District Department of Transportation

Construction Management Manual

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District Department of Transportation

Construction Management Manual

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1.0 INTRODUCTION

1.1 CONSTRUCTION MANAGEMENT MANUAL OVERVIEW

The primary purpose of the District of Columbia Department of Transportation (DDOT) Construction Management (CM) manual is to establish standard operating procedures and provide guidelines to DDOT's engineers, construction managers (DDOT personnel and consultants), and personnel engaged in contract administration promoting uniformity and efficiency.

The CM staff must coordinate with others who provide services that include planning, budgeting, pre-design services, design services, scheduling, bid and award services, and field oversight. The CM procedures written in this manual are primarily for DDOT projects. The CM standard operating procedures and guidelines provided in this manual are beneficial to the overall success of DDOT's construction projects. This manual can be accessed on the DDOT website at https://wiki.ddot.dc.gov/display/CMM. DDOT encourages the use of the online version of the full manual or individual sections for the latest version and electronic search capabilities.

The manual will be updated continuously, and updates will be published on the DDOT website. Questions about any section of the manual and/or proposed changes to the manual should be submitted to cm.manual@dc.gov.

1.2 EXPECTATIONS FROM THE CM TEAM

DDOT expects the CM team to deliver the construction project successfully on time within budget with all quality requirements met per the contract documents. DDOT also expects to access any information at any given time. DDOT will not accept and receive hard copies at the end of the project. Therefore, the CM team shall upload daily all generated documents (including hard copies scanned and uploaded) related to construction to the document management system and databases which are setup for the project. DDOT should always be able to access this information.

This manual only gives guidelines to the CM teams on how to manage construction projects as expected by DDOT. However, the CM team shall remember that the construction contract documents (which includes plans, specifications, permits, and other DC and federal regulation requirements) are binding between DDOT and the construction contractor. As representatives of DDOT, the CM teams shall understand the construction contract documents clearly to meet DDOT's expectations.

During construction management, the CM team representatives and construction contractor representatives often have disagreements. When an issue emerges, the following issue resolution matrix (also called resolution ladder) shall be implemented to resolve issues quickly.

Issue Resolution Matrix / Resolution Ladder

DDOT Representatives	Construction Contractor Representative	Allowed Time
Inspector	Foreman	1 hour
Lead Inspector	Superintendent	3 hours
Construction Manager	Project Manager	1 day
Contract Administrator	Contract Manager/Project Manager	2 days
DDOT Team Leader	Senior Representative from Contractor	3 days
Contracting Officer	Senior Representative from Contractor	Final Step

Note: When an issue cannot be resolved, it should be elevated to the next level until the issue is resolved.

1.3 ABBREVIATIONS

Section 101 of the DDOT Standard Specifications for Highways and Structures includes the intent and meaning of abbreviations and terms commonly used in connection with construction projects administered by the Department. DDOT and consultant CM personnel should be familiar with these terms and abbreviations and use them correctly.

The terms cited in the Standard Specifications for Highways and Structures, as well as other terms, which are defined or explained as follows, will be used frequently in this manual. Whenever the following abbreviations are used in this manual, the intent and meaning shall be interpreted as follows:

AA	Administrative Administration
AASHTO	American Association of State Highway Transportation Officials
ADA	Americans With Disabilities Act
ANC	Advisory Neighborhood Commission
BID	Business Improvement District
CA	Contract Administrator
CBE	Certified Business Enterprise
CI	Construction Inspector
CM	Construction Management
CO	Contracting Officer

COR	Contracting Officer's Representative
CPM	Critical Path Method
DBA	Davis Bacon Act
DBB	Design Bid Build
DB	Design Build
DBE	Disadvantaged Business Enterprise
DDOT	District Department of Transportation
Department	District Department of Transportation
DOEE	Department of Energy and Environment
EEO	Equal Employment Opportunity
EOR	Engineer of Record
FHWA	Federal Highway Administration
HOA	Homeowners Association
IDR	Inspector Daily Report
IGE	Independent Government Estimate
IPMD	Infrastructure Project Management Division
MOT	Maintenance of Traffic
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NCR	Non-Conformance Report
NTP	Notice to Proceed
OA	Operations Administration
OE	Office Engineer
OCP	Office of Contracting and Procurement
OJT	On-the-Job Training
PDA	Project Delivery Administration
PS&E	Plans, Specifications & Estimate
PE	Project Engineer
PID	Public Information Division
PoDI	Projects of Division Interest
PM	Project Manager
PMA	Performance Management Administration
SBE	Small Business Enterprise

TCP	Traffic Control Plan
QA	Quality Assurance
QC	Quality Control
RFI	Requests for Information
RE	Resident Engineer (also called Field Engineer)

The Contractor refers to the construction contractor wherever it is mentioned in this manual.

1.4 DDOT ORGANIZATION AND OVERVIEW

DDOT's mission is to enhance the quality of life for District residents and visitors by ensuring that people, goods, and information move efficiently and safely with minimal adverse impact on residents and the environment.

DDOT manages and maintains transportation infrastructure by:

- Planning, designing, constructing, and maintaining the District's streets, highways, tunnels, bicycle tracks, alleys, sidewalks, bridges, traffic signals, streetlights, sign structures, streetcar infrastructure, and Circulator infrastructure.
- Managing and making improvements to the public right-of-way to facilitate multi-modal traffic flow through the District of Columbia.
- Managing, with the Department of Public Works as a partner, the snow and ice removal from the public right-of-way.
- Coordinating the District's mass transit services, including the reduced-fare program for students using MetroBus and MetroRail.

The Office of the Director is responsible for the oversight and management of the entire agency. The Chief Officers are responsible for the oversight and management of the following administrations:

- Project Delivery Administration (PDA)
- Operations Administration (OA)
- Administrative Administration (AA)
- Performance Management Administration (PMA)

The DDOT agency organization information and current organizational chart can be found on the DDOT website at https://ddot.dc.gov/publication/ddot-organizational-chart.

The capital construction projects are managed by the **Infrastructure Project Management Division (IPMD) under PDA**. IPMD is responsible for the design, engineering and construction of roadways, bridges, and large infrastructural projects in the District of Columbia. IPMD also manages special construction projects and all roadway assets. The asset maintenance construction projects are managed by the **Maintenance Division under OA**.

1.5 PROJECTS BY FUNDING CATEGORIES

DDOT projects are grouped in three categories by funding:

- Federal-aid projects
- Locally funded projects
- Third party/developer projects

The Federal-aid Highway Program provides financial assistance for the construction, maintenance, and operations of the highway network, including the Interstate Highway System, primary highways and secondary local roads. The Federal Highway Administration (FHWA) is charged with implementing the Federal-aid Highway Program in cooperation with the states and local government. For more information about federal-aid project requirements see Title 23, Part 635, Code of Federal Regulations (CFR). The Federal-aid Highway Program is administered in DC based on the Stewardship/Oversight Agreement between FHWA and DDOT per Section 106 of Title 23, United States Code . For federal-aid Projects of Division Interest (PoDI), all changes must be approved by FHWA with the Form FHWA-1365 (Record of Authorization to Proceed with Major Contract Revision) as attached to Appendix. The FHWA-1365 forms are approved by DDOT for the state assumed Federal-aid projects in accordance with the agreement between FHWA and DDOT.

Locally funded projects are fully funded by the District of Columbia. These projects are required to follow the District of Columbia Municipal Regulations (DCMR).

The third-party agreement on a project happens when an entity (design-builder) and DDOT have a mutual interest in the development and maintenance of transportation infrastructure in the District of Columbia. The funding for these projects comes from third parties.

The Transportation Infrastructure and Public Space Impact Mitigation Amendment Act of 2014, effective July 23, 2014 (D.C. Law 20-128; D.C. Official Code §50-9231.02(f)) gives DDOT the authority to enter into an agreement with a developer, property owner, utility company, the federal government or other governmental entity, or other person or entity to pay for the costs of DDOT's review and implementation

oversight of a proposed project that affects the transportation infrastructure or public space in the District.

1.6 DELEGATIONS OF AUTHORITY

DDOT's Chief Engineer oversees all phases of transportation infrastructure improvement projects in the District of Columbia. Chief Engineer may delegate this authority to Deputy Chief Engineers or Program Managers.

1.6.1 Contracting Officer

Contracts may be entered into and signed on behalf of the District Government only by contracting officers. The Contracting Officer (CO) is the only District official authorized to contractually bind the District.

Authorized Changes by the CO:

- The CO is the only person authorized to approve in writing any changes of construction contract requirements.
- The Contractor shall not comply with any order, directive or request that changes or modifies the construction contract requirements, unless they are issued in writing and signed by the CO.
- Any changes at the direction of any person, other than the CO, will be considered to have been made without authority and no adjustment will be made in the contract terms.

1.6.2 Contract Administrator

According to 27 DCMR §1209, the CO may appoint a Contract Administrator (CA) for each contract. The CA is synonymous with the term Engineer and/or Contracting Officer's Representative (COR).

The CA has the responsibility of ensuring that the work conforms to contract requirements and such other responsibilities and authorities as may be specified in the contract. The CA acts as the Contracting Officer's representative for technical matters, providing technical direction and participating in discussions, as necessary with respect to the specifications or statement of work, and monitoring the progress and quality of the contractor's performance. The CA keeps the CO fully informed of any technical or contractual difficulties encountered during the construction performance period and advises the CO of any risk and/or potential problem areas under the construction contract.

The CO may delegate the following functions to a CA:

- Prepare a clear and concise statement of work.
- Determine the allowability, suspension, or disapproval of costs.
- Approve or disapprove contractor invoices.
- Review and approve or disapprove a contractor's requests for payments under progress payments or performance-based payment structures.
- Take action to recover overpayments from the contractor.
- Perform production support, oversight, and status reporting, including timely reporting of potential and actual slippages in contract delivery schedules.
- Advise the contracting officer of any actual or potential labor disputes.
- Ensure contractor compliance with contractual quality assurance requirements.
- Ensure contractor compliance with contractual safety requirements.
- Perform surveillance to assess compliance with contractual terms for schedule, cost, and technical performance in the areas of design, development and production.
- Report to the contracting officer any inadequacies noted in the specifications.
- Ensure timely submission of required reports.
- Monitor contractor compliance with specifications or other contractual requirements.
- Prepare evaluations of contractor performance in accordance with chapter 22 of DCMR.
- Any other function relating to contract administration not expressly reserved by these rules to the contracting officer.

The CA must be a DDOT employee. In some cases, the DDOT Project Engineer might also be appointed as a CA.

1.6.3 DDOT Project Manager/Engineer

Pursuant to 23 C.F.R. §635.105(b), although the State Department of Transportation (State DOT) may employ a consultant to provide construction engineering services, such as inspection or survey work on a project, the State DOT shall provide a full-time employed state engineer to be in responsible charge of the project. Therefore, DDOT assigns a full-time Project Engineer for each construction project. When the consultant services are procured for the construction management, the consultant team is considered as an extension to the DDOT CA and Project Engineer.

1.7 ETHICS

All District government employees must maintain high standards of honesty, integrity, and impartiality. Employees must carry out this responsibility consistent with the laws and regulations that establish how to do so ethically. To ensure public confidence and trust in government, each employee shall follow the principles of ethical conduct set forth in Chapter 18 of the District Personnel Manual (DPM) and comply with the District's Code of Conduct. Failure to do so can result in penalties ranging from reprimand to termination from employment and, in some cases, even fines and criminal action. The Code of Conduct consists of various laws and regulations that limit many aspects of employee behavior.

This section contains a brief description of some of the District's ethics rules and is provided as an overview but not an exhaustive list and more detailed information may be found in the District's Ethics Manual, which is prepared by the District's Board of Ethics and Government Accountability (BEGA) and is available on BEGA's website at https://bega.dc.gov):

Some general principles of ethics and specific ethics standards include:

- Employees shall adhere to the principles of ethical conduct.
- Employees shall understand that government service is a public trust.
- Employees shall put forth honest effort.
- Employees shall report credible violations to appropriate authorities.
- Employees shall satisfy lawful obligations to government.
- Employees shall adhere to all federal, state, and local laws and regulations.
- Employees shall not hold financial interests that conflict with performance of duty.
- Employees shall not use nonpublic information improperly.
- Employees shall not make unauthorized commitments.
- Employees shall not use public office for private gain.
- Employees shall not act impartially or give preferential treatment.
- Employees shall not use government property for unauthorized activities. District equipment shall not be used for private purposes. Supervisors shall be especially vigilant to assure this rule is kept.
- Employees shall not take actions creating the appearance that they are violating the law/ethical standards.

- The political activity of District government employees is limited by the local Hatch Act (DC Law 20-4; DC Code §1-1171 and the Ethics Act (DC Law 19-124; DC Code §1-1161.01). In addition, the federal Hatch Act applies to some District employees whose salaries are paid in whole or in part with federal funds (i.e. a federal loan or grant to the District). No employee shall engage in any conduct contrary to these provisions.
- District employees and/or its consultants should neither solicit nor accept gifts or gratuities which are/or might be construed to be an influence on the decisions they make as representatives of the government.

Federal laws and code of ethical behavior may also apply including the following which provides that any person in government service should:

- Put loyalty to the highest moral principles and to country above loyalty to persons, party, or Government Department.
- Uphold the Constitution, laws, and legal regulations of the United States and of all governments therein and never are a party to their evasion.
- Give a full day's labor for a full day's pay; giving to the performance of your duties your earnest effort and best thought.
- Seek to find and employ more efficient and economical ways of getting tasks accomplished.
- Never discriminate unfairly by the dispensing of special favors or privileges to anyone, whether for remuneration or not; and never accept, for yourself or your family, favors or benefits under circumstances which might be construed by reasonable persons as influencing the performance of your governmental duties.
- Make no private promises of any kind binding upon the duties of office, since a Government employee has no private word that can be binding on public duty.
- Engage in no business with the Government, either directly or indirectly, which is inconsistent with the conscientious performance of one's governmental duties.
- Never use any information coming to you confidentially in the performance of governmental duties as a means for making private profit.
- Expose corruption whenever discovered.
- Uphold principles, ever conscious that public office is a public trust.

2.0 CONSTRUCTION DELIVERY METHODS AND REQUIREMENTS

Construction delivery methods are processes including planning, design and construction required to execute and complete a project. Choosing a project delivery method is one of the fundamental decisions owners make while developing their project delivery strategy.

Choosing the best method for any project must start with a good understanding of choices available. In all project delivery methods, there are always a minimum of four parties involved (minimum of three parties if DDOT does not hire a construction management consultant): DDOT as the owner, construction manager, designer and contractor. Project considerations have fundamental impacts on the delivery method selected. These considerations include a realistic budget, a schedule that includes a reasonable performance period, a responsive and quality design process, a risk assessment with allocation of risks to the appropriate parties and recognition of the level of expertise within the owner's organization.

DDOT generally contracts construction projects by the design-bid-build (DBB) project delivery method, which is also known as the low bid method. Some of DDOT construction projects are also delivered by the design-build (DB) project delivery method. Therefore, this manual focuses on two project delivery methods, DBB and DB, which have been used for the Department's construction projects. The other project delivery methods, such as Construction Management at Risk and Public-Private Partnerships (P3) are excluded from this revision of the manual.

2.1 DESIGN-BID-BUILD (DBB) PROJECTS

The DBB project delivery method typically involves three sequential project phases: the design phase, which requires the services of a designer who will be the "Engineer of Record (EOR)" for the project; the bid phase, when a contractor is selected; and a build or construction phase, when the project is built by the selected (typically low bid) contractor. This sequence usually leads to a sealed bid, fixed-price contract. This method is typically a unit priced contract, but it can also include lump-sum items.

This method is widely applicable, well understood, and has well-established and clearly defined roles for the parties involved. This method is presently a very common approach for public owners due to procurement statutes under which they operate. DDOT has a significant amount of responsibility for the success or failure of the end product, particularly since the facility's features are fully determined and

specified prior to selection of the contractor (DDOT "owns" the details of the design). The contractor and designer work directly for DDOT. This process may have a longer duration when compared to other delivery methods since all design work must be completed prior to solicitation of the construction bids.

Construction may not begin until the design and procurement phases are complete. The absence of construction input into the project design may limit the effectiveness and constructability of the design. There is no contractual relationship between the contractor and the designer.

2.2 DESIGN-BUILD (DB) PROJECTS

The DB method of project delivery includes one entity (design-builder) and a single contract with DDOT to provide both architectural/engineering design services and construction. Cost efficiencies can be achieved since the contractor and designer are working together throughout the entire process, resulting in fewer changes, fewer claims, less litigation, and earlier knowledge of firm costs. DB can deliver a project quicker than conventional DBB. DDOT can, and should, specify performance requirements in lieu of prescriptive specifications. DB team qualifications are essential for project success to enhance project coordination and reduce project claims.

2.3 THIRD PARTY/DEVELOPER PROJECTS

The third party/developer projects involve the joint efforts between DDOT and the third party/developer. DDOT's initial role in these types of projects is to provide planning support by DDOT's Planning and Sustainability Division (PSD) to review 30 percent preliminary design plans. As the project transitions from planning to design and construction, DDOT's Infrastructure Project Management Division (IPMD) involvement becomes critical to ensure that DDOT design and construction standards are met. DDOT supports the project with design reviews and construction support services.

DDOT issues public space permits to the developer for the demolition of existing infrastructure and the construction of DDOT-related public infrastructure improvements within the existing public right-of-way (ROW) in accordance with applicable DDOT regulations and permitting procedures. DDOT participates in weekly management team coordination and/or construction coordination meetings with the developer throughout design and construction. DDOT inspects facilities during construction and if required, notifies the developer in writing within two (2) business days that the DDOT facilities are not constructed in accordance with DDOT standards or the approved design as documented.

DDOT participates, upon receipt of written notice, in the substantial completion inspection of the DDOT facilities and, in conjunction with the developer, creates a punch list of remaining items to be completed by the developer's team. DDOT participates, upon receipt of written notice, in the final completion inspection of DDOT facilities. DDOT signs-off and accepts ownership of the new ROW and DDOT facilities in the work area upon the developer's completion of all punch list items, the developer's correction of all non-conforming items, the developer's installation and utility agency acceptance. Unless there is a prior agreement, DDOT is solely responsible for the operation, maintenance, and repair of the DDOT facilities.

3.0 CONSULTANT MANAGEMENT

The purpose of this section is to set forth general instructions for contract administrators concerning the administration of construction management consultant contracts when consultants are contracted as an extension of the DDOT construction personnel. The Department maintains representation in administering construction projects through professional services contracts. The consultant CM team is managed by the DDOT Contract Administrator assigned to the project by the Office of Contracting and Procurement (OCP) and DDOT. The consultant CM team is the extension of the DDOT team managing the construction project. Hence, the authority of the consultant construction management firm's lead person, such as the consultant Construction Manager or consultant Project Engineer, shall be identical to the Department's Resident Engineer (RE), also known as the DDOT Project Engineer. The Contract Administrator is a DDOT employee that reports to a DDOT team leader. Therefore, the CM team is also managed by the DDOT team leader through the Contract Administrator. The consultant CM team is required to exercise their professional judgment in performing their obligations and responsibilities under the contract. However, the consultant must seek input from the Contract Administrator and the DDOT team leader, as necessary. Therefore, the Department vests the consultant with the responsibility and authority in administering the project(s) and to implement actions based on their authority.

The consultant shall render the services consistent with the standard of care, skill, and diligence exercised by members of the same profession providing similar services under similar conditions at the location of the project and at the time the services are to be performed. Consultants' standard of care shall not be altered by the application, interpretation, or construction of any other provision of the contract.

3.1 RESPONSIBILITIES OF CONSULTANT

The followings are responsibilities of the CM team:

- Perform its services consistent with the skill and care ordinarily provided by construction manager-agents practicing in the Washington, D.C. metropolitan area on projects of a similar type, cost, and size. The CM team shall perform its services as expeditiously as possible and with the necessary skill and care to achieve orderly progress of the Project.
- Provide inspection services consistent with the contractually specified version of the DDOT Standard Specifications for Highways and Structures and this manual along with other construction contract documents.

