

DISTRICT OF COLUMBIA

DEPARTMENT OF TRANSPORTATION



CONSTRUCTION MANAGEMENT MANUAL

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DISTRICT OF COLUMBIA

DEPARTMENT OF TRANSPORTATION



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INTRODUCTION

1. OVERVIEW

The District of Columbia Department of Transportation (DDOT) Office Manual for Construction Management (CM) presents DDOT's procedures and standards for managing and administering construction projects. The primary purpose of the manual is to establish standard operating procedures for DDOT's engineers, construction managers, consultants, and contractors in order to promote uniformity and efficiency. The construction management staff must coordinate with others who provide services that include planning, budgeting, pre-design services, design services, scheduling, bid and award services. The CM procedures written in this manual are primarily for DDOT projects. The use of CM practices provided in this Manual is beneficial to the overall success of DDOT's construction program.

2. CONSTRUCTION ENGINEERING INSPECTION

Construction engineering and inspection services provided during the construction phase of a project usually include monitoring of the construction work through inspection and testing, tracking progress against the construction schedule, checking and recommending interim and final payments, administrating changes, maintaining and filing records for audits, and providing documentary records that the project has been built in accordance with plans and specifications. The management of a project usually includes a Construction Manager (CM), and typically, a Project Engineer (PE) who is supported by inspectors. Depending upon the size of the project, it may be desirable to expand the staff to include secretarial/administrative staff, and office engineering staff.

Within DDOT, the Chief Engineer for the Infrastructure Project Management Administration (IPMA) or his/her designee is responsible for oversight and management of all phases of construction projects. The Chief Engineer is supported by two Deputy Chief Engineers. The District of Columbia is divided into eight (8) geographic Wards, with a Team Leader assigned to manage the construction projects within each Ward. The Construction Manager will receive direction and oversight from the Team Leader within the specific Ward in which that project resides.

FHWA 23 CFR regulations paragraph 635.105(b) includes the requirement that a responsible DDOT employee be the official government construction representative of all federally funded construction projects: "Although DDOT may employ a consultant to provide construction management services, DDOT shall provide a full-time employed engineer to be in charge of the project".

Organization charts presented in the manual show various layers of the administrative structure of IPMA's organization, normal and expanded duties of the staff members.

3. CONSTRUCTION PROJECT STAFF AND RESPONSIBILITIES

This Construction Management Manual describes the duties involved in the management of construction projects. It recognizes that for projects that require expanded service the CM will be supported by additional staff. The expanded staff may consist of Office Engineer, Administrative Assistant, Inspectors and others depending on the size and complexity of the project. The following job descriptions cover the normal range of duties of the PM, CM, Office Engineer, Administrative Assistant, and Construction Inspector. These job descriptions are not a complete

list of duties and responsibilities. However, all construction management staff should recognize that every project will be different to some degree and will require flexibility in the procedures and responsibilities in adapting them to a particular project. For typical projects, the CM and Construction Inspector are responsible for all duties described below where applicable and feasible.

Ward Team Leader

The Team Leader or his/her designee is the person that is responsible for the administration of construction projects within his/her assigned Ward. Within this capacity, the Ward Team Leader or his/her designee takes on the duties and responsibilities of the Project Manager (PM) at the ward level, and is responsible for the oversight and management of assigned projects. The Team Leader or his/her designee is responsible for securing funding, budgeting, planning, scheduling, preparing bid documents, and general oversight of the project from inception to completion.

Construction Manager (CM)

The CM is the primary contact between the Construction Contractor and the Team Leader. The CM may also be a consultant, and hold additional titles such as Project Engineer or Resident Engineer. However, a full-time DDOT employee must be assigned/responsible/in charge of project. The CM 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 CM is responsible for monitoring works of the contractors to ensure that the work is performed in accordance with an agreed schedule and to ensure that support services from DDOT comply with the construction schedule. The CM will 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 CM shall document and prepare all requests for changes, either from the Contractor or the PM, including any changes that may revise contract price or contract performance period.

The CM will be responsible for the supervision of field inspection staff. The CM shall attend progress meetings, review overall and interim construction schedules, and of field inspectors with the contractors operations. The CM will ensure that field inspectors are familiar with the contract plans, specifications, DDOT procedures, Maintenance of Traffic (MOT) and safety requirements.

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

The CM will coordinate between field inspectors and contractor superintendents to maintain coverage of the work being performed and testing being conducted. The CM will confer with the inspector on non-conforming work and will determine with the Team leader when Non-Conformance Notices are to be issued.

