer.

### 3.2 QUALITY MANAGEMENT

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The Consulting Engineer is required to have a Quality Management Plan (QMP) to ensure that the work performed meets both the terms of the Consultant Agreement and the Department's standards and expectations for the quality of services provided. The Consulting Engineer must submit a QMP to the District Office for review prior to performing any work on the project. The QMP must conform to the Department's Construction Manual and at a minimum should include the following:

- An organizational chart showing how the proposed staff for the project will be organized. The chart must include both direct staff and any sub-consultants on the project. A description of the reporting relationships among the staff should accompany the chart.
- A description of field staff oversight procedures for ensuring the quality of inspection. Include samples of any forms or reports used to monitor compliance.
- A description of how the responsibility for making (and checking) payments under the construction contract will be delegated among the project staff.
- A description of the correspondence and documentation procedures that will be utilized on the project including a description of a hierarchical filing system for project records.
- A plan for verification and maintenance of any required staff licenses and certifications. The plan must include provisions for the Consulting Engineer to notify the District Engineer, in writing, within 5 days, of any staff whose certifications, registrations or licenses have been suspended, revoked, expired or otherwise no longer in effect and to immediately replace such person with someone who both holds the proper credentials and meets the minimum qualifications for the position as detailed in Section 2.3 of this pamphlet.
- A plan for the submission of annual/yearly documents for multi-year project. I.e. affirmative action plans, annual gift affidavit, etc.
- An issue resolution procedure, addressing how unresolved quality issues will be escalated and resolved.
- The primary person responsible for implementing and monitoring compliance with the QMP.
- A description of the training the project staff will receive relative to the QMP.
- A monthly status report, to be submitted to the State's Project Engineer, noting any exceptions encountered during the month and actions taken to address those exceptions shall be noted at that time.

The QMP may include elements from a company-wide quality plan, but the details shall be tailored to the individual project and address any special conditions or requirements relative to the project.



### **3.3 HEALTH AND SAFETY**

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The Consulting Engineer is required to have a Health and Safety Plan (HASP) covering the activities of their own staff and any sub-consultants. The Consulting Engineer, at his own expense, shall provide all necessary training, supervision, equipment and programs to ensure that staff assigned to the Project will be protected from health and safety risks according to the current requirements of OSHA, as well as all other applicable Federal, State and local laws, rules and regulations.

In addition, it is expected that the Consulting Engineer's staff comply with the most current version of the following Department policies and plans:

- Policy Statement E&H.O.-35A (Headgear Policy)
- Policy Statement E&H.O.-35B (Protective Footwear Policy)
- Policy Statement E&H.O.-35C (Safety Vests)
- Department's Fall Protection Plan.

### **3.4 EQUIPMENT PROCUREMENT**

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Prior to purchasing any equipment, which has been authorized by an agreement, supplement, or extra work claim, and charged as a direct cost to the State, the Consulting Engineer shall obtain written approval for the purchase from the Department's District Engineer. For equipment costing in excess of \$2500.00, the Consulting Engineer shall obtain cost proposals from at least three (3) suppliers and submit the proposals and equipment catalog cuts for approval. All purchased equipment shall be tagged by the State, maintained in good condition and shall be turned over to the State upon completion of the construction project.

### **3.5 MILEAGE, LODGING AND SUBSISTENCE**

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Employee travel expenses will be limited to on project related mileage. All other travel/lodging/subsistence expenses will only be reimbursed with prior approval from the Department and as negotiated. Subsistence and lodging rates, when negotiated and approved by the Department, shall not exceed the rates currently in effect for State Manager's under State Travel Regulations. In addition, if any employees that have company vehicles assigned for use on the project, reimbursement for mileage will be allowed only if the vehicle is not normally charged to the company's overhead. Reimbursement shall be made only for the percentage of on job and project-related use. The Consulting Engineer shall provide a monthly accounting of job related mileage, commutation mileage and other mileage usage and compute the proportional share of mileage to be charged as a direct cost in accordance with the OPM's General Letter 97-1 (maximum is established per the State Travel regulations Manager's Agreement). This accounting shall be submitted with the CLA-3.

Lodging and subsistence will not be allowed as a direct cost unless specifically negotiated and listed in the agreement or supplemental agreement, and only with prior approval from the State's Project Engineer. Subsistence and lodging rates when approved shall not exceed the rates currently in effect under the State Travel regulations Manager's Agreement.

### 3.6 BILLING PROCEDURES

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In accordance with the Consulting Engineer's agreement, the Consulting Engineer shall submit on a monthly basis, two copies of a certified payroll, in effect at the time of the invoicing, and request for payment (CLA-3 form provided by the State), including copies of all supporting documentation.

The CLA-3 and supporting documents must be submitted monthly in accordance with the "Pamphlet for Monitoring Performance and Payment Requests for Consultants". Delays in submission and combining several months in one submission severely impacts the review and approval of the invoice and causes delay in payment.

When the CLA-3 is submitted, the Consulting Engineer should ensure legible copies of all substantiating data are included. Examples of required supporting data include:

- Copies of Invoices and Receipts for Direct Cost Material Purchased
- Substantiation of Mileage Claimed and Paid
- Certified Payroll in Effect at Time of Invoicing
- Record of Daily Hours Worked by Each Employee
- Copy of State Project Engineer's Overtime Approval
- Copy of Invoices for Subsistence, Lodging, etc. (when authorized by agreement)
- Appropriate Backup for long distance Telephone Calls

Any CLA-3 submitted with insufficient information, illegible copies of substantiating data or errors shall be returned to the Consulting Engineering for correction. Corrections should be made promptly so that the error does not carry over to future invoices.

The Consulting Engineer shall complete one sub-consultant Payment log for each sub-consultant assigned to the project per calendar year.

Consultant's semi-final invoice (CLA-3), before final audit, shall be for release of retainage. This invoice will be held pending final audit results.

Note: At the completion of the project, the Consulting Engineer will be required to provide documentation confirming that all of their subcontractors have been paid.

Documentation of "Good Faith" efforts and amounts completed of the DBE/SBE Program, if any, will be required to be submitted with the final invoice.

### 3.7 PERFORMANCE REVIEWS

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The Department will perform bi-monthly evaluations of Consulting Engineer's performance for the following periods:

January 1 to February 28

March 1 to April 30

May 1 to June 30

July 1 to August 31

September 1 to October 31

November 1 to December 31.

A copy of the bi-monthly evaluation will be provided to the consultant's Resident Engineer. It is expected that the Resident Engineer will keep the consultant's Project Manager informed of all evaluations received.

Semi-annual consultant performance evaluation ratings shall be done for the following periods: January 1<sup>st</sup> through June 30<sup>th</sup> and July 1<sup>st</sup> through December 31<sup>st</sup>. These ratings will be based on the results of the bi-monthly evaluations prepared for each Consulting Engineer prior to the semi-annual evaluation. A copy of the semi-annual evaluation will be sent to the consultant's designated project manager.

Performance reviews may be conducted more frequently if determined necessary by the District.

When evaluations indicate improvement is needed or if the consultant wishes to discuss the evaluation, they should contact the Project Engineer and arrange a meeting. These evaluations are used by the Consultant Selection Panel when evaluating firms for future project selections. Failure to take corrective action when necessary could prevent the Consultant from being assigned future projects.