- Represent the District in a fiduciary capacity in its role as construction manager-agent.
- Identify a representative authorized to act on behalf of the Consultant with respect to the project.
- Not engage in any activity, or accept any employment, interest or compensation that would reasonably appear to compromise the consultant's judgment with respect to the project, except with DDOT's prior knowledge and prior written consent.
- Conform to and uphold all established ethical principles and professional standards of practice governing consulting engineers in the District of Columbia, and in any jurisdiction where the consultant may be licensed or registered.
- Not have responsibility for the construction means, methods, techniques, sequences or procedures for the work of construction contractors for all or any portion of the Project except where such are required by contract or where they deviate from good and usual construction practices.
- Provide all necessary expertise and services, and shall have and maintain appropriate licenses that meet District of Columbia requirements, so that consultant can professionally and diligently prosecute the work authorized.
- Provide staff to monitor and manage work whenever the Contractor is granted permission to work. The work times may extend beyond normal working hours or be at night or on weekends.
- Contract for or employ at consultant's expense, subcontractors to the extent deemed necessary for the work, with the prior written consent of DDOT.
- Consult with normal and customary employees, agencies, and/or representatives of the District of Columbia regarding the work of the contract.
- Work effectively with other District of Columbia and federal agencies.
- Abide by all regulations imposed by funding sources, such as auditing requirements and payroll affidavits.
- Perform its services in accordance with all applicable District and federal, laws, codes, regulations, standards, guidelines, and orders.
- Recognize that in the performance of the contract that the CM team may receive certain information submitted to the District government on a proprietary basis by third parties, information which relates to potential or actual claims against the District government, or information which relates to matters in dispute or litigation. Unless the District consents to a particular disclosure, the consultant shall use such information exclusively in the performance of

the contract and shall forever hold inviolate and protect from disclosure all such information, except disclosures required by applicable law or court order. The consultant also agrees that, to the extent it is permitted to disclose such information, it will make such disclosures only to those individuals who need to know such information in order to perform required tasks in their official capacity and will restrict access to such information to such individuals.

- Maintain all books, documents, papers, accounting records and other evidence pertaining to consultant's costs, expenses, and fees incurred during the performance of the work under the project. Such materials shall be made available at the consultant's office at all reasonable times during the period of this contract and for three (3) years from the date of final payment under this contract. Copies of these materials shall be furnished upon request by DDOT (both in hardcopy and electronic copy format).

3.2 ADMINISTRATION OF CONSULTANT CONSTRUCTION MANAGEMENT CONTRACTS

3.2.1 Pre-Service Phase

A pre-service meeting (also known as a kickoff meeting) is required on all consultant construction management contracts following execution of the contract and prior to the pre-construction conference. Generally, those in attendance will be representatives of the DDOT team responsible for the construction project and the consultant construction management team to discuss administration of the consultant contract. The DDOT team lead and Contract Administrator will be responsible for the meeting.

Subjects covered at the meeting will include, but not be limited to:

- Department lines of authority concerning administration of the CM contract and the administration of the construction contract.
- Consultant's schedule for identifying and assigning personnel and equipment.
- Terms of the consultant construction management contract (e.g., approval of consultant's personnel qualifications, approval of personnel and equipment assignments, rates, etc.). Clarify any portions of the consultant CM scope of services that are unclear to any parties.
- Invoice procedure as outlined in the invoice processing section of the contract, including consultant's invoice submission & processing.
- The coordination between the Contract Administrator and consultant construction manager for processing consultant construction management supplemental amendments and invoices.

- Review the process for the consultant construction management to contact the design consultant for post-design services and clarification or correction of plans and specifications.
- Discuss Disadvantaged Business Enterprise (DBE), On-the-Job Training (OJT), and Equal Employment Opportunity (EEO) monitoring and documentation submission requirements.
- The Professional Services Consultant Work Performance Evaluation Procedure.
- Actions required by construction management consultant prior to start of construction.
- Review of the critical items for successful administration of the construction contract.
- Consultant Construction Management's Quality Control (Q.C.) Review process. A complete and concise record (including the names, titles, addresses, and telephone numbers of all participants) of the proceedings of the meeting shall be prepared by the consultant and approved by the Contract Administrator. The approved record of the meeting shall be distributed to all participants and other interested parties within 1 week following adjournment of the meeting.
- Construction documentations and electronic document management

3.2.2 Service Phase

The Contract Administrator, under direct supervision of the DDOT team lead, must administer the consultant construction management contract(s) and monitor the activities of the consultant(s) engaged in construction contract administration and is in charge of the contract(s) at all times. The Contract Administrator will serve as the liaison to the FHWA (for the federal-aid projects) and DDOT as it relates to various contract administration issues.

3.2.3 Consultant Personnel

The Contract Administrator shall compare the personnel proposed by the consultant with the technical proposal for any changes in personnel. Replacements for the original personnel must have equal or better qualifications than the personnel being replaced. The Contract Administrator along with Contracting Officer shall review and approve all subsequent additions and deletions to consultant staffing of a project and all changes in salary. All overtime usage is subject to the terms of the consultant construction management contract. All personnel approvals with allowed contractual rates shall be in writing.

3.2.4 Consultant Performance

During the early stages of the construction project, the Contract Administrator shall thoroughly evaluate the performance of the consultant firm to ensure the consultant firm is demonstrating the necessary knowledge, skills and experience to make decisions in accordance with the consultant construction

management contract. Any deficiencies in the performance of the consultant firm will necessitate remedial action, including but not limited to, reassignment of personnel, replacement of personnel, increase in the frequency of monitoring and inspection activities, and increase in the scope and frequency of training of the consultant personnel. The Contract Administrator shall maintain a continuing overview of Consultant performance of duties by interim reviews of records, inspection procedures, testing procedures, sampling procedures, etc. The Contract Administrator shall use the current performance evaluation tool used by OCP and DDOT for the DDOT contracts and provide written explanation with supporting documentation as necessary for areas with "unacceptable" performance. The Contract Administrator may obtain comments from other appropriate District personnel on consultant's performance.

3.3 CONSULTANT CM ACCOUNTABILITY

The purpose of this section is to establish procedures for the assignment of responsibilities when a consultant construction management firm has been determined to have performed work for the Department that has been identified as having errors, omissions, or contractual breaches. This procedure is for use by the Department to document the deficiency and the additional costs and damages sustained and establish the requirement for a recommendation for action against the consultant.

Throughout the construction phase of the Department's construction contract under the management of a consultant CM, quality assurance reviews are performed. Reviews performed by both the Contract Administrator (also known as the DDOT Project Engineer) and by the FHWA representative (for federal-aid projects) are intended to determine whether the work performed on the project is of an acceptable level of quality as established in the contract documents for the project.

3.3.1 Identification of Errors, Omissions, or Contractual Breaches

The initial identification of the errors, omissions, or contractual breaches is the responsibility of the Contract Administrator. This is accomplished through routine project and quality assurance reviews of the consultant's work product, records, and performance grades. Reviews should be made on a continual basis and will be documented during the consultant's performance evaluation. If the consultant CM contractual performance, staffing, equipment, or contract administration is found unacceptable and not in agreement with Department historical decisions during a Department QA review, the deficiency shall be clearly defined in writing, and the authority (contract section, article, page, etc.) cited. The Contract Administrator will communicate and provide supporting documents to the Contracting Officer for consultant corrective action. The relationship involved here is contractual, and the Department will allow

the consultant sufficient and reasonable time to correct noted deficiencies with their contract performance, as appropriate under the circumstances. If appropriate action is not taken to correct the deficiencies, the Contracting Officer will direct the consultant in writing to provide a written response to the deficiencies addressing the reasons why the issues have not been addressed and a plan outlining the time frame within which all issues will be addressed. If the response is acceptable to the Department, corrective actions and a time frame for corrective action shall be approved in writing. Continued monitoring by District staff will be required. A follow-up at the end of the specified correction period will be prepared based on the staff's investigation at that time.

3.3.2 Consultant Contract Termination

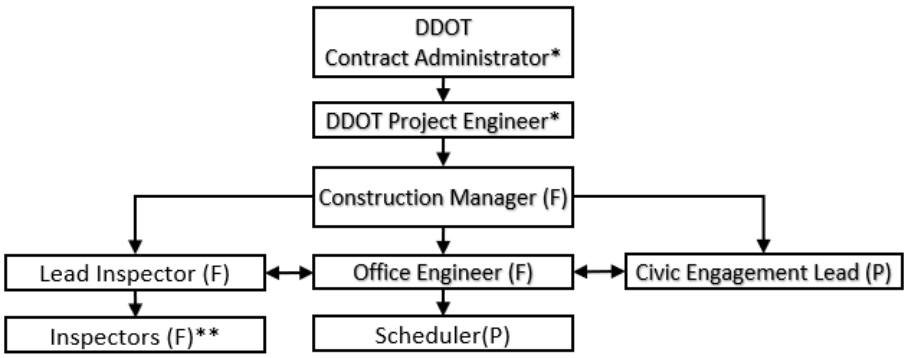
If the consultant CM team does not follow through with the corrective action or the action taken is unsuccessful, OCP will make the determination about the contract termination.

3.4 STAFFING NEEDS FOR CM PROJECTS

Construction engineering and inspection services provided during the construction phase of a project usually include monitoring of the construction work through inspection and testing, recording, documenting and reconciling quantities, tracking progress against the construction schedule, checking and recommending interim and final payments, administering changes, maintaining and filing records for audits, and providing documentation that the project has been built in accordance with plans and specifications. The management of a project usually includes a Construction Manager, and typically, a Project Engineer (PE) who is supported by inspectors. Depending on the size and makeup of the project, it may be necessary to expand the staff to include office engineering staff and/or temporary/part-time specialized, certified, or licensed staffing support applicable to specific needs and roles. For example, if the project includes plantings, CM staff must include landscape architects, arborists, and/or inspectors with appropriate experience. Likewise, if the project includes stormwater management, CM staff must include inspectors with Low Impact Development (LID) experience.

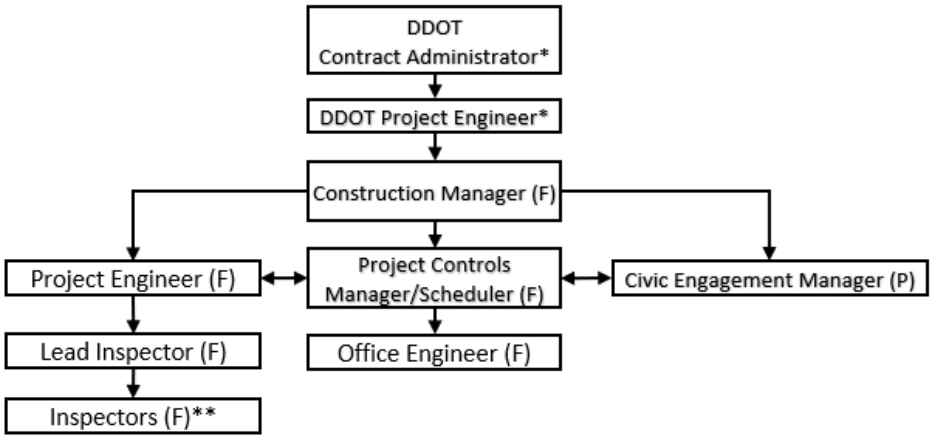
3.4.1 Design-Bid-Build Projects

The following personnel are recommended for design-bid-build projects with construction costs under $50 million.



* Sometimes Contract Administrator and Project Engineer can be a same person.
** Number of inspectors will be determined based on project phasing and activities.
(F) for full time and (P) for part time.

The following personnel are recommended for design-bid-build projects with construction costs $50 million and above.



* Sometimes Contract Administrator and Project Engineer can be a same person.
** Number of inspectors will be determined based on project phasing and activities.
(F) for full time and (P) for part time.

When the consultant services are procured for the Program Management/Construction Management, the following personnel positions and responsibilities are expected:

Construction Manager

All projects will have a DDOT CA, who is responsible for the project delivery, representing the CO and can act as Construction Manager for the project, or Construction Manager may be a consultant, and hold additional titles such as Project Engineer or Resident Engineer. The Construction Manager is responsible

for the administration of the construction contract to ensure that the contract work is completed in accordance with the plans and specifications, required quality standards, the contract performance period, and the contract price.

The Construction Manager is responsible for monitoring the contractors' work to ensure that the work is performed in accordance with an agreed upon schedule and to ensure that support services from DDOT comply with the construction schedule. The Construction Manager shall receive and resolve requests for information and clarification of the construction documents and resolution of field conditions that may represent a change to the contract conditions. The Construction Manager shall document and prepare all requests for changes, either from the Contractor or the CO, including any changes that may revise contract price or contract performance period.

The Construction Manager is responsible for the supervision of field inspection staff. The Construction Manager shall attend progress meetings, review overall and interim construction schedules, and assign field inspectors with the Contractor's operations. The Construction Manager shall ensure that field inspectors are familiar with the contract plans, specifications, DDOT procedures, maintenance of traffic (MOT) and safety requirements.

The Construction Manager shall instruct the field inspectors in taking and recording quantities, checking and verifying layouts, observing the work and maintaining daily reports. The Construction Manager shall review specifications, procedures, and testing requirements with the field inspectors. The Construction Manager shall review the Inspector Daily Reports (IDR) for accuracy and countersign the report. The Construction Manager shall prepare a daily diary (as shown in Appendix) of project progress and events.

The Construction Manager shall coordinate between field inspectors and Contractor superintendents to maintain coverage of the work being performed and testing being conducted. The Construction Manager shall confer with the inspector on non-conforming work and will determine with the CA and the DDOT team leader when non-conformance notices are to be issued.

The Construction Manager, in conjunction with the DDOT team leader or his/her designee shall be responsible for responding professionally, timely, and courteously, to concerns about the construction that originate from the public and are reported to the DDOT public information office, the Advisory Neighborhood Commissions (ANC), the city administration, the City Council, and the Mayor. The Construction Manager is expected to take reasonable steps to minimize the impacts of construction on the affected residents, travelers, businesses and institutions.

The Construction Manager is responsible for verifying quantities and checking all payments for the work period for which payment is requested. The Construction Manager shall maintain a documented comprehensive record of all quantities and payments made. This shall include quantities and payments for any changes in the work. The document record shall include all supporting documents required for payment such as inspection checklists, material certifications, affidavits for payments to subcontractors and suppliers, insurance certificates and invoices for stored materials.

The Construction Manager is responsible for monitoring the quality of materials and work in place in order to confirm compliance to the specifications and industry quality standards. This shall include processing of shop drawings and other submittals, monitoring of all testing both on-site and off-site, observation of the work being installed and gathering of certifications, warranties, and guarantees. The Construction Manager shall record all non-conforming work and completion of corrective action.

The Construction Manager is responsible for monitoring the Contractor for conformance with contractual safety requirements and shall bring all observed violations to the attention of the Contractor. The Construction Manager is not responsible for the safety of the Contractor's work force and methods of construction. However, the Construction Manager shall require correction of observed situations that are potentially dangerous to workers, the public and the project and shall order the termination of work that poses a serious and imminent danger to public safety or substantial property damage.

The Construction Manager is responsible for monitoring the work of others assigned to assist him/her in the administration of construction contracts and shall ensure that they perform their duties as required. The Construction Manager shall provide assistance and guidance as necessary so as to promote a productive team environment and a positive work experience. The Construction Manager shall perform periodic reviews of the work of his/her staff and shall advise the staff of the results of the reviews and shall monitor the implementation of any corrective action.

The Construction Manager is responsible for regular and timely reporting to the CA and DDOT team leader the progress of the work. The Construction Manager shall promptly report any major deviations from the schedule, the contract price, or the quantity of the work to the CA and DDOT team leader. All accidents requiring medical attention or property damage shall be immediately reported to the CA and DDOT team leader. Any visits by the media shall be immediately reported to the CA and DDOT team leader. The Public Information Division (PID) and the DDOT team leader will report it to the Chief Engineer. The Construction Manager shall inform the DDOT team leader of any adverse incidents that will require their attention or involvement for resolution. The Construction Manager shall refer all media inquiries to the DDOT PID.

Project Controls Manager

The Project Controls Manager will be included in the Construction Management team for large construction contracts ($50 million and above). The Project Controls Manager is responsible for overseeing all of the project controls management for the project. The Project Controls Manager shall have proven skills in developing, implementing and tracking project schedules, documentation, and change order/claim management. This person shall have a thorough understanding of Primavera program management software, and Microsoft SharePoint. The Project Controls Manager shall review baseline schedules and update schedules and help the CA and DDOT team leader to prepare recommendations in a report to DDOT for rejection or approval of the schedules.

Project Engineer

The Project Engineer will be included in the CM team for large construction contracts ($50 million and above). This individual shall help the Construction Manager with monitoring the day-to-day construction activities to ensure that the construction is delivered in strict conformance with the construction contract, within the approved schedule, within the approved budget, in accordance with the protocols and procedures of DDOT, and meets all environmental requirements and contractual requirements. The Project Engineer shall be fully knowledgeable in construction contracts, contract interpretation, DDOT's protocols and requirements and design standard interpretation.

Office Engineer (OE)

The Office Engineer (OE) shall support the Construction Manager and Project Controls Manager and is responsible for the technical and administrative areas of the project.

The OE is responsible for setting up and maintaining the project files. The OE is responsible for developing lists of submittals for the project and for receiving, distributing to the Construction Manager for review, expediting review and timely return to the Contractor of all submittals required by the contract. The OE shall maintain a log of all submittals and re-submittals.

The OE is responsible for collecting and recording quantities, receiving and checking payment applications and all supporting documents, and expediting timely processing of payment applications. The OE shall maintain records of all quantities, changes, and payments made and shall continuously reconcile quantities and payments with the contract documents.

The OE shall attend progress meetings and shall provide minutes in accordance with procedures. The OE shall provide and maintain logs of requests for information, change requests and submittals and shall attach updates of these logs to the meeting minutes. The OE shall receive and process all requests for information and changes and shall expedite and document this process. The OE in collaboration with the Construction Manager or Project Controls Manager shall determine who will respond to a Request for Information (RFI) and shall ensure that the response is expedited. Any changes that result from the RFI shall be processed through change documentation.

The OE shall monitor all testing and shall maintain all records of testing, certification and all other quantity records. The OE shall notify the CA of quantity/testing issues and shall monitor and document resolutions.

Lead Inspector

The inspection team lead is responsible for the daily construction activity by making sure the Inspector Daily Reports are properly logged, the Contractor's 2-week look ahead schedule is within the approved project schedule, and the construction quality control / quality assurance are followed as per the contract documents. The lead inspector shall make sure everyone in the inspection team maintains their certifications and provide daily reports to the project engineer or Construction Manager with the attachments of the Inspector Daily Report.

The Lead Construction Inspector shall meet one of the following qualification requirements:

- Be an engineer with a minimum of three (3) years of bridge/highway construction experience acceptable to the DDOT team leader.
- Be National Institute for Certification in Engineering Technologies (NICET) certified as a Transportation Engineering Technician Construction, Level II or higher, with a minimum of five (5) years of bridge/highway construction experience acceptable to the DDOT team leader.
- Be certified through a combination of the following agencies as relevant to the project with a minimum of ten (10) years of full-time experience, acceptable to the DDOT team leader, as a construction engineer or inspector on bridge/highway construction projects:
    - Mid-Atlantic Region Technician Certification Program (MARTCP) for concrete field and asphalt field.
    - The American Concrete Institute (ACI) for concrete sampling, inspection, and testing.
    - WACEL (Washington Area Council of Engineering Laboratories) for structural steel inspection, soil and concrete sampling, inspection, and testing.

Construction Inspector (CI)

The Construction Inspector (CI) shall work under the direction of the Construction Manager/Project Engineer and Lead Inspector. The CI is responsible for performing inspection of a construction contractor's work, as assigned by the Construction Manager, to assure the work is in compliance with approved contract plans and specifications. The CI shall observe the Contractor's work and recommend approval of the inspected work to the Construction Manager based upon tests conducted in accordance with published procedures and good construction practices. The CI shall maintain inspection records and records of pertinent data regarding equipment, material, and labor. Utilizing construction management software such as AASHTO's Field Manager and Field Book (preferred by DDOT), the CI shall prepare daily inspection reports and keep the Construction Manager/Project Engineer and Lead Inspector advised of inspection results, particularly items requiring re-work because of quality deficiencies. The CI shall verify and maintain daily quantity data for use in processing payments.

For projects with limited service (part-time or limited knowledge) staff members, the CI will assume additional responsibilities as assigned by the Construction Manager.