The CM, in conjunction with the Ward Team Leader or his/her designee will 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 CM is expected to take reasonable steps to minimize the impacts of construction on the affected residents, travelers, businesses and institutions.

The CM is responsible for verifying quantities and checking all payments for the work period for which payment is requested. He/She shall maintain a documented comprehensive record of all

quantities and payments made. This will include quantities and payments for any changes in the work. The document record shall include all supporting documents required for payment such as, material certifications, affidavits for payments to subcontractors and suppliers, insurance certificates and invoices for stored materials.

The CM 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 will 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 CM shall record all non-conforming work and completion of corrective action.

The CM 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 CM is not responsible for the safety of the contractor's work force and methods of construction, but 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 CM 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 CM shall provide assistance and guidance as necessary so as to promote a productive team environment and a positive work experience. The CM shall perform periodic reviews of the work of his/her staff and shall advise the staff the results of the reviews and shall monitor the implementation of any corrective action.

The CM is responsible for regular and timely reporting to the Ward Team Leaders or his/her designee on the progress of the work. The CM shall promptly report any major deviations from the schedule, the contract price, or the quantity of the work to the Ward Team Leader or designee. All accidents requiring medical attention or property damage shall be immediately reported to the Ward Team Leader and the Deputy Chief Engineer. Any visits by the media shall be immediately reported to the Ward Team Leader and to the Deputy Chief Engineer of DDOT. The Public Information Office (PIO) and the Deputy Chief Engineer will report it to the Chief Engineer. The CM shall inform the Deputy Chief Engineer of any adverse incidents that will require their attention or involvement for resolution. The CM shall refer all media inquiries to the DDOT PIO.

Office Engineer (OE)

The Office Engineer supports the Construction Manager on construction projects 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 PM 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 up-dates 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 CM will determine who will respond to a

request for information (RFI, as shown in Appendix D) and will ensure that the response is expected. Any changes that result from the RFI will 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 PM of quantity/testing issues and shall monitor and document resolutions.

Administrative Assistance (AA)

Administrative Assistance may be provided to the CM for secretarial and administrative support. The AA will cover the telephones at the Field Office and maintain telephone logs. The AA will maintain all contract files. The AA will receive, date stamp and log all incoming correspondence and copy and distribute according to procedures. The AA will be responsible for logging and mailing all out-going correspondence.

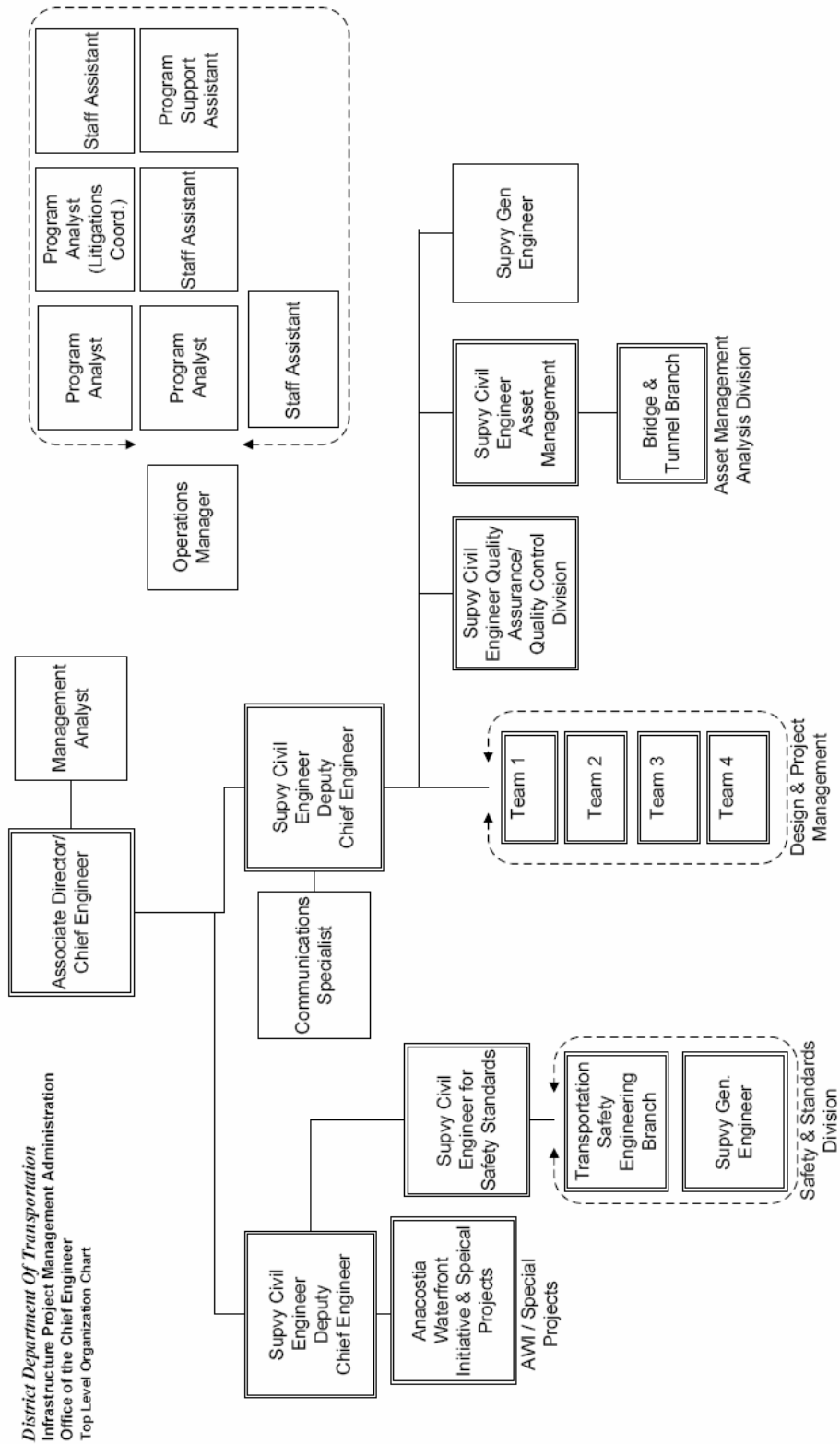
The AA will provide typing support to the field staff. This will include general correspondence, meeting minutes, letters of transmittal, weekly/monthly reports, and other documentation. The AA will maintain the field office supplies and process all invoices.