The Construction Inspectors shall meet one of the following qualification requirements:

- Be National Institute for Certification in Engineering Technologies (NICET) certified as a Transportation Engineering Technician Construction, Level II or higher, with a minimum of two (2) years of bridge/highway construction experience acceptable to the DDOT team leader.
- Be certified through combination of the following agencies as relevant to the project with a minimum of five (5) years full time experience, acceptable to the DDOT team leader, as a construction engineer or inspector on bridge/highway construction projects:
    - Mid-Atlantic Region Technician Certification Program (MARTCP) for concrete field and asphalt field.
    - The American Concrete Institute (ACI) for concrete sampling, inspection, and testing.
    - WACEL (Washington Area Council of Engineering Laboratories) for structural steel inspection, soil and concrete sampling, inspection, and testing.

3.4.2 Design-Build Projects

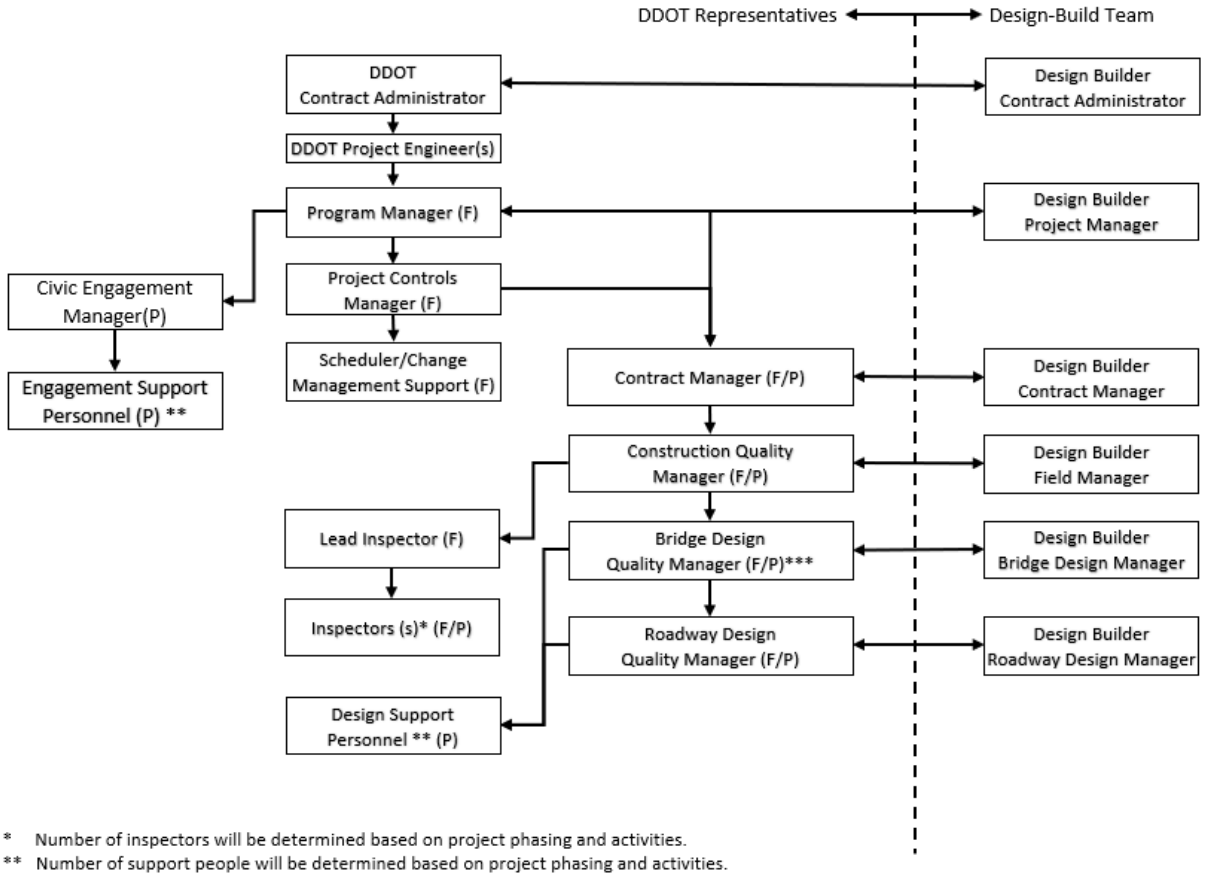
The following personnel are recommended for design-build projects. Some of the position descriptions, Lead Inspector and Construction Inspector, are already provided in the previous section. Therefore, it is not repeated in this section. When the consultant services are procured for the Program

Management/Construction Management, the following additional personnel positions and responsibilities are expected:

Program Manager

The Program Manager is responsible for the overall management and delivery of the project and for ensuring that personnel and other resources are made available when needed. The Program Manager shall be a professional engineer licensed in the District of Columbia and have experience in a comparable function on similar projects. The Program Manager is expected to possess the following qualifications and abilities:

- Strong and effective management skills capable of providing overall direction, coordination and accomplishment of contractual functions and requirements on the procurement of design and construction services.
- Ability to establish and maintain effective working relationships with, and evaluate the work of consultants, contractors, construction managers, and others.
- Use of tact and discretion in dealing with those contacted in the course of the work.
- Fostering development of excellent and responsible architectural and engineering design and construction.
- Ability to communicate effectively, orally and in writing especially on technical subjects; expertise in preparing written reports, correspondence, and in briefing clients and management personnel.
- Ability to analyze contract documents and construction projects for code deficiencies with respect to District and federal requirements.



* Number of inspectors will be determined based on project phasing and activities.
** Number of support people will be determined based on project phasing and activities.
*** If the project includes bridge design.
(F) for full time , (P) for part time, (F/P) for full time and part time assignments during parts of the project.

- General knowledge of construction methods and techniques.
- Ability to interpret architectural and engineering drawings and specifications, and to coordinate them.
- Knowledge of and familiarity with related engineering fields sufficient to ensure that areas of overlapping responsibilities between technical disciplines receive proper consideration.
- Ability to lead construction contractors and construction managers relative to activities on project construction sites and to analyze construction requests for information, change order requests, change orders, and payment applications.
- Knowledge of construction site reporting systems, to monitor and control projects, such as CPM scheduling and project cost status reporting.
- Employ computer applications to collect, analyze, and communicate information.

Construction Quality Manager

This Construction Quality Manager is responsible for overseeing the construction management of the project to deliver construction activities with quality work, on time, and on budget within the protocols and procedures of DDOT and the contractual requirements. This person shall have experience in complex urban highway, bridge, transit or river crossing projects, have experience in the construction industry, and have performed a comparable independent quality management function.

Contract Manager

The Contract Manager is responsible for ensuring the project adheres to all contractual and environmental requirements. The Contract Manager shall be fully knowledgeable in design-build contracts, contract interpretation, DDOT's protocols and requirements and design standard interpretation. The Contract Manager shall have demonstrated experience in both design and construction of complex urban highway, bridge, transit or river crossing projects, be a licensed professional engineer, have relevant experience, and have performed a comparable function.

Bridge Design Quality Manager

The Bridge Design Quality Manager is responsible for overseeing the bridge design of the project to ensure that all structural activities are delivered with quality work, on time, and within budget in accordance with DDOT and contractually required standards. The Bridge Quality Design Manager shall be responsible for independent audit and verification of all elements of the bridge design, retaining walls, and all other structural elements. The Bridge Design Quality Manager shall have proven skills in planning, design, scheduling, cost estimating, and a thorough knowledge of all local and federal requirements of structural design. The Bridge Design Quality Manager shall be a licensed professional engineer, have relevant experience on bridges, and have performed a comparable function.

Roadway Design Quality Manager

The Roadway Design Quality Manager is responsible for overseeing the non-structural design components of the project. The Roadway Quality Design Manager shall be responsible for independent audit and verification of the design to ensure compliance with DDOT standards, industry standards, and overall contract compliance. The Roadway Design Quality Manager shall have proven skills in planning and design of roadway facilities, utility mitigation, maintenance of traffic, analysis and implementation of corridor-wide traffic plans, signal plans and intelligent transportation systems. The Roadway Design Quality

Manager shall be a licensed professional engineer, have relevant experience, and have performed a comparable function.

Project Controls Manager

This Project Controls Manager is responsible for overseeing all of the project controls management for the project. The Project Controls Manager shall have proven skills in developing, implementing and tracking project schedules, documentation, and change order and claim management. This person shall have a thorough understanding of Primavera program management software and Microsoft SharePoint. The Project Controls Manager shall review baseline schedules and update schedules and help the Program Manager to prepare recommendations in a report to DDOT for rejection or approval of the schedules. The Project Controls Manager shall have performed a comparable function.

Civic Engagement Manager

The Civic Engagement Manager shall manage all project information, traffic advisories, provide DDOT assistance in briefings for elected officials, manage a public information plan, and engage and inform the public on the implementation of the project. The Civic Engagement Manager shall work in conjunction with DDOT's Public Information Office. The Civic Engagement Manager shall help the Program Manager in responding professionally, timely, and courteously, to concerns about the project that originate from the public and are reported to the District Government including, e.g., DDOT PID, the ANC, the city administration, the City Council, and the Mayor. The Civic Engagement Manager working together with the Program Manager shall refer all media inquiries to the DDOT PID and immediately report any visits by the media to the CA and DDOT team leader. The Civic Engagement Manager shall be responsible for coordinating all external project meetings.

Contract Compliance Manager

The Contract Compliance Manager is responsible for overseeing all compliance and reporting aspects of the project. The Contract Compliance Manager shall have demonstrated expertise in DBE compliance and reporting, labor statistical reporting, and workforce development. The Contract Compliance Manager shall support the Contract Manager in assuring the project adheres to all contractual requirements and provides all necessary reports. The Contract Compliance Officer shall be responsible for uploading subcontracts and prompt payments and using the DDOT Compliance tools.

3.4.3 Third Party or Developer Projects

The number of Construction Management personnel required for a third party or developer project shall be determined based on the project size and complexity by the DDOT team.

4.0 PRECONSTRUCTION ACTIVITIES

4.1 BID PROCEDURES

The bid process for DDOT projects is managed by OCP. As explained in Section 3, the consultant team is considered as an extension to the DDOT CA and Project Engineer. The consultant CM team is generally not contracted at this stage of the construction project. Therefore, the DDOT team lead's and CA's roles are to provide technical support to the contracting office during the bid process. This support includes but is not limited to response to bidders' questions, review of bid documents, and verification of cost items.

4.1.1 Pre-Bid Conference

OCP manages the bid process and schedules this meeting. All (potential) bidders are invited/informed by the OCP solicitation site and a newspaper advertisement. When possible, a Pre-Bid Conference should be conducted. The purpose of the Pre-Bid Conference is to ensure a thorough understanding of the project by the prospective bidders. The more the bidders understand the project and its conditions, the more intelligent and realistic will be their bids, and the potential for conflict during construction is likely to be reduced. Maximum use of visual aids such as colored and highlighted drawings, aerial photographs, large-scale location maps showing major access routes and restrictions, scale models, and three dimensional CADD graphics should be considered.

OCP shall keep records of the meeting and responses to questions. If the response merely provides clarification of the contract documents, there is no need for inclusion in an addendum. However, if the question clearly requires modification or expansion of the information provided in the documents, the response must be included in an addendum. Potential bidders are directed from the OCP site to the DDOT's DTAP site (District Transportation Access Portal) for downloading the bid documents (Plans, Specifications & Estimate (PS&E)). The potential bidders are recorded by the DDOT's DTAP site. All bid document holders, not just those in attendance, receive the addendum from OCP. Questions, which could not be answered at the Pre-Bid Conference, are addressed in an addendum. Responses that will be addressed by addendum should be clearly recorded. An appointed recorder should provide concise yet comprehensive minutes.

4.1.2 Bid and Pre-Award Processing

The DDOT team should provide technical support to OCP during the bid opening process. On the day of bid opening there should be clear understanding of the process. Bidders may have the bids returned to them upon written request any time prior to the designated time for bid opening. Once the designated time has passed bids will not be returned. Under no circumstances are bids accepted after the designated time for opening; they remain sealed and are returned to the bidder. In order to maintain an orderly process during bid opening, a clock showing the correct time should be clearly visible and the bidder names should be announced. The OCP will administer the opening of bids.

Bid tabulation sheets should also be prepared. Typically, the bid tabulation sheet will show the title of the contract or contracts to be opened, space for names of bidders, columns for noting receipt of bid bond and acknowledgment of receipt of addenda, a column for base bid and columns for each bid alternate.

At the time of bid opening it should be announced that time for receipt of bids has passed and no further bids will be received. The Contract Specialist from OCP will then declare that this is the time and place for opening of bids for designated contract(s), welcome all attendees, make any required formal announcements and proceed with the opening of bids.

The Contract Specialist will take the opened bid, read out the name of the bidder, declare that bid bond is included and receipt of addenda acknowledged and then clearly read out the base bid amount, followed by the amount(s) of any alternate(s) and/or substitutions. These amounts should be entered on to the bid tabulation sheet. Discussions about the acceptability of the bids as they are read should be avoided.

At the close of the bid opening all bids should be collected and forwarded to the CO. Upon request, bid bonds should be returned to any bidder who is not in contention for an award. All bids are considered good for a period of sixty (60) days after the bid opening or as specified in the bid documents.

The DDOT team should assist the CO in reviewing bid prices and determining compliance with other requirements of the bid documents. Bid analysis guidance can be found on the FHWA website: https://www.fhwa.dot.gov/construction/cqit/award.cfm.

Bid Evaluation sheets should be prepared. If it is a lump sum contract without alternates, there is usually little to evaluate other than conformance with the Instructions to Bidders. Bids shall be

reviewed and compared against each other and against the Engineer's Estimate to determine the bid range, the difference between the apparent low bidder and second lowest bid, and significant differences among bid items. The DDOT team shall determine if the lowest bid is responsible and responsive and prepare an engineer's recommendation.

If the contract is a unit price contract, the Bid Evaluation form should list all the bid items and quantities down the side and the bidders along the top so that each unit price can be compared. Evaluation of unit price bids requires more care and a good understanding of the project and bidding strategies.

The purpose of this exercise is to determine if unusual bid patterns exist. Although the analysis can be done manually, the use of a computer to analyze the data and to monitor bidding activity has become prevalent. While many DOTs have their own bid analysis system, the majority of the DOTs are using the Bid Analysis and Management System / Decision Support System, (BAMS/DSS), a module within the AASHTO Trns-port® software package. The BAMS is a comprehensive system comprised of five modules, which includes the Decision Support System containing the collusion detection capabilities. The use of a computer program is intended only to provide information to indicate whether further investigation is warranted.

However, the final analysis should not preclude the use of engineering judgment. In analyzing bids, the following should be considered:

- Is the bid mathematically unbalanced? Are the unit bid prices in reasonable conformance with the engineer's estimate and other bids?
- If awarded, what effect will unbalanced bid items have on the total contract amount?
- If quantities are incorrect, will the contract cost be increased when the quantities are corrected?
- On items where the quantities may vary, will the lower bidder remain as low bidder?
- If the bid is unbalanced, will the unbalance have a potential detrimental effect upon the competitive process or cause contract administration problems after award?

4.2 CONTRACT AWARD AND EXECUTION

OCP will make the final evaluation of the bid and execute the contract for construction. A written Notice of Award is prepared and issued to the successful contractor. A Pre-Award Conference may be held with the successful contractor. The purpose of the Pre-Award Conference is to finalize any issues/questions about the bid and the contract. The CM should provide technical support to the OCP during the Pre-Award Conference.

Commencement of the work is not permitted prior to execution of the contract. The contract documents may stipulate limited commencement of work by Notice of Award. Official Notice of Award occurs when the OCP sends the contractor a written notification with the actual contract document. This would normally be followed by the Notice to Proceed (NTP) letter prepared by the DDOT team responsible for the project and executed by the Contracting Officer. Generally, the Notice to Proceed signifies the commencement of the contract time. The CM and its staff should be aware of the procedures for commencement of work and be fully set up on site ready to administer the contract from its inception.

4.3 CONSTRUCTABILITY REVIEWS

The constructability reviews are completed before the bidding process. The CM team still shall perform constructability reviews for each element of the construction work. The constructability review shall be an independent and structured review of construction documents by the CM team to determine that:

- the work requirements are clear,
- the documents are coordinated,
- the ease with which the project can be built using industry-accepted means and methods as designed,
- the documents assist in construction and project administration to reduce negative impacts to the project.

When issues are identified as a result of constructability reviews, the CM team shall inform the CA for required contractual modifications ahead of commencement of construction activities.

4.4 BASE SCHEDULE APPROVAL

Before issuing the Notice-to-Proceed (NTP) date, the CA and CM team shall ensure that the Contractor submits the baseline project schedule. The baseline project schedule shall use the Critical Path Method (CPM) and indicate all major activities of work required under the Contract, from Notice-to-Proceed to Contract Completion Date. The activities included shall be detailed in order to demonstrate a logical progression of the elements of the work. The schedule shall include sufficient detail in order to explain the relationships among the aspects of the work including but not limited to mobilization, submittal process, material ordering and delivery, phasing of the work, maintenance of traffic, subcontract work, utility work, and other important aspects of the project. The schedule shall include any special project requirements for MOT phasing, utility coordination and installation, submittal review, material

procurement, and other significant elements to the project schedule. The baseline project schedule shall demonstrate the completion of all work within the contract time.

When the Contractor submits the baseline project schedule for review and approval, the CM team shall review and return comments and expected NTP date for incorporation to the final version of the baseline project schedule. After incorporation of review comments and provided NTP date, the Contractor shall submit the final version of the baseline project schedule for approval at least one week before the provided NTP date. Once the CM team verifies incorporation of the review comments and expected NTP date in the baseline project schedule, NTP is issued along with the approval of the baseline project schedule.

4.5 PRE-CONSTRUCTION CONFERENCE

Prior to issuing the NTP date, the DDOT team leader should schedule and chair a Pre-Construction Conference. The Construction Manager shall participate and maintain minutes of the meeting. In addition to the team leader and the Construction Manager, attendees should include: the FHWA Division Area Engineer, the contracting professional from OCP, representative from the pertinent DDOT engineering departments, the Engineer of Record, public utilities, community advisory groups, historic preservation groups, federal government agencies, the Contractor and assigned subcontractors. The Construction Manager should complete a checklist of attendees to be notified. The purpose of the meeting is to introduce all the participants in the project and to discuss actions necessary to the successful start, prosecution, and completion of the contract. Items to be discussed should be listed on a prepared agenda issued to the participants. Agenda items should include the general checklist items as shown in Appendix, with appropriate additions/deletions as warranted by the contract at hand.

The Pre-Construction Conference is important for setting the tone for the relationships and to prepare the groundwork for the efficient administration of the contract. The Contractor should be urged to come to the meetings with a written list of any questions, requests, or suggestions to be addressed at the meeting. Detailed minutes should be recorded, and an action list should be included and attached for subsequent actions agreed upon at the meeting. The Pre-Construction Conference minutes will constitute an important contract record and appropriate care should be given to their preparation and distribution.

Adequate meeting time should be allotted to discuss all items on the agenda. Matters requiring a subsequent response should be clearly recorded in the meeting minutes with action assigned to a specific person and a date by which a response must be made.

4.6 NOTICE TO PROCEED AND RELATED DOCUMENTS

The Contract Specialist from OCP will issue the documents required to start construction, a written Notice to Proceed (NTP, as shown in Appendix), after a contract is executed. The NTP will indicate the official date of beginning work. The contract work can begin immediately if the Contracting Officer indicated that signing and receiving the contract also served as the NTP. Work shall not commence until the NTP is given.

4.7 PREPARATION OF ELECTRONIC FILING SYSTEM

DDOT continuously improves the electronic document controls system. DDOT desires to access any construction information at any given time. Therefore, the CM team shall maintain construction documentation every day. Every paper copy such as material delivery tickets shall be scanned daily and uploaded in the DDOT document control system for the project. The documentation shall be complete and accessible at all times. The current requirements for electronic documentation are located in Appendix. The DDOT team will set up the current DDOT document control system for the project before issuing a Contract to a CM consultant. The CM team shall follow these requirements and get familiar with the current DDOT document control system prior to the construction NTP date.

5.0 SAFETY AND TRAFFIC

5.1 SAFETY

The subject of safety on the construction project is complicated and requires diligent study by the Construction Manager. In general, the Contractor is solely responsible for safety of the work including work done or materials supplied by subcontractors, consultants, and vendors. This responsibility cannot be delegated to subcontractors, suppliers, or other persons. The Contractor is responsible for complying with the requirements for safety, accident prevention, and loss control contained in the construction contract and for compliance with all federal and DC regulations and standards applicable to the work.

All projects in the U.S. are subject to the Federal Occupational Health and Safety Act (OSHA) Sections 1910 and 1926.

5.2 CONTRACTOR'S SAFETY PLAN

At the Pre-Construction Conference, the Contractor should be instructed to submit a formal safety plan that meets the requirements of DDOT Standard Specifications Sections 103.01 General Provisions (Construction Contract), Article 27. Safety Program.

The CM field staff should be familiar with the Contractor's safety plan and shall comply with the requirements of the safety plan when conducting their duties at the construction site. This will include use of personal protective equipment, using only designated accesses, obeying controlled access and lockout procedures, etc.

5.3 MONITORING COMPLIANCE WITH CONTRACT SAFETY REQUIREMENTS

Safety should be an agenda item at the progress meetings and safety issues should be discussed and recorded in the minutes.

During normal inspection of the work for quality, quantity and progress purposes, if any major safety violations, unsafe practices or hazardous conditions become apparent, these should be noted in the daily diary and the Contractor's nearest supervisor informed. The name of the person informed, and the date and time should be noted in the daily diary. The Contractor's designated safety officer must be informed. Details of corrective action taken, and the date and time of the action should be noted in the report or a

subsequent report. If corrective action does not begin, the Inspector must report the condition to the Construction Manager. The Construction Manager will immediately contact the Contractor and advise that corrective action should be instituted without delay. Copies of the diaries should be placed in the safety file. The Construction Manager and staff should not attempt to inspect work to which there is not adequate and safe access. The Contractor should be notified in writing that any work installed that is not inspected due to inadequate, unsafe access will not be included for payment.

Copies of all accident reports and other reports shall be required from the Contractor. The CM team will meet with the Contractor, if necessary, to review accident reports and determine if additions or amendments to the Contractor's safety plan need to be instituted. Changes to the Contractor's safety plan and other corrective actions shall be documented and copied to the safety file. In the event of a major accident, incident, or emergency, the Construction Manager shall notify the CA and DDOT team leader and the appropriate safety personnel.

5.4 MAINTENANCE OF TRAFFIC

A Traffic Control Plan (TCP) is included with each Department construction contract. The Contractor will furnish a letter to the Resident Engineer stating whether they plan to use the Department designed TCP or will submit an alternate TCP for approval in accordance with construction contract requirements and DC and federal regulations. The alternate TCP must be signed and sealed by a professional engineer licensed by the District of Columbia and shall be reviewed, discussed, and approved by the Resident Engineer. When the Contractor proposes a modification to the TCP, particular attention must be given to the utility adjustment plan of the project and utility work schedules. In addition, attention must also be given to the cost of the Contractor's modified TCP. The increase in the TCP cost to DDOT shall not be allowed and an increase in the TCP cost should only be considered if Contractor is willing to bear the additional costs. If the proposed TCP modification affects the utility work schedule or the planned utility adjustments, the Contractor shall revise the proposed TCP to avoid such effects if possible. The Resident Engineer shall coordinate with DDOT before approving/disapproving the proposed alternate TCP. Emergency services should be notified in advance of any major modifications affecting traffic flow or patterns.

If the alternate TCP is acceptable, the Resident Engineer shall issue an approval letter including a statement to the effect that any additional costs or delays, including any increase to the cost for the utility work will be borne by the Contractor. The change will be documented by a supplemental agreement or

work order with the Contractor's revised plans. The Contractor will not begin work using an alternate TCP until the Resident Engineer obtains approval for the alternate TCP.

6.0 ENVIRONMENTAL REQUIREMENTS AND PERMITS

During planning and design phases of the construction projects, DDOT communicates the environmental commitments it is responsible for as a result of the National Environmental Policy Act (NEPA) process. As a result of the NEPA process, DDOT becomes signatory to Memorandums of Agreement (MOAs) or Memorandums of Understanding (MOUs) or accepts some requirements as conditions of the permits obtained from other agencies. The MOAs, MOUs, and permits are parts of the construction contract documents. DDOT expects the CM team to become familiar with MOAs, MOUs, and permit conditions to deliver the construction projects as agreed with other agencies.

In addition to safety of the individual, increasing emphasis is being placed on protection of the environment and the cleanup of earlier degradation. Many elements that were common in construction, or were routinely buried as harmless wastes, are now recognized as hazardous materials and there are extensive and extending regulations governing the handling of these materials. Of particular concern in construction are asbestos, lead in paints or other materials, volatile organic compounds such as oil, petro-carbons, thinners, adhesives, etc., that give off potentially damaging fumes, and other exotic chemicals. If suspected hazardous materials are encountered which were not expected, the CA is to be immediately informed and authorization obtained to stop the work and make the area secure. The Construction Manager should contact the City Department of Health (DOH) and Department of Energy and Environment (DOEE) to get direction on how the situation will be remedied. If costs are involved, the Construction Manager should inform CA to get approval from the CO to verify funds that are available and certified. The Construction Manager should safeguard the health of the field staff by avoiding contact with the suspected hazardous materials until clear instructions are received. Supervision, monitoring, and inspection of hazardous waste handling and remediation plans normally require special training and should be coordinated with the DOH.

To meet legal requirements, the CM team shall coordinate and communicate with DDOT legal and environmental staff, possess appropriate skills, receive appropriate training, and understand their role in successfully carrying out environmental commitments and contract requirements.

The following are necessary for meeting environmental commitments during construction:

- Environmental resources
- Air, noise, and water pollution control

- Permits with particular emphasis on the appropriate management of District Department of Energy and Environment (DOEE) permits, which includes final inspection by a DOEE inspector and the uploading of As-Built Drawings to the DOEE Stormwater Database

- Licenses, and agreements

- Hazardous materials

- Hazardous waste and contamination

7.0 PUBLIC RELATIONS

We are in an age of ever-increasing public participation in the decision-making and oversight process of matters affecting construction projects. People are demanding the right to be involved in the conduct of work that affects their community. As a result, the Construction Manager should expect to be involved in matters of public relations and should be prepared to perform public relations activities in a manner that is consistent with DDOT policies.

The most effective public relations tool is to conduct oneself in matters involving the public in a professional manner. Courtesy is of prime importance and every member of the public and their representatives must be treated with courtesy and respect. The Construction Manager and staff must not respond negatively to provocation but should remain calm and respectful at all times.

7.1 ADVISORY NEIGHBORHOOD COMMISSION (ANC) AND RESIDENCE COMMUNICATIONS

The goals of ANC and Residence Communications are to provide accurate, timely information to the community during the construction about activity in the neighborhood and to enable neighbors to plan accordingly for any potential disruptions. These channels also create opportunities for residents and other stakeholders to ask questions or raise concerns about activity, and require DDOT to provide accurate, timely responses.

The Construction Manager should be committed to a high level of communication with the community and implement several proactive initiatives to demonstrate that commitment and begin the process.

Steps that the Construction Manager must take include:

- Retaining the services of a leading communications consulting firm, and other communications agencies to support the needs of the project.
- Creating a new project website with prominently featured activity updates, 'Contact Us' functionality, the ability to subscribe to direct email notices.
- Promoting a dedicated phone number where residents can reach community affairs specialists to receive, log and forward requests for information or service to appropriate team members.

A member of the CM team will be responsible for maintaining a calendar of upcoming activities and their potential effects on the community. That calendar will be shared and discussed during the weekly status meetings, and the activities identified on the calendar will drive the content of communication to the community. By distributing notifications for the activities listed below and others as needed, the community can plan accordingly to lessen the impacts and voice concerns to the project team. Notifications for short-term activities, such as utility disruptions and temporary lane closures, will include estimated durations. Pertinent information and notifications will be distributed through various mechanisms, may include the following:

- "Activity Updates" on project website.
- Twitter announcements via DDOT PID about Activity Updates.
- Email blasts to neighbors who have requested notifications.
- Leaflets, flyers or door hangers distributed through Community Office.
- Updates to Frequently Asked Questions section of website, to reflect emerging issues of community concern.
- Publicity in local and regional news outlets (traffic reporters, neighborhood bloggers, etc.).
- Community meetings.
- Regular attendance at meetings of ANCs, neighborhood HOAs, business improvement district (BID) board meetings and other neighborhood groups upon request.
- Other means as necessary.

7.2 MEDIA COMMUNICATIONS

If contacted by the media, the CM team and staff should decline comment and refer them to the DDOTPID and immediately contact the DDOT team leader. The CM team should not provide any written documentation to the media unless it is requested in writing by the DDOT team leader.

When highway construction information must be conveyed to large numbers of highway users, including those who commute regularly over a particular route and those who use the route only occasionally, contact the public information officer early in the project. The public information officer will use print and social media, radio, internet, and television to publicize the upcoming work.

Another helpful method of promoting good public relations is to use District personnel as speakers at meetings of the local chambers of commerce and service clubs. Resident Engineers so inclined might consider joining a service organization. Frequent notices and progress reports in the local media are also common and effective methods of keeping the public informed of changing project conditions.

If someone from the media asks for information, refer them to the DDOT PID. Unless specifically instructed to speak to the media, politely refer all questions to the appropriate public information officer. Sometimes the public information officers will be the only ones who may respond for DDOT about an issue. The PID may arrange for site visits for the media and will inform the construction engineer of the scheduled visit. Inform the contractor of these scheduled visits. In the case of a traffic event, an emergency, or other incidents that prompt unscheduled media visits, inform the public information officer immediately.

Project personnel should always keep in mind that they are representatives of DDOT and District of Columbia Government. As such, they are expected to conduct themselves in a manner that will earn respect, add value to the organization, and pass along vital information to the public.

7.3 CITIZENS' CLAIMS PROCEDURES

Upon receipt of a claim by a citizen asserting damage incurred as a result of construction activities, the CM team will forward the claim to the Contractor. The CM team will follow-up to ensure the Contractor investigates and provides a written response on the disposition of the matter within two weeks.

8.0 CONTRACT ADMINISTRATION

For successful construction project completion, DDOT expects CM teams to deliver quality work on time and within budget. Therefore, Construction Managers shall follow the following subsections for project controls to achieve DDOT's expectations from CM teams. This CM manual shall be used together with the DDOT Standard Specifications for Highways and Structures edition included in the construction contract along with other contract documents.

Project Controls is a term used to describe the methods applied during construction to manage the project schedule (schedule management), claims (claims management), contract additions or changes (change management), project cost (budget management), and document control, which includes the management of all project correspondence, inspection records, test reports, field measurement and determination/verification of quantities of work accepted for payment in accordance with the contract.

Project correspondence should be identified and organized by project area and/or construction operation and contract item whenever possible. This assists with the overall organization of project records for use in evaluating potential change orders or Contractor requests for compensation and/or time.

The implementation of effective project controls is essential for generating sufficient documentation to demonstrate and verify the project meets the contract requirements. During the design process, the Resident Engineer and Project Manager should jointly determine what specific project control methods are needed based on the project's size and complexity. Some examples of project controls may include: 100% completion payments vs. partially complete payments; cost-loaded schedule for payment by milestones/activities; full or partial electronic submittal requirements, etc.

The DDOT pay item numbers include six digits for the design-bid-build projects. The first three digits of the pay item numbers refer to the section number within the DDOT Standard Specifications for Highways and Structures. Sometimes, sections in the standard specifications are modified or replaced by designers. In that case, the project specific specifications are prepared to supersede or supplement the DDOT Standard Specifications for Highways and Structures or the Green Infrastructure Standards. The project specific specifications are called "project specifications" or "special provisions" within the DDOT construction community. The standard specifications or project specific specifications include

description, construction requirements, and measure and payment subsections. The CM team shall follow the specification requirements for their inspections and quantity measurements.

The Construction Manager shall:

- Provide onsite staff, sufficient in number and qualifications, to carry out daily inspections and coordination of all construction activities on the project, resolve field construction problems, and provide input for design changes.
- Maintain a job log using the DDOT standard Daily Inspection Report form which is attached in Appendix. Maintain the job log to contain, without limitation, a daily record of weather conditions, work performed by the Contractor including the progress thereof, material deliveries, identification of equipment at the site, number and classification of workers, labor issues and disputes, and any other pertinent information required by DDOT or the standards.
- Endeavor to ensure that the Contractor's work is completed by the Contractor in strict accordance with the construction contract, including, without limitation, plans and specifications, required quality standards, the contract performance period, and the contract price.
- Maintain a log of planted LID, plantings, seed/sod, trees, and any other project vegetation to ensure compliance with DDOT standards and maintenance/care through construction (See the Plantings Periodic Report referenced in Appendix). Provide a complete summary log of all project planted vegetation to include planting date, acceptance, guarantee period, and scheduled post-construction inspections to be performed through the guarantee period.
- Notify DDOT of any defects or deficiencies in the construction work. The Construction Manager shall have the authority to reject construction work that does not conform to the construction contract. A failure of the Construction Manager to reject construction work shall not constitute acceptance of such work or a waiver of the requirements of the project construction contract documents. Observe construction and make recommendations to DDOT concerning construction progress, quality of construction, and conformance with the contract documents.
- If it appears that the Contractor is failing to meet any of the requirements of its contract, then the Construction Manager shall recommend actions to be taken by DDOT in response to such failure.
- Obtain and forward to DDOT Contractor's evidence of insurance, consent of sureties, releases and waivers of liens, and other documentation required of Contractor.

- Schedule and conduct pre-activity conferences prior to the commencement of construction for each element of the construction work. Such conferences shall detail proposed construction means, methods and sequencing, effects on traffic, and potential schedule impacts.
- Prepare and distribute an agenda for each Construction Manager-hosted project meeting in advance of the meeting date. The CM team representation at all meetings shall include individuals having knowledge of the agenda topics, and authority to make decisions and commit resources on behalf of the CM team. The CM team shall provide minutes of all Construction Manager-hosted project meetings and presentations to all attendees identifying new and unresolved old action items and the responsible party for each item. Minutes must be provided within seven calendar days after each meeting. The CM team shall reply to correspondence from DDOT, other agencies and entities with jurisdiction over the project, and Contractor within seven (7) calendar days.
- The CM team shall be responsible for assuring that all project-related permits are current and renewed on time and that the project construction work is within the requirements of the permits from the respective regulating agencies, including, but not limited to, District Department of Energy and Environment ("DOEE"), National Park Service ("NPS"), and the District of Columbia Department of Consumer and Regulatory Affairs ("DCRA").
- Record the progress of the project. On a weekly basis, or as otherwise required by DDOT, the CM team shall submit written progress reports to DDOT containing the information below:
    - Percentages of completion
    - Construction work completed for the period
    - Defects and deficiencies
    - Planned and actual construction budget status
    - Progress photos
    - Project schedule update
    - Submittal schedule and status report, including remaining and outstanding submittals
    - RFI, Change Order, Force Account Change Order, and Letter Directive status reports
    - QA/QC, testing, and inspection reports
    - Status of nonconforming and rejected construction work
    - The CM team's daily logs
    - Jobsite safety evaluation including incident reports
    - Cumulative total of the project costs of the construction work to date including the CM's compensation

  - Other relevant information as required by DDOT or the standards
- Observe construction and make recommendations to DDOT concerning construction progress, quality of construction, and conformance with the construction contract.
- Certify to DDOT such substantial completion when the construction work or a designated portion thereof achieves substantial completion as defined in the construction contract.
- Evaluate the substantial completion, as defined in the construction contract, of the construction work and shall advise DDOT when the construction work is ready for final inspection. The CM team shall convene and conduct a final acceptance conference, and shall develop punch list items, independently of Contractor, that require action prior to final acceptance.
- Coordinate the construction work with the General Services Administration, DDOE, the District of Columbia Water and Sewer Authority, FHWA Washington Gas, PEPCO, Washington Metropolitan Area Transit Authority, NPS, U.S. Army Corps of Engineers, ANCs, and other agencies and organizations as applicable.
- Confirm that the construction meets Americans with Disabilities Act (ADA) compliance including, without limitation, checking layout and formwork before concrete pours, and checking post-pour dimensions and slopes for conformance. The CM team shall assist in the preparation of solutions to achieve ADA compliance when constraints or limitations are encountered in the field.
- Assist in the assessment of utility conflicts, provide recommendations if conflicts are encountered, and facilitate coordination across multiple disciplines, stakeholders, and agencies.
- Evaluate and review design errors and omissions, rendering professional opinions to DDOT, and assisting DDOT in recovery efforts if necessary.
- Assist DDOT and other District agencies, as required, in the review and evaluation of claims from the Contractor.
- Provide Disadvantaged Business Enterprise (DBE) compliance monitoring of Contractor's DBE program if required by the construction contract. Provide regular status reports to DDOT.
- Provide Small Business Enterprise (SBE) / Certified Business Enterprise (CBE) compliance monitoring for local projects if required by the construction contract. Provide regular status reports to DDOT.
- Provide SEP-14 (District of Columbia Local Labor Hiring Pilot Program [LLHPP] under Special Experimental Project [SEP] No. 14) monitoring of Contractor's compliance if required by the construction contract. Provide regular status reports to DDOT.

8.1 DOCUMENT CONTROL

8.1.1 Inspector Daily Report

It is mandatory for the Inspectors to fill out daily reports and a daily personnel and equipment record, one for each contract they are assigned. These are on standard Inspector Daily Report (IDR) forms. The Construction Manager will prepare, daily, the official daily diary of the project. It will provide the most comprehensive record of the installation of the work of the project, the weather, and other conditions affecting the work. The IDR and diary must adequately describe the day, date and contract day number, (determined usually from the official Notice to Proceed date, i.e., Day #1 is the first day after the date of the Notice to Proceed) weather conditions and temperatures, personnel and equipment on-site, the work performed, instructions given or received, problems encountered, delays and disruptions, materials received, quantities of work installed, visitors to the site and other relevant information. As one of the principal forms of documentation on the project, great care should be taken to be thorough and accurate when completing the IDR and diary. The IDR and diary should not be viewed as an exception report, detailing only the negatives, but rather as a definitive report that accounts for all construction work and practices observed by each inspector, whether or not in compliance with the contract documents. It is permissible to commend good work and extra efforts as well as record deficiencies. The IDR and diary shall be filled out on the standard forms which can be accessed in Appendix.

8.1.2 Contract Drawing and Specification Distribution and Revisions

The contract drawings and specifications represent the graphical and textual information indicating the work to be constructed. It is essential that this graphical and textual information be carefully controlled and distributed so that all contributors to the construction can be assured that they are working on the latest and most accurate information and that there exists a formal procedure for clarifying, expanding or amending that information.

The CA will ensure that the field office receives sufficient copies of the contract drawings and specifications, including all addenda issued prior to and during the contract. The CA shall deliver to the Contractor electronic copies of plans and specifications stipulated in the construction contract, together with all addenda. Copies of plans and specifications may be required by other entities such as governmental agencies, public utilities, railroads, other inspection agencies, and other Contractors

interfacing with the work of contract. The CA shall ensure that plans and specifications are sent to the correct parties as requested. Whenever revisions to plans and specifications are issued, the Contracting Officer will submit a change order to the contractor to incorporate the revision into the contract.

8.1.3 Shop Drawings, Working Drawings, Sample Submittals

Shop drawings are provided by the Contractor to expand, verify, or complete the information provided by the Designer on the plans or in the specifications. These may include catalog cuts, manufacturer's standard drawings and details, fabricators' detailing, equipment performance characteristics, etc.

Working drawings are provided by the Contractor to indicate means and methods of construction and design and description of temporary works including, sheeting, shoring, underpinning, cofferdams, temporary construction loads, etc.

Material samples certifications are provided by the Contractor to indicate conformance with contract requirements, DDOT standards and descriptions of finishes or to provide a selection for final choice by the Designer.

The contract documents will indicate the shop and working drawing and sample submittals required from the Contractor. In circumstances where submittals are normally required but are not indicated in the contract documents, it should be clarified with the Designer to determine if submittals are, in fact, required. If submittals are required, this information should be provided to the Contractor.

The submittal list should be forwarded to the Contractor for review and confirmation that the list is fully inclusive of all required submittals. The Contractor should be instructed to include the list of all submittals in the construction schedule and to return the submittal list with each submittal numbered consecutively in the order of priority determined by the schedule.