Construction Inspector (CI)

The Construction Inspector works under the direction of the Construction Manager. The CI is responsible for performing inspection of a construction contractor's work, as assigned by the CM; to assure the work is in compliance with approved contract plans and specifications. The CI observes the contractor's work and recommends approval of the inspected work to the CM based upon tests conducted in accordance with published procedures and good construction practices. The CI maintains inspection records and records pertinent data regarding equipment, material, and labor. Utilizing construction management software such as AASHTO's FieldManager and FieldBook, the CI prepares daily inspection reports and keeps the CM advised of inspection results, particularly items requiring re-work because of quality deficiencies. The CI will verify and maintain on a daily basis quantity data for use in processing payments.

For projects with limited service staff members, the CI will assume additional responsibilities as assigned by the CM.

DISTRICT DEPARTMENT OF TRANSPORTATION Infrastructure Project Management Administration Functional Organizational Chart



SECTION 1 BID PROCEDURES

1.1 BID PROCEDURES AND EXECUTION

The bid process for DDOT projects is managed by the Office of Contract and Procurement (OCP). The Construction Manager's role is to provide technical support to the Contracting office during the bid process. This support includes, but not limited to: response to bidders' questions, review of bid documents, and verification of cost items.

1.2 CONSTRUCTIBILITY REVIEW AND PRELIMINARY SERVICE ESTIMATE

The CM should include his recommendation for field office and equipment in the constructability review.

1.3 FINAL BID DOCUMENT REVIEW

The final plans, specifications and estimates should be thoroughly reviewed by the Team Leader and his staff before sending for the Chief Engineer's signature. This review should insure that all issues previously identified have been addressed properly. Not only should incorporation of comments on earlier stage document reviews be verified, but also appropriate action taken on other pending issues regarding real estate, utilities, permits, environmental issues, cost estimate compared to available funds and items of concern to abutting property owners and the public. Resolution of these matters before the contract award process begins will significantly reduce the cost and schedule impacts. The signature of the Chief Engineer is the final approval of the plan.

1.4 PRE-BID CONFERENCE

The Office of Contracting and Procurement (OCP) manages the bid process and calls for this meeting. All (potential) bidders and the designers shall be invited. 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. To this end, 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 and CADD graphics, 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. All plan holders not just those in attendance will receive the addendum. Obviously, questions, which cannot be answered at the Pre-Bid Conference, should be responded to in an addendum. Responses that will be addressed by addendum should be clearly recorded. An appointed recorder should provide concise yet comprehensive minutes.

SECTION 2 AWARD PROCEDURES

2.1 BID AND PRE-AWARD PROCESSING

IPMA team should provide technical support to the 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 anytime 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. Clock showing the correct time should be clearly visible as well as bid to allow for an orderly processing of the opening of bids. The OCP Office 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 Contract Office (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 days after the bid opening or as specified in the bid documents.