The Construction Manager shall maintain a submittal log indicating each submittal's unique identification number, title, date of receipt from Contractor, date forwarded to reviewer, date received back from reviewer, status (i.e., approved, approved as noted, revise and re-submit, or rejected) and date returned to Contractor. Where there is more than one reviewer, additional columns should indicate date sent to and received from each reviewer. Re-submittals shall have the original identification number with the suffix "A", "B" or "C" indicating each re-submittal. The Construction Manager shall maintain the Submittal log to provide a clear history of the processing of each submittal.

The Construction Manager or designer shall review each submittal to confirm that the submittal is in accordance with contract requirements. If not acceptable, the submittal shall be returned to the Contractor with a letter of transmittal (as shown in Appendix) indicating the deficiencies in the submittal. It is the responsibility of the Construction Manager to track and expedite the review process of all submittals and to provide notification to relevant parties when the review process is exceeding, or is likely to exceed, the review period. The submittal progress should always be an agenda item at progress meetings with all parties kept informed and updated.

The Construction Manager shall track all submittals and shall note the reviewer's comments and action required. For record and audit purposes, the Construction Manager shall maintain in the field office clean copies of all submittals approved or otherwise. The CM staff must ensure that work is not performed without approved shop or working drawings or material samples. On completion of the work, a copy of all submittals shall be included in the Contract records.

The CM team shall:

- Support processing of Contractor submittals.
- Maintain a log of Contractor submittals and shall manage the process of submittal review and approval.
- Within three business days of receipt, distribute submittals with a transmittal form to the Project Engineer and reviewers as required by the construction contract, project agreements, and project permits.
- Endeavor to ensure that all required Contractor submittals are timely.
- Check each submittal for completeness and conformance with construction documents. The CM team shall return incomplete or nonconforming submittals to the Contractor.
- Include at minimum the following items in the submittal reviews when they exist in the construction contracts:
    - Structural steel: confirm materials, member sizes and connection details are in compliance with contract drawings and special provisions. Girder grade, camber and sweep diagrams will only be spot checked.
    - Retaining wall shop drawings, calculations, and constructability
    - Bearing components: confirm materials, member sizes and connection details are in compliance with the construction contract.

- Reinforcing steel: review the bar sizes, quantities, and dimensions to ensure compliance with reinforcing details and schedules in contract drawings.
- Bridge deck: review the panel sizes, types and connection details to ensure compliance with the construction contract. Review order of panel placement sequence.
- MSE walls: review the wall details and geometry for compliance with the construction contract.
- Bridge railings: review railing and post details for compliance with the construction contract.
- Expansion joints: Joint sizes, types, details and installation for compliance with the approved shop drawing and the construction contract.
- Temporary structures
- Demolition drawings
- Construction staging, erection process, and other works

- Coordinate the resolution of rejected submittals.

8.1.4 Requests for Information (RFI)

From time to time, the Contractor may request information in addition to the information provided in the contract documents or for clarification of information provided. These Contractor requests must be logged and documented. Prior to the commencement of construction, the Contractor should be instructed to use Request for Information (RFI in the singular, RFIs in the plural) forms for all information or clarification requests with each RFI numbered in consecutive order. For projects with multiple contracts, the RFI number should be pre-fixed with the contract number.

The Contractor should be instructed to use the RFI forms only for information or clarification purposes. They should not be used to request changes to the work or to offer savings through different materials, processes, or procedures. A request for information or clarification may result in a change, which will be processed via a Request for Proposal submitted by the contractor or through a Proposal Request issued by the CM team. On receipt of an RFI, the CM team shall review to determine the responding party.

The CM team shall track and expedite the RFI to ensure a timely response and forward the response to the Contractor along with any additional instructions generated by the response. For instance, the RFI may indicate a need to change the design or contract requirements, which will, in turn, generate a Proposal Request.

The Construction Manager shall maintain a RFI log which lists the RFIs in increasing numerical order, describes the nature of each RFI, indicates the date of receipt, documents the dates to and from the A/E, records the date of response returned to Contractor and notes any changes or other instructions generated by the RFI. The RFI log should be reviewed at progress meetings to ensure that processing of RFIs does not impede the progress of the work.

RFIs can be initiated by the Contractor or the Resident Engineer (RE). RFIs initiated by the Contractor must go through the RE. The RE should either respond to RFIs or forward them to the appropriate party for response. The RE should maintain an RFI log to track and document responses and dates. The log should include the date of submission, RFI ID, the party responsible for responding, date a response is required, and final response. The log should be reviewed at the weekly project meeting. All RFIs should be processed in a timely manner and the RE must document all conversations and responses regardless of whether a log is maintained.

The CM team shall:

- Receive and respond to RFIs from the Contractor, including clarifications of the contract documents and resolution of field conditions that may represent a change to the construction contract conditions, all in a timely manner and within the period of time permitted by the construction contract so as not to cause delay to the construction.
- Provide reviews, evaluations, recommendations, and reports to DDOT for RFIs prepared by the Contractor that may substantially impact the operational character of the project, project schedule, or project budget or that are not in conformance with DDOT design and construction standards.
- Maintain a log of all RFIs.
- Return questionable, spurious, excessive, dilatory, or abusive RFIs to the Contractor after consulting with the DDOT Project Engineer or Contract Administrator.
- Provide recommendations to DDOT as to whether the response to an RFI requires an adjustment in the construction contract price or time for performance.
- Advise DDOT as to whether a response to an RFI requires additional design or technical documentation.

8.1.5 Weekly Report

A weekly report, or as otherwise required by DDOT, should be prepared for each contract. The weekly report is normally completed by the Construction Manager or OE. Major events, milestones, starts and completions of large activities, expenditures, visitors, changes and claims should be described in the weekly report, along with summaries of work complete and time expired, where required. The weekly report should contain observations on concerns and potential problems with some indication of any possible effects and solutions. Where possible, photographs of the project should be included demonstrating work complete that week. The Construction Manager should keep in mind that the weekly report may have wide circulation, and attention must be given to its preparation. Together with the IDRs and diary, the weekly report provides the detailed job history and will have great importance in the event of claims or disputes leading to litigation. A template for the weekly report is provided in Appendix.

8.1.6 Logs

Logs are effective tools for Construction Management and enable the CM team to summarize the correspondence, identify issues quickly, and manage responses effectively. DDOT expects access to any given information at any given time. The logs can help the CM team to achieve this goal. The Construction Management log templates are presented in Appendix, which shall be used by the CM team for effective Construction Management.

8.1.7 Photographs

Photographs are an important part of the project records. They document general project progress as well as: unusual occurrences such as slides, cave-ins, floods; actual conditions when a contractor alleges differing site conditions; unusual construction features or practices; accidents involving death, personal injury or property damage; encroachments within the right-of-way; and other such occurrences and conditions. They are useful in illustrating reports on experimental features and unusual construction practices, final construction reports, and other reports. They are invaluable as evidence in case a controversy develops and results in litigation. They are especially useful when a construction contract encompasses a long period of time. As memories fade and Project Engineers are transferred to other projects or retire, photographs provide direct records of past site conditions. The adage that “a picture is worth a thousand words” applies here.

In order to best serve the intended purpose, a photographic history of all construction projects should be made. Photographs should be taken of the construction site before construction begins, during each stage

of construction as it progresses, and of the completed project. For example, during a project on which major excavation is to be accomplished, photographs should be taken daily on a regular basis to document progress made by the Contractor. Such photographs should be taken from the same location and the camera should be aimed at the same reference point in order that a person looking at the pictures can actually see the progress, or lack of progress, which was made by the Contractor during a certain period of time.

If a project is of sufficient length, several reference points should be chosen by the Project Engineer from which photographs can be taken during the course of a project. Special consideration should be given to those areas along the project length where experience has shown that difficulties may be encountered. For example, if there are unusual rock formations that might be encountered as excavation progresses, that site should be chosen, and photographs should be taken on a regular basis.

In addition to photographs taken from specified reference points on a regular basis, photographs also should be taken immediately after unusual occurrences and before unusual conditions are disturbed. The Project Engineer and all inspectors shall always have cameras during construction. The use of cameras daily should be emphasized by the Project Engineer.

Clarity and good composition are very important, as is proper identification. In some cases, it may be appropriate to place an individual or object beside the unusual condition to demonstrate the relative size of the condition. The identification record for each photograph should include the location from which the picture was taken (including references to project stations if applicable), time of day and date taken, and name of photographer. This information is particularly important for photographs that may be used as evidence in legal proceedings.

The photograph identification record shall be organized so that all photographs can be easily located and shall be maintained as a part of the project filing systems.

The construction contract will often indicate specific requirements for progress and record photos of the work. The Contractor may be given the responsibility for progress photos. The CM team shall pay attention to the project requirements and ensure that they are fully met. It is important that the CM team record existing conditions for record keeping purposes (with supplemental photos) and additional photographs of work activities.

8.1.8 Project Record (As-Built) Documents

It is rare that a project does not experience minor field changes. Minor field changes will not warrant the formal issue of revisions to drawings or specifications but do need to be officially recorded for operations and maintenance purposes in case of possible future expansion or renovation of the facility. The CM team shall be responsible for recording and submitting to the Designer and Contractor all minor field changes information. If the construction contract does not assign the construction Contractor as the responsible party for the as-built drawings, the Construction Manager shall be responsible for completion of the as-built drawings. The Construction Manager shall ensure that the responsible party shall incorporate all changes to the as-built documents signed and sealed by a DC Licensed Professional Engineer.

The successful delivery of a construction project will depend, to a large degree, on the quality of the planning provided at the beginning of the project and the diligent monitoring of the construction plan during construction.

The CM team shall:

- Maintain one complete record set of project construction contract drawings (red-lined as-built drawing set) on which the CM team shall annotate, in a timely manner, all deviations, field changes, changes accomplished by change order, force account change order, amendment to the contract for construction, or directive letter, including, without limitation, as-constructed depths of footings and structural elements, and horizontal and vertical locations of underground electrical and utility facilities referenced to survey data.
- Review and comment on final as-built drawings submitted by the Contractor. Monitor adequacy of the Contractor's as-built drawings regularly throughout the project.
- Prepare, maintain and secure at the job site, and keep current, all construction contract records including, without limitation, correspondence, submittals (including annotations), pending and approved change orders including supporting documentation, value engineering recommendations, RFIs and responses thereto, claims including supporting documentation, partial payments, meeting minutes, daily inspection reports, construction estimates, as-built drawings, specifications, submittals, safety reports, shop inspections, accident reports, monthly status reports, safety plans and incident reports, non-compliance and rejection notices, and other relevant information as required by DDOT or the Standards.
- All project records shall be uploaded to the project SharePoint site.

- Provide an accurate red-lined as-built drawing set reflecting final as-built conditions created in Bentley Systems MicroStation.
- Prepare all final reports required by DDOT including the final payment voucher, material certification, and analysis of overrun and underrun of quantities. Analyze and report on the Contractor's time of completion and prepare any justifiable time extension or recommend assessment of liquidated damages and incentive or disincentive charges as appropriate. Provide to DDOT all project records in accordance with DDOT Standards and requirements.
- All project records as defined in this section shall be made available to DDOT and, upon completion of the project, shall be delivered to DDOT at its principal offices. Return to DDOT any original calculations, survey notes, engineering or other data provided by DDOT. Provide certifications thereon of all original as-built plans, calculations, maps, engineering data, final estimates and any other engineering data produced by the Consultant. Documents prepared by the Consultant and its subcontractors in performance of their work with respect to the project shall be delivered to, and become the property of, DDOT.
- Follow the DDOT checklist (See Appendix) for project close out, prepare all the documents and close the construction project. If there are outstanding issues, then prepare a project memo listing the outstanding issues, transfer all documents to the DDOT Project Manager, upload all as-built plans, specifications, calculations, shop drawings, RFIs, change orders, materials approvals, meeting minutes, invoices, reports, etc. in approved electronic format to the DDOT project document control system in a timely manner.
- Track and monitor the preparation of all documentation required for close-out. Close-out includes the set-up of preventive maintenance programs, management of warranties and asset preservation for each project executed.

8.2 QUALITY ASSURANCE AND CONTROL

The terms Quality Assurance (QA) and Quality Control (QC) are much confused and the terms, though distinctly different, are often interchanged and used as if they are the same. The following definitions of Quality Assurance and Quality Control are taken from ISO 8402 which is the international standard referencing quality. It is also important to define “Quality” so that all parties understand what Quality Assurance and Quality Control are designed to produce.

Quality: The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs. In a contractual environment, needs are specified. Needs may include aspects of visibility, safety, availability, reliability, maintainability, economics and environment.

Quality Assurance: All those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality. For effectiveness, quality assurance usually requires a continuing evaluation of factors that affect the design or specification for intended applications as well as verification and audits of production, installation, and inspection operations. Providing confidence will usually involve producing evidence.

Quality Control: The operational techniques and activities that are used to fulfill requirements for quality. Quality Control involves operational techniques and activities aimed both at monitoring a process and at eliminating causes of unsatisfactory performance at relevant stages of the quality loop in order to result in economic effectiveness.

In effect, Quality Control consists of those activities required to meet the specified requirements while Quality Assurance consists of those oversight activities that confirm and assure that Quality Control is in place and is effective.

It must first be firmly established that the Contractor is contractually responsible for the quality of the work and QA or QC activities performed by other parties in no way negate the Contractor's responsibility for quality. As such, the Contractor must have in place QC activities to ensure that quality requirements are met.

The QA/QC program will usually be under the direction of the Construction Manager. The Construction Manager will be assisted by trained and experienced inspectors capable of documenting the operation and results of the QA/QC program. The CM team must have available qualified personnel or sub-consultants for sampling and testing, for survey checks of the Contractor's work, and for other specialist QA/QC activities.

On design-build contracts with the contractor self-performing QA/QC, the CM team will audit the field performance of the DB Contractor's QA staff, testing frequencies, and testing results at a frequency determined by DDOT. The CM team will conduct oversight Inspection audits to verify the adequacy of the DB Contractor's inspection activities and testing procedures. The CM team reserves the right to generate and submit a non-conformance report (NCR) to the Quality Assurance Manager (QAM) of the design-builder team for resolution if nonconforming work is observed.

The CM team shall:

- Review and comment on Contractor's Quality Management Plan, including quality control ("QC"), and Contractor's proposed testing laboratories. The CM team shall review and comment on laboratory certifications which may be submitted to DDOT for approval.
- Monitor the quality of materials and work in place in order to confirm compliance with the construction contract and industry quality standards. This shall include:
    - processing of shop drawings and other submittals,
    - conducting and monitoring of all testing both on-site and off-site,
    - observation and inspection (when inspection is specifically required by the Contract) of the work being installed, and
    - gathering of certifications, warranties, and guarantees.
- Verify that tests are conducted at the DDOT required frequencies in accordance with the construction contract. On design-build contracts with the contractor self-performing QA/QC, the CM team shall perform Owner's Independent Assurance Testing to validate the DB Contractor's sampling and Testing Independent Assurance program.
- Witness all major tests.
- Review test results for construction contract compliance. Notify DDOT of any testing failures and issue non-conformance reports to track the non-conforming materials incorporated into the project. Review contractor's remedial actions to correct the non-conformance and make recommendations to DDOT to accept/reject the remedial actions. If remedial actions are rejected make recommendations to DDOT to correct the non-conformance. Oversee the approved corrective action and retesting.
- Provide independent quality management including independent audit and verification of all elements of the construction work. The CM team shall submit test samples to the DDOT QA/QC laboratory, or such other laboratory as may be designated by DDOT. If such other lab is not under contract to DDOT, then, as a part of such services, if directed by DDOT, the CM team shall hire such independent testing laboratories for Quality Assurance ("QA")/QC tests, as required. The laboratory certification shall be submitted to DDOT for approval. Consistent with such services, the CM team shall conduct onsite testing of construction materials, and shall obtain and submit sampling for testing to the DDOT QA/QC testing laboratory in accordance with the construction contract documents, and as specified below. The CM team shall review proposed tests in advance with DDOT.

- Obtain and submit materials and samples for testing to the DDOT QA/QC Branch under IPMD as specified in the construction contract. Such materials and samples shall be identified with material or product name, intended use, source, date of submission, person submitting, and project name and number. These materials and/or products shall include: job mix formulas, mix designs and composition materials for bituminous mixtures, Portland-Cement-Concrete, masonry concrete, tack coat, prime coat, base course, embankment fill, structural backfill, steel reinforcement, water-stop, curing compounds, sealers, welded wire fabric, brick, post tensioning wire, strands, bars, tendon grout mix, neoprene bearings, anchor bolts, paint and any other material requiring testing by the DDOT QA/QC Branch under IPMD pursuant to the contract documents for the construction contract.
- The Contractor shall be responsible for the performance of bituminous and Portland Cement Concrete plant inspections. The CM team shall notify the DDOT QA/QC Branch under IPMD of planned Portland Cement Concrete and asphaltic concrete placement at least one (1) day in advance of such planned work. The CM team shall perform testing of concrete at the job site and shall ensure the temperature of asphalt mixes delivered to the job site conforms to the construction contract requirements.
- The CM team shall coordinate scheduling of compaction testing with a DDOT QA/QC inspector during trench backfilling.
- As directed by the DDOT team, provide shop and field inspection services for fabricated and rolled structural steel, and other metal work, including carbon and alloy steel, steel and iron castings, rockers, pins and shoes, welding, expansion and fixed dam facilities, anchor bolts, roadway load transfer assemblies, fabrication of steel girders and beams and other prefabricated elements, handrailing, guardrail, galvanizing, surface preparation and painting, epoxy coatings of reinforcing steel, and inspection of other material that is heated, rolled, fabricated or welded during all phases of fabrication and painting at the fabricator's plant pursuant to the construction contract. Submit resumes of qualified personnel to perform the shop inspection duties. The assigned shop inspector shall prepare reports and data confirming materials and fabrications are in compliance with the approved shop drawings and the construction contract documents.
- Maintain daily quality management audit reports throughout the duration of the project.
- Schedule weekly quality management meetings with the Contractor.

8.2.1 Contractor Quality Control (CQC) Plan

If the construction contract specifically requires QC to be performed by the Contractor, the Contractor will be required to provide a CQC Plan. The CM team should require early submittal of the CQC Plan before any construction work is begun. Normally, the contract will forbid commencement of any construction prior to approval of the CQC Plan.

CQC Plans should be reviewed by the CM team and the DDOT QA/QC Branch under IPMD and discussed with the Contractor. When satisfactory, the CQC Plan should be forwarded to the Engineer of Record (EOR). Compliance with the approved plan should be monitored and recorded.

8.2.2 Inspection

It is the duty of the Construction Manager and inspectors to monitor and verify that the project is being constructed in accordance with the plans and specifications and in compliance with the terms of the contract. The inspector has, and shall exercise, the authority to reject both unsatisfactory workmanship and materials. Such rejections must be made immediately upon discovery, documented and referenced to the appropriate plan or specification requirement. Documentation should include photographs where possible. However, the work shall not be directed to stop unless the non-conforming work will be covered up or the correction of the non-conforming work will have a critical impact on completion of the project.

The Construction Manager or Construction Inspector will ensure that inspection of the work is so organized as to support the Contractor's schedule and that inspection forces are available and sufficient to meet the schedule. Every effort should be made to cooperate with the Contractor so that inspection activities will dovetail with the Contractor's work. The inspection staff must be aware of the daily and weekly schedules provided by the Contractor and schedule their own work accordingly.

The inspectors will provide daily inspection reports indicating work performed, inspections and tests carried out, non-conformances noted, and any other information relative to the quality of the work. Daily reports must be completed on standard Inspector Daily Report Form, be neat and legible, and specifically note that work has been performed according to contract documents.

Off-site inspections may be required. These will be scheduled by the CM team with the Contractor's input to the schedule. Inspectors shall provide details of inspections, tests, sampling performed, and conditions observed. Inspectors' reports shall note the status of progress in fabrication/production and

conformance with required schedule and inform the Construction Manager of any potential for delays due to quality or production problems.

Inspection staff members are required to inspect all materials delivered to the worksite and to confirm that the materials meet the specified requirements. All incoming materials should have required documentation including certification that materials have been manufactured /processed in accordance with specified quality standards and passed all required inspections and tests. Technical data and certified test results should be submitted by the contractor. The inspectors will check all such documentation and forward it to the field office for filing. Storage and protection of all delivered materials shall be checked periodically to ensure that there is no deterioration in the materials prior to incorporation in the work.

Inspectors are expected to be knowledgeable in the work, be familiar with the contract plans, specifications and contract conditions, and experienced in the methods of installation and construction materials. They must be careful not to direct the Contractor in means, methods, techniques, sequences, or procedures of construction or to make recommendations. Any advice requested and offered must be qualified with the statement that the Contractor, alone, is responsible for the construction of the work.

The inspectors shall be familiar with the duties and responsibilities as stated in this manual and other construction contract documents.

8.2.3 Plant and Off-Site Material Inspections

DDOT, through its quality assurance/quality control (QA/QC) programs, will self-perform, or engage independent consultants and CM consultants to perform, inspections at fabricators' shops, suppliers' facilities and producers' plants. For example, DDOT will hire an approved structural steel inspection firm to perform shop inspections at fabricators' facilities. DDOT will continue to monitor product from approved concrete suppliers in accordance with DDOT's plant inspection and quality assurance programs. Off-site testing in pre-cast yards and fabrication plants will be performed by the CM teams, and sampling and testing of concrete, asphalt, and aggregate at producers' facilities will be performed by DDOT or independent consultants.

8.2.4 Testing

The Construction Manager and field staff shall schedule testing services to ensure that their resources are planned and available. To the fullest extent possible, an inspector should observe testing performed by the consultants and statutory agencies and document it on the daily report. Any test certificates

issued must be safeguarded and filed. Any hard copies of test results shall be scanned and uploaded in the document management system daily.

Particular attention should be given to testing work or materials which will shortly thereafter be covered or become otherwise inaccessible. Satisfactory testing results are required in order that follow-on work may proceed. The testing resources should be organized to be available as the work is installed and test results provided as soon as reasonably possible. Every effort should be made to cooperate with the Contractor.

Should the Contractor insist on covering work which has not been tested, the Contractor shall be informed, in writing by a Non-Compliance Notice (NCN), that such work has not been accepted, that no payment will be made for the work, that any costs associated with uncovering the work will be solely the responsibility of the Contractor, and that there will be no extension to the contract time as a result of uncovering untested work or work for which a test result was unsatisfactory.

Off-site testing may be conducted. The CM team shall require the Contractor to provide adequate notice for all testing requirements.

Test results for all off-site testing should be received at the site before material/equipment is incorporated in the work. If the Contractor elects to use/install material/equipment without test results being available, the Contractor shall be notified that it will be entirely at the Contractor's risk and responsibility for any consequent costs or delays.

All test results are to be distributed to all required parties upon receipt and all test reports are to be maintained on file. The Construction Manager or DDOT QA/QC team should be consulted with regard to matters arising out of unsatisfactory test results.

8.2.5 Coordination with Statutory Authorities

The Construction Manager should be aware of other statutory authorities' inspection and testing requirements and must verify that the Contractor has coordinated with the proper statutory agency to inspect the work.

8.2.6 Survey Control

The CM team must ensure that all survey reference information is included in the design plan. This information includes all lines, grades and measurements for grading and paving, and baseline and

benchmarks for bridges and structures. The Contractor is responsible for laying out the survey required for construction. Basic survey controls are to be protected.

There should be frequent checks on layout to confirm work is accurately installed. The CM team should do regular spot checks of measurements and elevations including pile locations, foundation elevations, etc.

The CM team shall:

- Verify the accuracy of the Contractor's field measurements, baselines, and benchmarks as set forth in the construction contract for the project.
- Check base line points and benchmarks for surveys when directed by the Project Engineer. Report all discrepancies in the established baselines and benchmarks to the Project Engineer and recommend solutions. Provide other surveying services as requested by the DDOT team.
- Coordinate with the Contractor with respect to the measurements to be taken, as required by the construction contract, for the purpose of determining excavation and fill quantities. Verify the accuracy of the Contractor's measurements prior to the Contractor's proceeding with such work.
- Verify that the Contractor makes all field measurements of the existing construction, as required by the construction contract, which may affect the construction, e.g., elevations of existing bridge girders and beams, and location of existing bearing center lines. Verify the accuracy of the Contractor's measurements.
- Verify and monitor such controls and layout for conformance with the construction contract requirements after the Contractor has established its controls and detailed layouts. Depending upon the construction contract details, such verification shall include all abutments, piers, walls, footings, pile locations, sewers, water lines, superstructures, beam seats at supports, anchor bolt locations, bents, curbs, gutters, roadways or any other construction feature requiring layout. Such verification shall be performed prior to construction and in a manner such that there will be no delay to the Contractor. Report all discrepancies found to DDOT and the Project Engineer and recommend action for resolution to the Contractor.

8.2.7 Non-Conforming Work

The contract records shall indicate that non-conforming work was brought to the attention of the Contractor; that corrective action was taken by the Contractor to bring the work into conformance; that

the corrective action was, where required, pre-approved by the Construction Manager; that the corrective action was observed and the finished work was re-inspected, re-tested or re-assessed and found to be in conformance.

In general, minor non-conformances can be verbally notified to the Contractor and correction observed and confirmed. Where verbal notification does not produce correction within a short period, written notification of non-conformance shall be issued. Where there is a major nonconformance, a written notification to the Contractor shall be issued by the Construction Manager. Where a test result does not meet specified minimum requirements, a written notification of non-conformance for the work represented by the test result shall be issued.

Notification of non-conforming work shall be by means of a Non-Conformance Report (NCR) see Appendix. The NCR shall identify the non-conforming work and, if re-work is extensive or complicated or time-consuming, shall require the Contractor to submit a proposal for corrective action. The corrective action proposal shall be reviewed by the CM team and, if acceptable, the Contractor will be notified.

A Non-Conformance Report addresses work that deviates from the contract documents or fails to meet the approved Quality Management System standards for the project. All NCRs shall be logged and tracked. The status of NCRs shall be discussed at progress meetings. The intent is that non-conforming work be corrected as quickly as possible. There may be a tendency, with some Contractors, to put off correcting defective work until late in the project in the hope that the work will be accepted as is in order to maintain schedule. The Construction Manager should not allow corrective action to be delayed and should refuse to approve for payment the maximum amount of work associated with the NCR. Any direct costs incurred by the District caused by non-conforming work should be the responsibility of the contractor.

When the results of acceptance or assurance tests meet all the requirements of the Contract Documents, the work can be accepted. When the test results fail in any regard, that material or portion of work is rejected. There will be circumstances, however, when the CM team believe that the test results indicate a minor variation and acceptance is still warranted. If this occurs the CM team shall request the approval from the DDOT QA/QC Branch.

INSTRUCTIONS:

As prudent, the Construction Manager will use Non-Conformance Reports (NCRs) to identify items that could potentially affect the permanent work and are significant enough to require a formal resolution process. An example of a situation where an NCR may apply would be a concrete cylinder break that did not meet Contract Documents. This would warrant an NCR because the result indicates that there is a potential effect on the permanent work, and it is significant enough to require a formal resolution process. Examples of items that would not be covered by an NCR are a failing backfill test that the Contractor proceeded to recompact promptly, or a load of concrete that is rejected before it is placed.

Only the Construction Manager or his designee is authorized to generate an NCR. Each NCR is logged, sequentially numbered, and dated. It will have a description of the issue, the required action, and the description and date of resolution. The CM team will include the NCR log in the progress meeting agendas so that acceptable measures are taken to rectify the non-conforming portions of the work.

The CM team shall immediately submit to the DDOT Project Engineer and DDOT QA/QC Branch under IPMD the test results for a material which the CM team wishes to employ but are not otherwise fully conforming with the Contract Documents.

The DDOT Project Engineer will review the tests and either authorize or deny the use of those materials or workmanship. The DDOT team may authorize acceptance only if the variations are considered minor and the material or workmanship substantially conforms to the Contract Documents, and the material or workmanship would not adversely affect the desired project result.

When certain materials are used which do not substantially meet the provisions of the Contract Documents, the DDOT team shall document reasons supporting their use in the project record and make a recommendation to the Chief Engineer for acceptance of this material. It is anticipated there will be very few, if any, incidents of this nature as non-conforming materials are to be rejected.

The DDOT QA/QC Branch is required to forward copies of the test reports to the appropriate DDOT team for record files. These reports will usually contain identification as to the type of test report (acceptance test – source approval; acceptance test – process control; certification acceptance; assurance tests; referee or record test) and a statement as to the conformance with applicable specifications. In the event the test does not conform to the Contract Documents, the DDOT Material Engineer will make a recommendation as to acceptance or rejection. Actual acceptance or rejection is the responsibility of the Construction Manager. The CM team shall seek FHWA concurrence when non-conforming items have been incorporated in federal aid projects.

8.2.8 Quality Promotion

The Construction Manager and field staff should work with Contractor's staff to promote a team approach to quality assurance and control, to inspection and testing, everyone working together towards a common goal of quality construction. Everyone should be made aware of the costs of poor quality, of the time and cost of re-work, of the negative effects on morale of having to remove work that one has worked hard to install. The inspection/testing program should be only one element in a total quality program designed to assist all participants in achieving superior levels of quality.

8.3 SCHEDULE CONTROL

The successful delivery of a construction project will depend, to a large degree, on the quality of the planning provided at the beginning of the project and the diligent monitoring of the construction plan during construction. The CM team shall:

- Perform a detailed review of all activities, sequences, durations, and the critical path of the baseline schedule that will be submitted by the Contractor to DDOT for acceptance or rejection. Provide detailed comments and evaluation of the Contractor's proposed schedule submittal to DDOT.
- Monitor the activities of the Contractor to ensure that the construction work is performed in accordance with a DDOT-approved construction schedule (Schedule) and to ensure that DDOT tasks and activities comply with the Schedule.
- Regularly review and comment on the updated Schedule from the Contractor as required by the construction contract. The Schedule shall include activity sequences and durations, allocation of labor and materials, review and processing of shop drawings and other submittals, and procurement and delivery of materials and products including those with long lead times. The Schedule shall include the activities of the Contractor and the District, including DDOT review times.
- Receive the Contractor's data files and monitor the schedule using Primavera P6 software.
- Recommend corrective action to DDOT if, at any time, it appears that the Schedule will not be met
- Assess delays attributable to the Contractor and assess delays attributable to DDOT.

8.3.1 Construction Contract Schedule

The Critical Path Method (CPM) shall be used in developing the construction schedule. There must be adequate time allowed for the Contractor to prepare a realistic CPM schedule. At the same time, it is important to know, as soon as possible, those activities that define the Critical Path so the CM team can plan their supervision. Prior to the commencement of any construction activities, the Contractor shall be required to submit a CPM construction schedule in compliance with the version of the DDOT Standard Specifications for Highways and Structures included in the contract, unless waived by DDOT.

A second important consideration is for procurement activities, including submittal and approval dates of shop and working drawings and samples, to be included on the construction schedule. To this end, the early preparation and agreement of the required submittals list is important. The CM team should require all procurement activities to be shown on the schedule including supporting information for procurement durations. Care should be given to major equipment or material purchases where delays could severely impact the schedule.

The CPM schedule activities should show interrelation with sequential and parallel activities. The schedule must clearly indicate the completion date and any contractual milestone dates. The Construction Manager and field staff shall review the schedule to establish that there is a logical sequence of activities, that the durations for activities are sensible and achievable based on the known or reasonably expected resources available, and that the format meets all contractual requirements. The review is not expected to comment on means, methods, techniques or practices except where such are required or prohibited by contract or where they deviate from good and usual construction practices.

The Construction Manager and field staff should be available to meet with the Contractor and offer technical advice on the development of the construction schedule. The CM staff's comments should be limited to potential areas of concern with logic that could affect the completion of activities. The Contractor is responsible for the development and submittal of the construction schedule. While it is beneficial to all parties if the CM staff can work with the Contractor, any comments or advice do not relieve the Contractor of its responsibility to comply with the DDOT requirements.

It is essential that the CPM construction schedule be developed and completed early and that no delay to submittal and acceptance of the schedule be permitted beyond the contractually mandated periods. The CPM construction schedule approval shall be the condition for the issuance of the Notice to Proceed

(NTP). The Construction Manager should give full attention to the CPM schedule. The establishment of a sensible, achievable schedule is critical to the installation of the work and the avoidance of delay claims.

8.3.2 Short-Term Schedules

Although the construction schedule is the master plan for the completion of the work, the day-to-day installation of the work by the Contractor's field foremen and superintendents is usually managed by means of short-term schedules extracted from the overall construction schedule. These short-term schedules normally cover periods from one to four weeks, with two-week lookahead schedules being usual.

Since these short-term schedules are normally the Contractor's primary guide to day-to-day construction activities, it is important that the CM field staff have these schedules for monitoring of the work.

The CM team should insist upon short-term schedules containing specific, measurable activities. A requirement for specificity will encourage accountability by demanding that careful thought be given to planning the two-week schedule. Review of the proposed short-term schedule at the progress meetings will determine if the resources are sufficient and available to meet the schedule. This will include Contractor resources and support resources such as CM supervision, information, and approvals.

Attention given to the detail of short-term schedules will greatly increase the planning of the work and the efficiency of implementation. It will benefit all parties, including the Contractor. It will usually lead to increased willingness to participate by the Contractor and enhancement of the team approach to the work, which in turn will lead to greater likelihood of successful completion. Achieving this cohesion will usually require considerable effort on the part of the CM team in the early stages of the contract and regular reinforcement throughout the project life.

Regular submission of the short-term schedules and the regular marking up of the schedules with the actual achievement will provide a detailed history of the planned versus actual installation of the work. Such a record can be invaluable in the resolution of claims for delay and disruption. These records usually indicate clearly where actual installation differed from planned installation and the reasons for it. The causes for the delay can usually be clearly discerned as government, Contractor, or third-party responsibility, allowing for quick resolution of problems.

8.3.3 Schedule Updates and Revisions

The CPM schedule is a living document and must be continually assessed against actual events to determine its continuing viability. The CM team should advise the Contractor early that contractual schedule updates will be required and reviewed.

The schedule review by the Contractor and the CM field staff should carefully consider the work installed during the period compared to the planned installation. Reasons for differences should be examined and the impact on following work assessed. Where targets were exceeded by small amounts, the logic is best left unchanged, and the additional float maintained to cope with possible obstacles in the following period. Similarly, where targets were missed by small margins, the additional work in the following period can probably be absorbed without changing durations.

The CM staff should review and examine the schedule for changes in logic, sequences, means and methods, resource allocation and other steps to recover, maintain, or accelerate the schedule.

The primary goal is maintenance of the contract completion date without additional cost to either DDOT or the Contractor. Schedule updates and schedule revisions are to be maintained on file together with documented review comments and recommendations. The Contractor should be clearly informed that delay in submission of the schedule update may result in a withholding of payment.

8.3.4 Schedule Communications and Meetings

Early establishment of the reporting relationships between the Contractor's staff and the CM staff is important for the successful planning of the work. Meetings shall be established for the earliest possible development of the preliminary and overall project schedules. The CM staff should be prepared to meet as frequently as necessary with the Contractor's staff to expedite the provision of a project schedule.

Regular schedule update meetings shall be established and may be incorporated into the normal progress meetings. These meetings should be attended by the CM team, DDOT team, the Contractor's Superintendent, Contractor's field superintendents and superintendents of major subcontractors and senior CM field staff. When needed, other District representatives should be invited as well as representatives from utilities and government agencies as their input and cooperation is essential to maintaining the schedule.

The schedule update meetings are intended to be practical, cooperative working sessions to determine the best possible plan for the on-going completion of the work. The purpose of the meeting is to

determine the most efficient and effective way forward based on the construction knowledge and expertise of all parties present, working in a supportive and cooperative team environment. The CM team should give special attention to developing and maintaining this team attitude at the schedule update meetings and to persuading the Contractor to bring the best field expertise to the meetings.

8.3.5 Procurement Control

Procurement control is normally the responsibility of the Contractor. However, the CM team should be aware that untimely procurement of critical items would delay the completion of the project. Thus, the CM team should exercise some monitoring over critical items. The CM team should request the contractor to provide a critical list of materials needed (for example, anchor bolts, street pavers, end dams, architectural finishes, etc.) and when delivery is scheduled. Where shop drawings and/or samples are required, the delivery times should include appropriate review time. The CM team should monitor this list, delivery schedule, and the return time for any reviews at each progress meeting.

Procurement of construction materials is normally the responsibility of the Contractor. However, there are occasions where the Construction Manager should have some control in the procurement of materials that are critical to the project schedule if this can be supported by the contract. In certain fast track project scenarios, DDOT may decide to procure long lead items or other critical equipment in advance of the construction contract, for later installation by the Contractor.

There are other occasions where there are substantial cost savings for DDOT to bulk purchase certain materials which are stored appropriately and then issued to the Contractor after the contract has been awarded.

Irrespective of who is responsible for the procurement of critical materials, the CM staff must understand the critical path(s) of the construction schedule, identify construction materials which are critical to the schedule either due to the construction sequence, or are otherwise long-lead items, develop a list of these items and receive concurrence from the Contractor for this list. It then becomes the Contractor's responsibility to tie the material procurement with the CPM schedule, as well as depict it in the schedule to serve as advance notification for all those who would be involved in material submittal reviews and acceptance.

8.4 COST CONTROL

The responsibility for controlling and recording the flow of funds for the construction of the work and for managing changes to the work that affect the cost of the project must be achieved by development

and maintenance of clear, accurate, sufficient document records that detail the flow of funds and the contractual transactions controlling that flow. The document record must be available for audit at any time during and after the project and must be maintained neatly, current and accessible.

8.4.1 Quantity Tracking

Inspection staff is responsible for daily quantity tracking with assistance from the Field Engineer or Resident Engineer (RE) when required. Quantities should be measured and recorded by the inspection staff as work is completed, including the on-site receipt of weight tickets and placement verification for items measured by weight for payment. Quantities for items measured by weight (weight tickets) must be verified, checked, and documented. The hard copies of weight tickets received on site and others shall be daily scanned and uploaded in the document management system by the CM team for accessibility to documents at any given time.

Inspection staff should use measurement methods consistent with sound engineering practice. Inspection staff shall submit quantities to the Field Engineer or RE. The RE should determine who is responsible for entering quantities into the DDOT's FieldBook© database before beginning work. No payment is to be made to the Contractor for work performed before receipt of all required submittals, certifications, or acceptable test reports required for acceptance.

The RE must notify the CA when any item quantity is expected to, or may potentially, vary significantly from the estimated quantity listed in the Engineer's Estimate for the project.

Quantities of work performed, item comments, placement comments, and estimated quantities for payment are required to be entered into FieldBook©. Item comments include general comments related to the item such as work location, subcontractor ID, or conversations or observations, but are not related to placement.

Placement comment entries in FieldBook© are used to document a placed quantity and generally include supporting notes, measurements, and calculations. When it is impractical to include this information in the placement comment, the placement comment must include reference to any drawings or sketches, supporting notes, measurements, and calculations that are located elsewhere. Quantities shall be tracked and entered into FieldBook© daily.

The three basic methods of measuring contract items for payment are described below:

8.4.1.1 Plan Quantity

A plan quantity is the accepted estimated quantity in the bid proposal and is the final quantity for which payment will be made unless the RE revises the plan dimensions through an approved change order. Although verification of the work is completed is necessary, no detailed measurement is required. If the RE revises or adjusts the dimensions of a work item that is identified as a plan quantity, a change order is required. Plan quantity items cannot overrun without an approved change order. The Contractor may also initiate a change to plan quantity items if they discover an error in the plan quantity. Before proceeding with any adjustment to a "plan quantity", the RE needs to carefully review the contract specifications and plans for the payment for the item of work, as the contract requirements may establish differing thresholds for variations in quantities before any adjustment can be considered. The Contractor is responsible for providing all plots, computations, and supporting documentation necessary to substantiate the plan quantity revision and allow verification by the RE.

8.4.1.2 Lump Sum

The Department measures the complete structure or structural unit, signal or lighting system, or other items of work specified in the bid proposal to be measured by lump sum to include all necessary work, fittings, and accessories for a complete unit or system. Although verification of the completed work is necessary, no detailed re-measurement is required. Lump sum payment is considered full compensation to the Contractor for all resources necessary to complete the work. If adjustment to the lump sum payment amount is determined necessary by the RE, a change order must be processed to either create a new item with the new lump sum amount or create a new item which makes up and explains the difference.

Progress payments for lump sum items in FieldBook© must have an explanation as to the estimated percent complete. When the work is complete, the final FieldBook© quantity must be "one".

8.4.1.3 As-Constructed Quantity (Unit Measurement)

An as-constructed quantity is based on unit measurement such as length, area, volume, or weight. Actual work completed is verified, measured, computed, and paid for. The RE should keep track of all quantities for budget monitoring purposes.