DDOT IPMA PM should assist the Contract Office (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: <http://www.fhwa.dot.gov/programadmin/contracts/index.cfm> under the FHWA Contract Administration Core Curriculum Manual link.

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. The bids should be compared to the Engineer's Estimate. The range of bids should be reviewed regarding where the estimate came in relation to all bids, the gap between first and second bids, and all bids. DDOT IPMA shall determine if the lowest bid is responsible and prepare an engineer's recommendation and Personnel and Finance (P&F).

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 very 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 comprising 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?

2.2 CONSTRUCTION MANAGEMENT BUDGET

The CM should work with the IPMA Ward Team Leader to develop the construction management budget. The construction budget should include labor costs for the inspection services required and non-labor, direct expenses that are specific to the management and administration of the construction project.

2.3 EXECUTION OF CONTRACT DOCUMENTS

The 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 usually 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 Notice to Proceed. Generally, the Notice to Proceed signifies the commencement of the contract time. The CM and his 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.

2.4 PRE-CONSTRUCTION CONFERENCE

The IPMA Ward Team Leader should schedule and chair a Pre-Construction Conference. The CM shall participate and maintain minutes of the meeting. In addition to the Team Leader and the CM, attendees should include: the FHWA Division Area Engineer, the contracting professional from OCP, representative from the pertinent DDOT engineering departments, the Designer-of-Record, Public Utilities, community advisory groups, historic preservation, federal government agencies, the Contractor and assigned subcontractors. The CM should complete 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 B, 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 included and attached for subsequent actions agreed 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.

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

2.5 NOTICE TO PROCEED AND RELATED DOCUMENTS

The Contract Specialist from the OCP will issue the documents required to start construction, a written Notice to Proceed (NTP, as shown in Appendix E), after a contract is executed. The NTP will indicate the official date of beginning work. The contract work can begin immediately if the Contract Officer indicated that signing and receiving the contract also served as the NTP. No work should be commenced until the NTP is given.

SECTION 3 CONSTRUCTION START-UP

It is generally agreed in construction that an efficient, organized, and planned start-up can go a long way towards ensuring a successful conclusion. An unplanned, poorly organized start-up can lead to initial delays and problems that are very difficult to recover from and can have repercussions throughout the life of a project.

The CM should have a thorough knowledge of the plans, specifications and contract requirements, status of right of way and utility relocations and familiarity with the site and the surrounding areas, all forms and contract administration procedures prepared and in place will make the field staff a resource to help get the project started on the right foot.

3.1 ORGANIZATION AND MANAGEMENT

Construction Engineering and Inspection services are provided during the construction phase of a project.

Each construction contract will have a CM, Ward Team Leader and Construction Inspector (CI) and additional inspectors and, if the contract is large enough, an administrative staff and office engineering staff. The size of the staff will vary depending on the size of the construction contract and the number of disciplines involved in inspection.

Inspectors, office technical and clerical personnel will be under the direction of the CM. The CM is responsible for the work of all staff assigned to the project, and will designate specific assignments to each, and will supervise and is held accountable for their performance.

The CM should conduct his relations with the Contractors in a professional, cooperative, and business-like manner. Absolute integrity is required and excessive fraternization with key personnel of the Contractor's staff must be discouraged. The acceptance of gifts or favors from Contractors by any member of the CM staff, or their family members, is strictly forbidden, regardless of their size or value.

All formal communications should be made with the authorized representatives of the Prime Contractor, and not with subcontractors or vendors. These representatives should be identified at or before the pre-construction conference.

It is very important to promote harmonious working relationships with utility companies, public agencies, and other governmental authorities whose facilities are affected by the project.

3.2 FIELD OFFICES AND FACILITIES

Ideally, the planning for mobilizing and establishing field offices should have been done during the design and bid phases of this project. The site should be reviewed for potential areas for site offices, workshops and storage, taking into account access, impact on local residences and businesses, effect on permanent work and cost of Contractor having to provide facilities off site. Where areas are available, this should be made known to bidders in the bid documents including details on provision of temporary services such as power, water sewer, parking, etc.

The Field Office should be of sufficient size to accommodate the maximum predicted level of staffing. The accommodation and furnishings should reflect the level and professionalism of the services to be provided from the Field Office. The CI is to maintain an efficient, professional environment and the CM should be insistent that the Field Office be maintained adequately. The

Field Office shall be separate from the Contractor's offices and shall be secure and equipped per contract specifications.