For as-constructed quantities, placement comment entries in FieldBook© must include locations, measured dimensions describing measurement methods, and calculations. In the case of stationing

references, indicate whether the stationing shown is approximate. All calculations, including unit conversions, should be included. Unit quantities are entered into FieldBook© with three decimal places.

8.4.2 Progress Payments

Most contracts stipulate that the work will be paid for at regular intervals, usually monthly, during construction. The contract will stipulate the period for payment; the timing of submission for payment; the required documentation and amount of retainage. The Construction Manager and the Contractor must agree on a quantity cutoff date for invoicing purposes. The essential requirements are that DDOT only pays for acceptable work installed; that the amount remaining to be paid, including retainage, is sufficient to complete the work in the event of default by or termination of the Contractor; and those contractual requirements necessary for payment are fulfilled. All payments are subject to the provisions of DC Law 9-81.

Material quantities are recorded in FieldManager© through FieldBook© for processing interim payments to the Contractor. The Department's construction management staff is expected to be thoroughly familiar with this AASHTO software, as it is vital for the field administration of contracts. It is further expected that input into FieldBook would be done daily by the inspectors for uploading into FieldManager by the Construction Manager or other designated field staff. The daily record includes an account of labor and equipment on site, (permanent and temporary) materials installed and received on site, materials at-hand, deficient materials, duration(s) of work, name of the prime or sub-contractor working and other pertinent information necessary to administer the contract

Creating a pay estimate is straightforward in FieldManager. The FieldManager sums up all material quantities and stockpile postings recorded in the inspector's daily reports to create the data necessary to process monthly payments to the contractors.

The CM team shall:

- Accurately measure and record all quantities of pay items that are to be paid under the project construction contract documents.
- Observe the progress of construction to determine whether construction has progressed to the points or percentages of completion claimed in Contractor's requests for payment to DDOT.
- Maintain detailed accounting records for construction work subject to unit cost billing, work billed in whole or in part on the basis of Contractor's actual costs of labor and materials, and

other construction work reasonably requiring accounting records for the purposes of DDOT's review and payment.

- Review Contractor's requests for payment and make recommendations to DDOT as to non-payment, or payment in whole or in part.
- To the best of the CM team's knowledge, information, and belief, for construction work, attest that the construction work has progressed to the point indicated in the recommendation, and that the quality of the construction work is in accordance with the construction contract. The foregoing representations are subject to:
  - An evaluation of the work for conformance with the contract documents upon substantial completion and final completion.
  - Results of subsequent tests and inspections.
  - Correction of minor deviations from the construction contract prior to completion.
  - Specific qualifications expressed by the CM team.

8.4.2.1 Method of Payment

Payment for construction may be by unit price, lump sum, or a combination of these. The contract documents will stipulate the method of payment.

Lump sum payments are paid upon completion of specific portions of the work. The contract lump sum is usually broken down into several stage payments, the amounts for each stage being as bid or as approved by DDOT, per approved schedule of values.

Unit price contracts include a detailed bill of quantities, each item of which is priced by the bidder. The total of all the unit prices is the total contract bid. Payment is made against the actual quantities installed and the final total may or may not be the same as the original total bid. The CM team shall continuously monitor the installed quantities. When installed quantities are estimated to be more than the original total bid, the CM team shall inform CA for a need for a contract modification. The CM team shall not pay the Contractor more than the authorized quantity until a modification is executed to increase the authorized quantity.

8.4.2.2 Method of Measurement

Interim payments on a lump sum contract require a breakdown of the lump sum. This billing breakdown, usually referred to as a schedule of values, should give a detailed list of the components of the work with a cost assigned to each component. Many lump sum items can be quantified, such as foundations. The Construction Manager should insist that the schedule of values sufficiently breaks

down the lump sum so that estimation of interim payments is largely a mathematical exercise. Progress payments should not rely on extensive subjective estimates of completion of large sections of the work. It may be a simple matter for a Construction Manager and Contractor's Project Manager to look at an element of work and agree that it is 20%, 40%, 60%, or some other percent complete. It is not such a simple matter to maintain an auditable document trail to justify the estimates of completion.

Unit price contracts are usually the easiest for preparing progress payments. Work installed must be measured or calculated daily, recorded on the FieldBook© for uploading to FieldManager. Price adjustments for reductions or additions of unit priced quantities shall be made per contract specifications and documented by a contingency allocation or change order. The CM team must constantly be aware of trends for quantity overruns of an item. The CM team shall review monthly data to recognize these trends and take positive action to mitigate or obtain additional funding from the contracting office.

Many unit price contracts include lump sum items. These may include general conditions, mobilization, temporary field offices, and other items. Where these lump sums are large and extend over several pay periods, the CM team should require a breakdown of these lump sums in the same manner as a lump sum contract.

In preparing the monthly pay estimates, the typical steps the CM should follow include:

- Step 1 - Review pay quantities for the month with contractor.
- Step 2 - Enter pay quantities into FieldBook©.
- Step 3 - Download pay quantities from FieldBook to FieldManager© System at DDOT office.
- Step 4 - Review copy of contractor's partial payment submitted to DDOT for payment with CA or designee.
- Step 5 - Review copy of partial payment generated by DDOT FieldManager© System with CA or designee.
- Step 6 - After final review of both FieldManager© partial payment and Contractor's partial payment, CA or designee to submit for payment with FieldManager© copy to DDOT for processing.

8.4.2.3 Prompt Payment

Section 109.06, "Payment to Subcontractors and Suppliers Certificate," of the DDOT Standard Specifications includes the Department's prompt payment requirements. The Contractor shall submit to

the CO certification that the Contractor has made and will make timely payments to its subcontractors and suppliers no later than thirty (30) calendar days after receiving payment from the Department. Certification shall be made on the form prescribed and submitted with the progress payment invoice. The CM team shall confirm that the subcontractors were paid for the payment received previous invoices before processing the current invoice.

8.4.3 Change Orders

During most construction projects, conditions or circumstances may arise that will cause or create a change to the contract. The construction contract documents will stipulate the conditions or circumstances that constitute changed conditions and the procedure for amending the contract to incorporate the changed condition.

Assessment of potential changes and the resolution and processing of change requests requires contract skills, tact, diplomacy, and a thorough knowledge of the site and contract conditions. The CM staff must be knowledgeable of the contract terms regarding changes and move swiftly to institute the procedures as soon as a potential for change becomes apparent.

The CM team shall review all notifications of change from the Contractor and shall provide recommendations to the CA and CO. If current work is affected by the situation, the CM staff will monitor all labor, equipment and materials involved and any delays incurred. In certain circumstances, for safety, for maintenance of schedule or to avoid major costs, it may be necessary for work on the change to proceed prior to agreement on costs and processing of the change order. The CM team should obtain approval for work to proceed from the DDOT Team Leader and the CO and notify the Contractor and maintain time and material records.

A change order may involve an addition, deletion or modification of the contract work. A change may be due to a design error or omission, change in the design, or by differing site conditions or situations arising that were not contemplated in the contract, could not have been reasonably foreseen by the Contractor, and will cause a change in the work. For a no cost change order due to a changed condition the CM team may authorize work to proceed immediately with verbal approval from the Contracting Officer and follow up with a written change order. When the change requires additional money to be certified to the contract, work should not proceed except for the reasons above until the money is certified through OCP.

The Contractor is required by the DDOT Standard Specifications to notify the CO of changed site conditions or situations in writing. The CM team and field staff should be alert to field conditions to anticipate potential conditions for change. The CM team shall notify the EOR of the potential or actual changed conditions or situations that may lead to change orders.

The CM team should request a detailed breakout of labor and material requirements and incidental costs and avoid lump sum cost responses from the contractor. The Contractor shall submit their estimate for the proposed change to the CA. Each change order must include a justification cover letter and all documentation verifying the amount and method of payment to be made for this work.

The CM team shall independently prepare an Independent Government Estimate (IGE) and submit it to the CA. When the CA receives independently both estimates from the Contractor and CM team, a negotiation meeting is scheduled with the Contractor. In the negotiation meeting, the differences between the CM estimate and the Contractor's proposal are discussed and a final number is negotiated with the Contractor.

An agreement on costs and/or time may not be achieved between the CM and the Contractor. In these circumstances the Construction Manager shall forward the CM estimate and the Contractor proposal with recommendations. The CA and DDOT team leader will determine if there is a basis for accepting the Contractor's proposal and will advise the Contracting Officer in writing.

A change order may require an extension of contract time. If there is no time extension granted by change order, the CM team must assess liquidated damages if the contractor fails to meet the completion date.

For the Federal-aid projects, change orders and potential claims should be discussed with the FHWA DC Division Staff when they arise.

The CM team shall complete the following steps for the change order preparations:

- A scoping meeting with the Contractor for the potential change to ensure that both parties complete independent cost estimates for the same work activities.
- Independent cost estimates based on labor, material, and equipment breakdowns with allowable markups as outlined in the Standard Specifications for Highways and Structures, Section 103.01, Article 3 Changes.

- Negotiation meetings between the Contractor representatives and DDOT and the CM team representatives after completion of the independent cost estimates.
- Preparation of a change order package after completion of the negotiations.

The CM team shall focus and complete the following for a complete change order package:

- Detailed Scope of Work
- Independent Government Estimate
- Memorandum of Negotiation
- Justification Statement

Once these four items are completed, the rest of the change order package requires completion of standard forms as listed in Appendix.

8.4.4 Claims

A claim, in a broad legal context, generally includes making a demand for money or services and alleging a right thereto. A claim is usually referenced as a request by a Contractor or subcontractor for added compensation (money and/or time) for work performed outside the scope of the contract or for work performed within the scope of the contract but under conditions that were neither bid nor anticipated. Invariably, when a claim appears, every party involved in the project has played a role in its formation. A contractor or subcontractor should only submit a claim when they believe they will not receive compensation for something to which they believe they are entitled and have exhausted the available contract remedies. The DDOT Standard Specifications require the Contractor to notify DDOT when a potential claim is anticipated.

The online FHWA Contract Administration Manual also provides guidance for the handling of claims, including regulations that apply to FHWA funded projects.

8.4.4.1 Claims Avoidance

Claims avoidance procedures should have started early in the design process. Through constructability and biddability reviews, many errors, omissions, and ambiguities can be identified and corrected prior to bid. The more comprehensive and clear the bid documents are, the fewer the claims likely to be submitted by the Contractor.

The Construction Manager's first efforts at claims avoidance is total familiarity, by all the CM staff, with the plans, specifications, contract language and site conditions. An experienced eye will note areas where the potential for claims exists and contingency plans will be prepared.

The contract records are the second major defense against claims with particular reference to records of planned versus actual installation of the work. A large proportion of claims stem from schedule problems. It is not unusual for a Contractor to fall behind schedule in the early months of a project as the construction forces go through the learning curve and the teaming process. Later the progress will improve, and the schedule will be recovered, and the end-date achieved. However, the Contractor may often try to blame the initial delays on problems outside of Contractor control and are therefore compensable by the DC Government. A detailed record of when work was actually installed in relation to when it was scheduled to be installed and the reasons for the differences, where they exist, will often deter the Contractor from submitting a claim that cannot be sustained in face of the CM team's document record. The CM team's contract records should be factual and nonbiased.

Various clauses of the contract specifications allow for conditions which enable the Contractor to request additional money or time, provided adequate notification and backup are given. The CM team should recognize any situation of potential claim and, where possible, take steps to minimize impacts and ensure complete documentation of before and after conditions.

Whenever possible, visibly changed conditions or other conditions which could result in a claim by the Contractor should be photographed by the CM team as evidence for future use.

8.4.4.2 Identifying and Classifying a Claim

Early identification of potential claim scenarios will allow the team to document and minimize the impacts. The team should be familiar with types and causes of construction claims. Refer to Section 103.01 of the Standard Specifications for Highway and Structures for details.

8.4.4.3 Claim Procedures

At the Pre-Construction Conference, the Contractor should be reminded of the contract conditions regarding the submission and processing of claims. Requirements regarding timely notification shall be clearly addressed and the Contractor advised that no relaxation of the requirements would be permitted, as stated in Section 103.01 of the Standard Specifications for Highways and Structures. The CM team should request this notification be in writing with a detailed description of why the contractor

feels they are due additional compensation. The contractor is required to proceed with the work in question even though payment of such work is in question.

As soon as the potential for a claim is apparent, a separate file for that issue shall be opened. Alternatively, upon receipt of a notice to claim from the Contractor, a file for that claim shall be opened. The CM team shall acknowledge receipt of notice of intent of claim, in writing, without any commitment or even indication of the CM team's opinion regarding the claim, to the Contractor.

The contract language may stipulate the dispute resolution procedures to be adopted on the project. The CM team should be familiar with these procedures and be prepared to participate in the various processes. In absence of this procedure any claim received should be reviewed with the Contracting Officer. The Construction Manager shall assemble all documentary and other evidence relating to the claim, including correspondence, photos, reports, drawings, contract language and specifications, and prepare a summary report. This summary report shall be a factual analysis citing specific evidence that will support or refute the Contractor's position. The CM team may provide any alternative strategies that will mitigate the cost of the claim and include his recommendations. The CM team should present the claim to the CA and Contracting Officer along with a recommendation for settlement and request a final decision on payment. The CM team should notify the contractor of the final decision. If the decision involves an increase in time and/or money, the CM team should process a change order.

8.5 CIVIL RIGHTS

8.5.1 Equal Employment Opportunity (EEO)

The Equal Employment Opportunity (EEO) program assures that employment in connection with all proposed projects will be provided without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin (41 C.F.R. §60- 1.4 (b)). To assist in providing this assurance, the CM team is responsible for being familiar with FHWA 1273, working with the Equity and Inclusion Division to perform EEO interviews, and enforcing EEO policies that include commitments to provide a workplace free of harassment, intimidation, and coercion.

8.5.2 Labor Compliance (Reference FHWA 1273)

As part of the contract it is required that all labor regulations are followed. Requirements of the Contractor and Department regarding contract labor provisions are covered in the contract and referenced regulations. A working knowledge of these regulations is expected of Department personnel

to ensure Contractor compliance. The Department is responsible for enforcement of the contract labor provisions to the same extent as any other contract requirements. To ensure compliance, the CM team is responsible for working with the Davis-Bacon Division to perform labor interviews, bulletin board reviews, and reviewing certified payrolls to verify compliance with the Davis Bacon Act.

8.5.3 Labor and EEO Interviews (Federal-aid Projects only)

The CA or appropriate designee shall assist the DDOT Equity and Inclusion Division to conduct interviews at the beginning of the project. As each new subcontractor begins working on the site, employee interviews must be conducted. A random number of employees should be interviewed, and the CM should make certain that a representative from each craft is interviewed. It is important that the interviewee and the interviewer understand the information gathered during interviews is confidential. Only authorized staff has access to interview information. In order to ensure interview requirements are met, the CM team shall assist the DDOT Equity and Inclusion Division to track the number and frequency of interviews and compare that to project records to verify all subcontractors working have been interviewed in accordance with this requirement.

8.5.4 Harassment, Intimidation, and Coercion (HIC) Requirements (Federal-aid Projects only)

Federal regulations require that all contractor working on Federal-aid projects provide a workplace free of harassment, intimidation, and coercion, and that DDOT must ensure that they are in compliance with this regulation. The Contractor shall ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, shall assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities (41 CFR 60 4.3.7a). DDOT will ensure compliance by conducting Contractor employee interviews and asking the question; “have you been harassed, intimidated, or coerced at work?”

8.5.5 Required Notices and Posters - Bulletin Board (Federal-aid Projects only)

The Contractor is required to erect and maintain a project bulletin board displaying required notices and posters. The required notices and posters must be posted on the project site in a conspicuous place for

awareness by all interested persons. The CM team shall perform a review within the first two weeks after beginning work on the project to verify the Contractor's compliance with these requirements. Reviews shall then be conducted periodically throughout the duration of the project. If the bulletin board is missing required information, the Construction Manager must notify the Contractor immediately and follow up with another review.

8.5.6 Disadvantaged Business Enterprise (DBE) Program (Federal-aid Projects only)

All projects shall comply with the District's Disadvantaged Business Enterprises (DBE) program plan to provide DBEs with a full and equal opportunity to compete fairly in the performance of contracts financed with federal funds as indicated in 49 CFR, Part 26.

The CM team shall assist the DDOT Equity and Inclusion Division to provide the following DBE compliance services:

- Monitor the DBE commitment and attainments.
- Assist with change orders requests to include a DBE impact analysis.
- Track attainment progress against the construction contract established goal.
- Monitor prompt payment.
- Review of all DBE contracts for the required provisions.
- Perform Commercial Useful Functions (CUFs) for each DBE (See Appendix for the form.
- Provide DBE vetting services.
- Monitor commitment changes as per approved change orders.
- Maintain the DDOT On-Line Compliance Tool.
- Prepare DBE Reports.
- Maintain records for audits.
- Manage, monitor, and require documentary records of the Contractor's efforts to meet/exceed the goal and if not, documentation of good faith efforts throughout the construction period.
- Draft warning and non-compliance letters as applicable.
- Communicate with the DDOT DBE Program Manager and, if necessary, facilitate meetings communicate successes, challenges, opportunities for improvement, report on DBE matters as necessary to include DBE replacements, scope reduction and all modifications to the DBE Utilization Plan as necessary and in accordance with the requirements of **49 CFR, Part 26.53**
- Attend progress meetings.

- Create monthly reports.

The objective of the DBE program is to ensure no discrimination in the award and administration of federally funded projects and to create equal opportunities for all firms. The Department's DBE special provisions are included in the contract of each federally funded project.

The CM team must be thoroughly familiar with the DBE special provisions. These special provisions identify the project goal and the Contractor's DBE commitment. The Contractor's approved commitment becomes a contract specification and the minimum goal for contract performance. The CM team must be familiar with the approved commitment and understand what bid items are committed to what subcontractors, whether they are complete or partial services, and whether the commitment is race conscious or race neutral. The CM is responsible for monitoring the status of DBE commitments and verifies that they are fulfilled. As part of this monitoring, the Construction Manager or designated representative must complete at least one commercially useful function review for each DBE subcontractor using the form shown in Appendix. Any issues identified during the reviews must be immediately brought to the attention of the DDOT Equity and Inclusion Division. DBE commitments are composed of three parts: the subcontractor, the item, and the dollar amount. All three must be met to be in compliance with the Department's DBE special provisions. No DBE subcontractors may be substituted with another DBE or a non-DBE without submitting necessary documentation and prior approval by the DDOT Equity and Inclusion Division. The CM team is responsible for monitoring committed items and who is performing them. If committed items of work are being completed by the prime contractor or subcontractors other than the committed DBE, the CM team must notify the Contractor and the DDOT Equity and Inclusion Division immediately.

8.5.7 Small Business Enterprise (SBE)/Certified Business Enterprise (CBE) Program (Locally Funded Projects Only)

Pursuant to DC Code 2-218.46, all contracts over $250,000 must subcontract 35% of their total contract value with SBEs. DDOT and the Department of Small and Local Business Development (DSLBD) monitors the SBE spend and ensures that full compliance with the SBE law throughout the life of the contract is met.

The CM shall provide the following S/CBE compliance services and ensure full compliance with the SBE law throughout the life of the project:

- Monitor the SBE commitment and attainments.

  - Assist with change orders requests to include an SBE impact analysis.
- Track attainment progress against the construction contract established goal.
- Monitor prompt payment.
- Provide DBE vetting services.
- Monitor commitment changes as per approved change orders.
- Maintain the DDOT On-Line Compliance Tool.
- Collect and validate the various project reporting as required.
- Maintain records for audits.
- Draft warning and non-compliance letters as applicable.
- Communicate with the DDOT Equity and Inclusion Division/ Department of Small and Local Business Development (DSLBD) and, if necessary, facilitate meetings communicate successes, challenges, opportunities for improvement, reports on SBE matters as necessary to include SBE replacements, scope reduction and all modifications to the SBE Vendor Verification Form as necessary and in accordance with DSLBD requirements.
- Attend progress meetings.
- Create monthly/quarterly reports as required.

The goal of the SBE/CBE program is to increase participation of the local companies with the locally funded projects by the DC Government. SBEs are a CBE subcategory. Both SBEs and CBEs are registered companies with the DSLBD and receive preference in District Government contracting and procurement. The SBE/CBE preference or participation amounts are determined for the locally funded project by OCP and DSLBD.

The CM team must be thoroughly familiar with the SBE/CBE special provisions. These special provisions identify the project goal and the Contractor's SBE/CBE commitment. The Contractor's approved commitment becomes a contract specification and the minimum goal for contract performance. The Construction Manager and project staff must be familiar with the approved commitment and understand what bid items are committed to what subcontractors, whether they are complete or partial services, and whether the commitment is race conscious or race neutral. The CM team is responsible for monitoring the status of SBE/CBE commitments and verify they are fulfilled. The CM team shall work with OCP and DSLBD for the Contractor's compliance with the SBE/CBE contract requirements.

8.5.8 On-the-Job Training (OJT) Compliance (Federal-aid Projects only)

The Training Services Provisions (TSP)/Employee Training Requirements are provided as part of the project's Equal Employment Opportunity (EEO) affirmative action program in accordance with 23 CFR, Appendix B to Subpart A, Part 230.

All federal-aid projects must evaluate the feasibility of assigning a training goal. Training goals are determined by the DDOT Equity and Inclusion Division and are included in the contract Federal Project Plan Sheets Part XIV – Specific Equal Employment Opportunity Responsibilities. Contractors are required to meet training goals and must submit On-The-Job Training (OJT) Commitment to the CM team at the preconstruction conference. If a Contractor fails to meet the goal, fails to provide acceptable good faith efforts, or fails to get prior approval from the DDOT Equity and Inclusion Division, liquidated damages are assessed. Damages are equal to the sum of the base plus fringe multiplied by the number of hours for each classification that the hours were short of the OJT commitment amount. If the goal is exceeded, a maximum of two times the total training goal is eligible for reimbursement.

The CM team is responsible for monitoring training hours, apprentice certifications, and apprentice to journeyman ratios. If issues are identified or possible, the CM must notify the Contractor and the DDOT Equity and Inclusion Division immediately so appropriate action can be taken.

The CM team shall assist the DDOT Equity and Inclusion Division to provide the following OJT Program compliance services:

- Manage the TSP goal for the project as determined per the contract documents.
- Monitor the implementation of the OJT Program.
- Assist to develop a selection-based training program to be fulfilled by all contractors on the project.
- Assist with the recruitment efforts and submittal of required OJT commitments to DDOT as required for approval.
- Review, monitor, and interview OJT participants.
- Conduct and manage site visits and reporting.
- Monitor OJT's progression, responsibilities, and hours.
- Conduct OJT participants' compensation reviews in accordance to the pay wage scale/wage determination.

- Draft warning and non-compliance letters as applicable.
- Assist contractors with recruitment efforts of trainees using DDOT, OJT Community-Based Organization List.
- Maintain individual OJT participant files, site visit reports and participant monitor forms for review and audit.
- Coordinate and/or assist with orientation activities for new OJT participants.
- Communicate with the DDOT OJT Program Manager and, if necessary, facilitate meeting with participants' community-based organization advisors as to their training progress, successes, challenges, opportunities for improvement, or separation.
- Attend progress meetings.
- Create monthly reports.

8.5.9 Project Labor Agreements (PLA)

If the project has a Project Labor Agreement (PLA), construction management services provided during the construction phase of a project shall include all services to assist the DDOT with the execution of the document and implementation of the program by providing all services required to fully execute, manage and maintain workforce and labor requirements. If it is required by the construction contract, the Construction Manager shall provide the following services:

- Assist Contractor's hiring efforts in coordination with CHOICE.
- Assist in the facilitation of monitoring the labor requirements that will produce a workforce of skilled trades and qualified workers to fill many of the employment needs of the project.
- Assist to review the work plan structure that should include collaboration with the DDOT Equity and Inclusion Division and CHOICE to structure a pre-apprenticeship training program for various trades. This effort shall meet the pre-apprenticeship training program requirements consistent with the 23 CFR Part 230 Appendix B to Subpart A Training Special Provisions.
- Attend the recruiting events that shall attract local residents and that shall promote the principal that local residents should participate in and benefit from the capital investments within the neighborhoods surrounding the project.
- Monitor all workshop and training offerings of CHOICE to ensure that minorities, women and disadvantaged individuals in the local area are afforded equal opportunities.
- Assist to design a data collection protocol.
- Provide reporting as required.

8.5.10 First Source Program

For more than 30 years, the First Source Program has been an important part of the District of Columbia's strategy to reduce unemployment in the city. Pursuant to DC Code §2-219.01 *et seq*., the First Source Law requires all beneficiaries of contractual agreements totaling $300,000 or more are required to enter into a First Source Employment Agreement with the Department of Employment Services.

Construction management services provided during the construction phase of a project shall include all services to assist the DDOT with the execution of the First Source Agreement(s) and all services required to fully execute, manage and maintain First Source Program.

- Monitor Contractor's effort to meet the First Source Requirements.
- Assist with monitoring the First Source requirements.
- Review First Source project reporting.

8.6 CERTIFIED PAYROLLS AND DAVIS-BACON ACT (FEDERAL-AID PROJECTS ONLY)

The DDOT Davis-Bacon Compliance Division (DBCD) determines when the Davis-Bacon Act applies to any construction project funded wholly or partially with federal funds and specifies minimum wage rates which laborers, operators, and mechanics must be paid. All contractors who work on the site must submit electronic certified payrolls in LCPtracker. Payrolls must be submitted weekly and within seven days of the previous week ending date. The CM team shall be responsible to work with the Davis-Bacon Division for reviewing submitted payrolls for errors and omissions, which include payment of unsatisfactory wage rates for the respective worker classification, improper worker classification, payment of apprentice wage rates, improper reporting of exceptions, and lack of overtime wage rates. The Contractor is responsible for ensuring all subcontractors submit payrolls within the time required. However, the CM team still shall be responsible to work with the Davis-Bacon Compliance Division to review subcontractors' payrolls.

It shall be mandatory upon each project and upon any subcontractor, to pay not less than the specified rates to all workers, OJT personnel, and apprentices employed by them in the execution of the contract. DDOT uses the LCP Tracker to monitor certified payroll reporting.

Construction Management services provided during the construction phase of a project shall include the following services to assist the DDOT Davis-Bacon Compliance Division:

- Validate certified payroll reporting and data uploading to LCPtracker by the Contractor.
- Document any anomalies.
- Assist to perform Labor Standard Form Interviews on the site:
  - To ensure that workers are being paid correctly.
  - To check that Davis-Bacon Posters & Wage Decisions are posted and updated.
  - To observe the work performed.
- Create monthly reports.

8.7 RELATIONS WITH COOPERATING AND OTHER AGENCIES

As soon as possible after assignment to the project, the CM team shall become acquainted with the local agencies, federal agencies (Forest Service, National Park Service, Fish and Wildlife Service, United States Coast Guard, etc.) and/or other interested officials, and discuss phases of the work pertinent to them.

It should be emphasized to these officials that contact with the Contractor on contract issues should be exclusively through the CM team. However, this should not preclude them from dealing directly with the Contractor on non-contract issues, such as overweight permits, pollution regulations, speed enforcement, and similar matters.

Local officials should also be advised of limitations in the CM team's ability to add or change contract work, and that such requests should be in writing and will have to be cleared by all appropriate officials.

These issues should be discussed at the preconstruction conference so that the Contractor understands the relationship involved.

8.7.1 National Park Service

Under normal conditions, the National Park Service (NPS) is represented on the project by a designated liaison from a local NPS office or a person designated in the project agreement. However, the CM shall also develop a good working relationship with the park superintendent, local park rangers, and maintenance personnel.

The NPS requirements are listed clearly in the special use permits. The CM team shall be familiar with the permit requirements. NPS requests or instructions are to be coordinated through the designated

NPS liaison. If conflicting instructions or changes become a problem, the DDOT team leader should be advised so that coordination above the project level can be improved.

8.7.2 Other Federal Cooperating Agencies

Whenever a construction project is undertaken for, or involving one of the federal agencies, the DDOT team lead will make the CM team aware of all necessary administrative information regarding DDOT's obligations to the agency and furnish copies to the CM team as appropriate. This documentation will usually include a Memorandum of Agreement (MOA) for the project.

8.7.3 Regulatory Agencies

Several federal and DC agencies have regulatory responsibilities that might result in their coming onto the project and interacting with the Contractor or DDOT personnel/representatives. These agencies include those responsible for water pollution control, air pollution control, occupational safety, erosion control, storm water management, and protection of endangered species.

The involvement of these federal and DC regulatory agencies has increased in recent years as a result of changes in federal regulations requiring compliance with all local regulations. Most permits allow these agencies the right to inspect the project and to review project records at any reasonable time.

In addition to diary notation, the CA should be notified of all visits and any anticipated further action. When regulatory agencies take issue with DDOT's compliance with permit or project agreements, the DDOT team leader should be advised.

8.7.4 Discovery of Historic Objects and Artifacts

In the event a discovery of potential archaeological resources occurs, the Contractor shall immediately stop work and notify DDOT. The Contractor shall not resume work in the affected area until directed to do so by the CO. The CO will not direct the Contractor to resume work without the approval of the DC Historic Preservation Office.

8.8 UTILITIES AND RAILROADS

DDOT project representatives communicate with utility and rail companies (when a project is adjacent to an active rail ROW) during design phases. The representative contact information for utilities and rail companies is listed in the plans and/or specifications. The CM team shall check the contract documents for starting communication with the utility and rail companies. In case of missing contact information,

the CM team shall communicate with the respective representative listed on the updated utilities contact information document posted in Appendix.

There is an existing railroad network within the District of Columbia. DDOT does not have rights over the railroad property, unless a right-of-way easement exists, or the land ownership is transferred to DDOT. The CM shall follow the contract documents which may include a Memorandum of Agreement (MOA) related to the construction work adjacent to rail ROW.

The CM team shall be familiar with the DDOT Utility Manual. Coordination with the utility companies requires constant communication with the utility representatives. The CM team shall invite the affected utility representatives to the progress meetings for better communication. When a utility representative is not responding to the requests, the CM team shall inform the CA and DDOT team leader for help to get the cooperation of the utility representatives.

The CM team shall monitor and record the DC Water inspection hours.

For electrical feeding points, DDOT initiates Traffic Signal Feed (TSF)/ Street Light Feed (SLF) numbers with Pepco during design phase. When the construction starts, the CM team shall obtain the TSF and SLF numbers from DDOT. These numbers shall be provided to the Contractor as early as possible at the beginning of the project to prevent delays. Then, the Contractor submits these numbers to Pepco for cost letters/invoices. When the Contractors pay Pepco, Pepco connects the temporary or permanent facility to electrical grid for activation.

9.0 CONTRACT COMPLETION AND CLOSEOUT

Contract completion and closeout is a critical element in the life of a construction project. It is not unknown for a team to build excellent relationships during the construction process only to have that relationship destroyed by a poor closeout procedure. As the end of a project approaches, the Construction Manager must maintain project control and attention to detail. The Contractor will often transfer key people to other projects and leave insufficient resources to supervise closeout. As the workload diminishes, a reduction in project staff must be expected, and this is normal and proper. It is essential is that there be a clearly defined closeout plan with procedures in place to allow the remaining staff to close out a project efficiently and effectively.

The time to start to plan the closeout of the project begins at the commencement of the project. The CM team shall, in the early days, begin to develop the closeout plan and procedures. This will begin with a thorough knowledge of the contract requirements relating to closeout. This will be followed by the insistence that the project schedule prepared by the Contractor includes all closeout activities and that the activities have adequate durations and resources assigned and that the logic and interfaces will permit timely conclusion.

Other major elements include insisting that non-conforming work be corrected within a reasonable period after notification. This will avoid a buildup of punch list items at the end of the project. Closeout punch lists should only refer to work installed within the last few weeks.

As-built drawings should be checked monthly through the life of the project to ensure that they are marked up regularly and are current.

9.1 CLOSEOUT PROCEDURES

Each project will normally specify the closeout procedures in the construction contract. The CM team shall become thoroughly familiar with the closeout procedures at the beginning of the project and manage the project with closeout in mind. A closeout checklist (as shown in Appendix) should be used during planning and during the closeout process.

The CM team shall prepare a punch list during the finish stages of a contract to indicate all work or corrective action remaining before acceptance of the project. A copy should be submitted to the DDOT team leader, EOR, and FHWA DC Division office.

The Contractor shall submit to the CM team a notification of completion, which indicates that the contractor is ready for final inspection.

The CM team shall do a final inspection. The DDOT team leader should be encouraged to participate in the final inspection. The FHWA Area Engineer should be invited to participate in the final inspection. The Construction Manager shall also schedule a final inspection by a DOEE inspector for those projects with DOEE permits.

The CM team shall establish a specific date of substantial completion and prepare a letter to the contractor to be signed by the contracting office. The date of substantial completion is when the construction is sufficiently completed, in accordance with the contract documents, as modified by change orders agreed to by both parties, and the owner can occupy or use the project as intended. This date also starts any applicable warranties required of the Contractor. The date of warranty commencement for items on the punch list will be the date of final payment unless otherwise agreed. The Construction Manager shall draft for DDOT a substantial completion letter (as shown in Appendix) for sending to the FHWA DC Division office.

If a substantial completion date is after the contract completion date, the CM team must either apply liquidated damages or process a contract modification with justification for a time extension.

9.2 AS-BUILT DRAWINGS AND RECORD DRAWINGS

As-built, record, and utility drawings are an essential requirement of those who manage and maintain facilities. It is usually a requirement of the construction contract that the Contractor maintains these records and drawings and deliver them to the CM team in electronic version upon completion of the project.

The CM team shall take responsibility for ensuring that the complete as-built, record drawings are delivered to CA and receipt acknowledged in writing.

9.3 WARRANTIES, GUARANTEES, AND OPERATING START-UP

The technical specifications normally stipulate the requirements for warranties and guarantees. The CM team shall prepare a list of warranties and guarantees required by contract, including the format and periods of warranty/guarantee, as part of the closeout plan. Before project completion, the CM team shall begin coordinating with the Contractor the delivery of warranties/guarantees. The intent is to have all warranties/guarantees in hand, properly bound, at contract completion, ready to transmit to DDOT.

Warranties/guarantees usually become effective on the date of substantial completion. One notable exception is the guarantee period for Vegetation/Plantings/Grass/Sod/Stormwater LID. The guarantee in this case is effective beginning with planting Acceptance through the applicable period. This may not necessarily be the date of overall project Substantial Completion. The contract may allow commencement of the warranty/guarantee period from date of start-up of project elements put into early use, particularly if this is for the benefit of the District.

If there is no provision in the contract, or if the contract clearly states that warranty/guarantee periods will commence on the date of final completion, the Contractor should be required to submit plans for maintaining the warranty/guarantee period on equipment/systems put to early use. This shall include plans for maintenance and replacement, if required, of guaranteed vegetation. This matter should be raised early in the contract before the Contractor has made final purchases of equipment/systems. The Contractor will then have the opportunity to negotiate extended warranties/guarantees.

Upon receipt of warranties/guarantees, they should be carefully reviewed to confirm that the warranty/guarantee is in accordance with the contract specifications. Attention must be given to the fine print to ensure that there are no provisions that would limit or reduce the protection to the District as stipulated in the specifications. The CM team shall reject such warranties/guarantees and advise the Contractor that the final certificate and final payment cannot be released until all warranties/guarantees comply with the contract. All warranties shall be transmitted to the CA.

For projects with mechanical and electric equipment that requires start up by the Contractor, the CM team shall be familiar with those requirements and should notify the maintaining agent and CA of any training and testing to be supplied by the Contractor.

9.4 CONTRACTOR'S FINAL PAYMENT/FINAL ESTIMATE

Release of the Contractor's final payment/final estimate usually signifies the completion of the contract and the settlement of all outstanding issues. The construction contract will usually stipulate the requirements for release of final payment. The CM team shall be familiar with these requirements and incorporate them into the closeout plan. The Contractor should be thoroughly educated in these requirements well before contract completion and advised that all requirements for release of final payment must be met.

The final payment will take into account all changes to the contract. It is therefore important that change orders and claims be resolved as they arise and not dealt with late in the contract. Early

resolution of changes and claims will contribute to a swift and efficient preparation of the final payment/final estimate documentation.

Release of final payment cannot occur until all contract requirements have been met and the CM team must make certain that all requirements have been met in full accordance with the contract requirements. The ability to require Contractor compliance after release of final payment is severely diminished.

9.5 FINAL MEASUREMENT BY SURVEYORS

Final payment should include adjustments, if any are necessary, to reconcile progress payment quantities with final quantities established by survey or other means. Any discrepancies between the Contractor's survey data and the DDOT's surveying contractor must be reconciled. The CM team should coordinate the reconciliation.

9.6 CLOSEOUT DOCUMENTATION

For the CM team, there are two phases to closeout documentation. The first phase is the documentation required from the Contractor prior to release of final payment. The second phase is the delivery of the total document record for the project to appropriate DDOT representatives.

The contract conditions will specify the documentation required for closeout. This will usually include an affidavit of payment of payroll, materials, equipment, etc.; consent of surety to release of retained and final payment; lien waivers; warranties and guarantees; operation and maintenance manuals, spare parts and as-built drawings. The CM team shall utilize the closeout checklist shown in Appendix in coordinating the closeout.

The CM team shall institute procedures for documenting receipt of closeout documentation and marking off the checklist. The checklist should indicate any partial submittals, dates all submittals are required and when actually submitted by the Contractor. The CM team shall not recommend release of final payment until the checklist is complete.

The second phase of closeout documentation involves completeness of electronic copies of contract records in the DDOT document management system. The CM team shall scan all hard copies (such as delivery tickets) into electronic copies daily during construction period, and the CM team shall ensure that all construction records are uploaded in the DDOT document management system.

9.7 FHWA REQUIREMENTS FOR PROJECT CLOSEOUT

If a project is funded with federal-aid monies, FHWA has requirements for certain documentation so that they can help to close the project. The FHWA Area Engineer should participate in the final inspection because they must write a final inspection report. A copy of the FHWA Final Inspection Report will be sent to the DDOT Team Leader. In that report, the requirements for moving forward to a FHWA Final Acceptance Report will be clearly stated.

All projects require a material certificate documenting that all materials used in the project were tested and found to be satisfactory. In the case of a failing test, the materials certificate should discuss that either a passing retest was done or there is reasonable certainty that the material was improved/reworked and would have passed a retest.

Often FHWA will request a copy of all executed change orders at the time of final inspection so that their records are complete. This helps final acceptance.

10.0 APPENDIX

All appendix materials can be downloaded from the DDOT CM Manual website. Please click the list below to download the corresponding electronic file.

Change Order Forms

- Checklists
  - Change Order Checklist
  - No Cost Change Order Checklist
  - Article 3 Directive Checklist
- Change Order Package Checklist with Divider Sheets
- Program Action Request (PAR) Form
- Standard Operating Procedure (SOP) – FHWA 1365 Form
  - FHWA 1365 Form – Project Changes
- Independent Government Estimate (IGE) Worksheet Template (See Section 103.01 Article 3 D. Change Order Breakdown of DDOT Standard Specifications for Highways and Structures)

Construction Administration Documents

- DDOT Document Management System (DMS) Information
- DDOT SharePoint Folders and Contents
- DDOT Letterhead
- DDOT Memo Template
- Transmittal Letter
- Pre-construction Conference Agenda
- Logs (Submittals, RFIs, etc.)
- Engineer's Project Diary
- Inspector's Daily Report (IDR)
- Plantings Periodic Report (PPR)
- Meeting Minutes
- Sign-in Sheet
- DDOT Report Template
- Weekly Report Template
- Weekly Report Sample
- Non-Compliance Report (NCR)
- Substantial Completion Letter
- Utilities Contact List

Invoice Forms

- Invoice Forms for Construction Contracts

- Invoice Forms for Consulting Services

Project Closeout Forms/Checklists

- SOP – FHWA Federal-Aid Project (FAP) Closeout
    - Closeout Checklist for Project of Division Interest (PoDI) Projects
    - Closeout Checklist for State Assumed Projects
    - Final Acceptance Report Form for PoDI Projects
    - Final Acceptance Report Form for State Administered Projects
- SOP – Local Capital Closeout
    - Closeout Checklist for Local Capital Projects
    - Final Acceptance Report Form for Local Capital Projects

Civil Rights Forms

- DBE Utilization Form
- DBE Contractor Payment Form
- Commercially Useful Function (CUF) On-Site Review Form