Where an area is provided for Contractor's use, this should be clearly indicated in the construction documents. Where the area is to be shared with other Contractors, the space for each Contractor should be indicated. The Contractor should be required to submit a plan of the office/yard layout prior to mobilization. The plan should be reviewed with regard to provision of services, handling of oil, gas and other potential hazardous materials, access for supplies and for emergency vehicles, impact on local residents and businesses and demobilization, including dealing with contaminants from workshops and storage areas.

The Contractor should schedule early installation of utilities with the utility companies. This process should be regularly checked and expedited. Field offices can be operated with temporary power sources and this should be planned where provision of power is likely to take some time. Where it is possible to do so, early planning should involve the utility companies so that they are aware of upcoming requirements and can have plans in place when services are ordered.

Temporary facilities should be covered in the pre-construction planning. Access to the site should be reviewed with regard to labor commuting, delivery of materials and movement of major construction and permanent equipment. Routes should be planned to avoid residential areas, school zones, hospitals, and similar sensitive areas wherever possible. Routes should be investigated for low bridges, weight restrictions, overhead utilities, and condition of roads. Where reasonable and possible, the contract conditions should restrict the Contractor's access to designated routes. Where private roads or parking areas abut the construction site, the Contractor must be instructed not to use these without written authorization of the owners, copies of which must be furnished to the CM.

Adequate provision for parking of workers' vehicles should be provided. The Contractor should be required to submit plans for handling of employee vehicles and to control their access to the site. This is necessary for safety, security, and operational reasons.

The site security requirements will usually be specified in the construction contract and the CM should be familiar with the requirements. Where the documents are not specific, there are certain basic requirements that safety, prudence, and common sense dictate. Any site security plan should cover prohibition of access to the public to areas of hazard or danger, security of storage of materials and equipment, security of offices and files, and vandalism.

3.3 PROJECT AND INSPECTION FILES

The Ward Team Leader and CM must guide their staff in establishing the project files. Field files should be stored in fireproof, locked filing cabinets. All members of the staff should be aware of the extreme importance of creating and maintaining comprehensive contract files. DDOT's ability to defend against contractor claims is dependent upon the detailed information contained in the contract files. Similarly, contract closeout can be accomplished efficiently if the contract files have been properly maintained. Since DDOT projects are subject to audits, the administrative records of contracts must provide clear evidence that the contract has been performed in accordance with contract documents.

The CM should provide an orientation on files for members of the staff and provide them documents such as the designer's quantity take-offs that are necessary to start the project.

3.4 DRAWINGS AND SPECIFICATIONS

The CM staff shall have all applicable specifications and drawings referenced in the contract, including all standards referenced and addendums. In the course of construction the contractor may question many details of the plans and technical specifications. The field staff must be knowledgeable about the drawings and the specifications. Although it is necessary to refer Requests for Information from the Contractor to the designer, a well-informed CM staff can resolve many issues in the field quickly. The CM should be responsible for insuring that inspectors are familiar with the requirements in the contract. The CM should also play a lead role in meetings with the Contractor regarding Quality Control measures to be employed as new construction activities are started.

The CM must insure that appropriate quantities of drawings and specifications are distributed to the field staff, the Contractor and testing agencies. Care must be taken to insure that all recipients of contract documents use revised documents. When drawings are revised as part of contract modifications, plan sets must be updated with the changed drawings.

3.5 TESTING SERVICES

The quality of construction is highly dependent upon the effectiveness of the materials testing program. The CM and staff must coordinate testing requirements with the Contractor and the testing agencies. The Contractor must provide reliable schedule information about when specific types of construction activities are to be performed. The appropriate testing equipment and staff must be available for earthwork, concrete placement, asphalt production and lay-down and other specialties as the work occurs.

Requirements for any off-site inspection must be established and staff or consultants provided. Off-site concrete batch plants, concrete trucks, asphalt plants, precast concrete plants, steel fabrication facilities and specialty mechanical/electrical equipment manufacturing plants often require visits by testing agencies.

The CM must insure that test data records are maintained in the project files and the CI should log all testing activities on the Inspector's Daily Report (IDR, as shown in Appendix H). A Notice of Nonconformance shall be issued for any materials, which fail test, and they should be replaced, reworked, or otherwise corrected to the satisfaction of the Ward Team Leader.

3.6 PERMITS

The CM and staff should review the specifications and produce a checklist of all required permits and who is responsible to get them. This list should be presented and discussed with the contractor at the pre-construction meeting. This list does not relieve contractor of his responsibility to obtain all the permits required. Failure to obtain permits on a timely basis can delay the start of construction.

3.7 PUBLIC RELATIONS

Public relations are a major factor in public works projects. The CM must be active in public information and involvement programs, handling complaints and providing the interface between residents, businesses, other city agencies, and the construction forces.

The CM should be familiar with contract requirements relating to public relations and be prepared to cooperate with official PR programs and to monitor Contractor compliance with PR requirements.

The impact of the project on the local community must be recognized and all reasonable steps taken to mitigate or avoid potential nuisance, disruption, noise, and irritants. The CM should notify affected property owners of the contract scope, schedule and start date of construction. On some projects it may be necessary for the CM to provide updates to residents and businesses at some specific intervals or when items such as parking restrictions and driveway access are significantly altered. The CM should carefully review the drawings and specifications during the constructability reviews for loss of driveway access to multi-tenant buildings and businesses and include in the contract documents means for temporary driveways and accesses.

The Contractor is required to notify the property owner in advance of the loss of driveway access. The CM should review the contractor's notification procedures and insure that they comply with their contractual requirements.

The Contractor should be instructed to notify the CM of complaints received from the public and incidents or disputes that arise from construction operations. These should be communicated to appropriate City agencies. Consideration for the welfare of the local community will help to prevent incidents and disputes that can affect the progress and/or cost of the work. Where the local community can see that their comfort, safety and convenience are important and given due consideration, they will be far more cooperative. All news and press requests for information should be forwarded to DDOT public information official for reply.

3.8 SUBCONTRACTORS

The construction contract will usually stipulate certain requirements relating to subcontracting. This may involve qualification and approval of subcontractors, percentage of work that may be performed by subcontractors, payments to subcontractors. The Contractor should be urged to submit his subcontracting plan early and approval of early-action subcontractors should be expedited.

Subcontractors are an essential element in the construction process and should always be treated with respect for their dignity and their contribution to the project. To the extent possible and permitted by the Prime Contractor, subcontractors should be involved in planning and scheduling meetings, problem resolution, implementation of changes and any other areas where their expertise and resources can benefit the project. Where the CM can promote the enthusiastic involvement and cooperation of the subcontractors, with the Prime Contractor's affirmation and support, while maintaining a contractual "arms-length" relationship with subcontractors, this will be of substantial benefit to the project.

It is critically important that the Prime Contractor be in contact with the CM for all project related matters.

Since subcontractors are contracted only to the General Contractor and have no privities of contract with the DDOT, all official communications with subcontractors must always be through the Prime Contractor. The CM must at all times avoid contractual involvement with the subcontractor and must be wary of being drawn into any negotiations, disputes, or differences between the Prime Contractor and subcontractor.

Nevertheless, subcontractors will constitute a substantial part of the resources required to deliver the project and balancing the interface and relationships with and between, the CM Field Staff, the Contractor and the subcontractors will require considerable tact, ingenuity, forethought and caution. The object is to promote cohesive, cooperating, mutually respectful, and beneficial team relationships between all the site participants without entering into, or being perceived to be entering into, the Contractor's responsibility for managing the work.

**3.9 EEO/AFFIRMATIVE ACTION & DISADVANTAGED BUSINESS ENTERPRISE
SUBCONTRACTING**

DDOT contracts require compliance with non-discrimination and Disadvantaged Business Enterprise (DBE) participation legislation. The contract documents require regular reporting and auditing procedures. The requirements will usually cover affirmative action to achieve stipulated levels of employment for minorities in various trades, confirmation that non-discriminatory policies are employed at the job site, payment of minimum wage rates and contracting of percentages of the work to DBE's.

All EEO and DBE subcontracting is to be monitored by the City's Contracting Officer. For Small and Disadvantaged Business Enterprises compliance, the contractor must comply with DC Law 9-217 or latest laws. For EEO compliance, the Contractor is to submit an Affirmative Action Plan in compliance with the Mayor's Order 85-85.

DBE participation on the project is known from the beginning of construction. On-site project staff is responsible for monitoring that DBE's are actually performing the work that as shown in DBE submittal. Questions or discrepancies should be brought to the attention of the Contracting Officer for resolution.

SECTION 4 CONMMUNICATIONS CONTROL

On a complex undertaking such as a construction project where there are many interested parties, control of the communications about that project is certified. Such communications will contribute to clarity of understanding, reduction of misunderstandings and enhancement of open and constructive communications.

Communications may be verbal in one-on-one discussions and phone calls or in meetings between individuals and groups. They may be in written form, in correspondence, memoranda, reports, studies, meeting minutes and telephone conversation memorandums. Communications may be visual in the form of photographs, films, videotapes, or videodiscs. It is extremely important, for relational, commercial, contractual and legal reasons, that there be clearly defined systems for control of communications and that an adequate documentation system is established to record the communications.

Verbal communications are the most common form, are the most difficult to capture on permanent records and create the greatest opportunity for misunderstanding. It is important in verbal communications to ask frequent questions to be sure one is being understood. It is also very important to listen carefully and to ask questions if the communication is not clear. Occasional use of a tape recorder at meetings can be useful if approved by each individual in attendance prior to commencement of meeting. But constant use of a tape recorder may undermine trust and rapidly inhibit communications.

It is frequently necessary to document conversations for the official record and to disseminate the information to a wider audience. If care is taken to maintain clarity and understanding in verbal communications, it should be relatively easy to reduce the conversation to its salient points and matters and to commit them to paper, either in diary form, correspondence, meeting minutes or reports. The Construction Manager (CM) should give careful consideration to the recording of verbal communications in order to complete the permanent records of the administration of the contract. The CM should e-mail or send a letter to the participants in the verbal exchange as a record to confirm any salient points between the parties.

Honesty and integrity is absolutely essential if one is to maintain trust in verbal communications. The document record of communications should be a concise, clear statement of what was said and positions expressed. There should be no attempt to embellish the conversation or to draw unwarranted conclusions. If the recorder has not understood what was being communicated, corrections should be made or, in the case of disagreements, the positions of the different parties to the disagreement should be documented.

4.1 CORRESPONDENCE

A large part of the documentary record of the communications on a project will be in the form of correspondence letters between various participants that inform, instruct, advise, or question. The handling of correspondence requires great care. The CM is the focal point for all correspondence and is responsible for ensuring that all incoming correspondence is read, prioritized, distributed, acted upon, and filed as necessary.

- Correspondence where appropriate shall be assigned an ID # and logged to include the appropriate date of the communication.
- All outgoing correspondence shall be submitted with the signature of the DDOT's PM.
- The Ward Team Leader shall receive a copy on all correspondence; other copies shall be distributed as necessary.

- Outgoing correspondence must be addressed to the PM of the Contractor, superintendent of the Contractor.
- Outgoing correspondence should be numbered when appropriate, indicate subject matter, and distributed.

The CM or AA is responsible for maintaining the document record of the construction of the project including all correspondence. Maintenance of this record requires an efficient filing system. Files are to be kept secure at all times.

Important telephone conversations always take place on the project. It is imperative that important calls be recorded and summarized on a Telephone Conversation Report Form. A copy should be mailed to the other party in order to have validity. Forms should be templated, approved and sent to all CM's in one hard copy.

All schedules should be documented in a weekly notebook reflecting the Office Engineers' (OE) schedule and inspectors' schedule. The PM must go onsite weekly to a randomly selected site and observe CM/OE activities.

4.2 DAILY/MONTHLY REPORTS

a) Daily Reports

It is mandatory for the Inspectors to fill out Daily Reports and a daily personnel & equipment record, one for each contract they are assigned. These are on standard Inspector Daily Report (IDR) forms. The CM will prepare, on a daily basis, 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. It is recommended that the diary be prepared using fine-point ink pens, not pencil that can fade and smudge over time. The IDR and diary shall be filled out on the standard form provided by DDOT and per the instructions attached.

b) Monthly Report

A Monthly Report should be prepared for each contract. The Monthly Report is normally completed by the CM or OE. Major events, milestones, starts and completions of large activities, expenditures, visitors, changes and claims should be described in the Monthly Report, along with summaries of work complete and time expired, where required.

The Monthly 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 month.

The CM should keep in mind that the Monthly Report may have wide circulation, and attention must be given to its preparation. Together with the IDRs and diary, the Monthly Report

provides the detailed job history and will have great importance in the event of claims or disputes leading to litigation.

4.3 MEETINGS

For coordination and information purposes, there will be a need for organizing meetings. The CM can expect, and should not hesitate, to call for meetings with various people at various times and at various locations. Meetings should not be called unless necessary and should be brief and also ensure that all matters are communicated and understood by all involved parties. The CM should chair the meetings whenever possible and keep the meeting focused and on track.

All meetings should have a standard template sign-in sheet that details the need for such data as name, telephone number, company/agency association, and job title. This sheet could also ask for an email address or a physical address for the circulation of minutes, action items, etc... The CM, or its staff, should be the keeper of this list.

All meetings should generate minutes to record the date and time, the purpose and business of the meeting, decisions agreed and action items to follow including the identification of the person(s) responsible for the action item(s). The minutes should also identify attendees and indicate distribution of the minutes. Brief, intelligible, and accurate minutes are important and should be given sufficient attention and care. If meetings are in the field or time is critical, it is permissible to distribute handwritten notes, provided they are legible, and also include an "after meeting" distribution of notes to the meeting's attendees.

Meetings should also generate Action Item Lists. These may be part of the minutes or a separate document. Actions to be taken following the meeting should be clearly described so all parties understand what the action is, should have a specific name indicating who is responsible for the completion of the action, and a date by when the action will be updated or completed. Action items should be assigned a specific ID and/or # to ensure tracking, particularly for items that may have an on-going process that entails several weeks, or longer.

a) Progress Meetings

The CM should establish the frequency of progress meetings in coordination with the Contractor. In general, bi-weekly progress meetings are preferred and shall be adopted unless otherwise directed. Where meetings are held at regularly scheduled intervals, the use of a standard agenda makes sense. The CM shall see that the minutes are accurately documented, distributed, and filed. The Ward Team Leader and his designee shall receive a copy on all project-meeting minutes. The recommended agenda for progress meetings is as follows:

1. Minutes of Previous Meeting
2. Progress. Construction activities last period (week, two-weeks)
3. Related Business. Problems encountered and status of their resolution.
4. Schedule for next period (week, two-weeks)
5. Submittals - Other Information or Approval Requirements
6. Safety
7. Quality Issues
8. Changes, Claims, Delays, Problems and Potential Solutions
9. Any Other Business

Depending on the project, other subjects can be added but all of the above should be addressed.

Progress meetings are important for coordination and management of the project as well as for the progress record they generate. It should always be kept in mind that progress meetings are

intended to review and record progress for the past period and to review the planned schedule for the upcoming period. This apparent statement of the obvious is sometimes lost in the other subjects covered at the meetings.

It cannot be overemphasized that progress-meeting minutes constitute one of the most important elements of the contract document record and should receive the requisite care and attention. They are important to the management and coordination of the work through the distribution of information to all parties, on and off the project site. They are important for educating new participants on the projects and they are often critical in the resolution of claims or disputes.

4.4 AGENCY/UTILITY COORDINATION MEETINGS

Most projects will involve the participation of public and private utilities, i.e., water, sewer, gas, electric, cable TV, petroleum products, and statutory agencies such as City Governmental Agencies and the Federal Government. Coordination with these utilities/agencies is an important element in the work of the CM and can be critical to the success of the project. It may be necessary to hold separate Utility/Agency Coordination Meetings from time to time.

Depending on the extent of utility/agency involvement in the construction, these meetings may be regular or ad-hoc. Utility/agency representatives should be highly encouraged to attend Progress Meetings, especially where their work or involvement is crucial to the project's schedule and progress. There may also be a need for additional separate meetings with the utilities/agencies for investigation, planning strategies, financial considerations, etc. These may be formal meetings in the office or informal meetings in the field. In any event, notes of the meetings must be taken and distributed to all who need to know.

4.5 PHOTOGRAPHIC RECORDS

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 or DDOT may contract with a professional photography service. The CM should pay particular attention to the project requirements and ensure that they are fully met. It is important the CM record existing conditions for record keeping purposes (with supplemental photos) and additional photographs of work activities.

SECTION 5 DRAWING CONTROL

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.

5.1 CONTRACT DRAWING DISTRIBUTION AND REVISIONS

The CM 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 CM shall deliver to the Contractor the number of 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 CM 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 shall submit a Change Order to the contractor to incorporate the revision into the contract.

5.2 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, etc. 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 of 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.

This 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 CM 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 CM shall maintain the Submittal Log so as to provide a clear history of the processing of each submittal.

The CM 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 G) indicating the deficiencies in the submittal. It is the responsibility of the CM 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 scheduled or stipulated or reasonable review period. The submittal progress should always be an agenda item at Progress Meetings with all parties kept informed and updated.

The CM shall track all submittals and shall note the reviewer’s comments and action required. The CM shall maintain copies of all submittals approved or other actions and keep a clean copy in the field office for record and audit purposes. 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.

5.3 REQUESTS FOR INFORMATION/CLARIFICATION

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) 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. On receipt of a RFI, the CM shall review to determine the responding party.

The CM shall track and expedite the RFI to ensure a timely response. The CM shall 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 CM shall maintain a RFI Log which lists the RFI in increasing numerical order, describes the nature of the 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.

5.4 PROJECT RECORD 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 shall be responsible for recording and submitting to the Designer and contractor all minor field changes information. The contractor is responsible for incorporating all changes to the built information in a permanent, final completed set of as-built drawings signed and sealed by a DC Licensed Professional Engineer.

SECTION 6 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.

6.1 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 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 most recent version of the AASHTO Standard Specifications for Highways and Structures, 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 should require all procurement activities to be shown on the schedule including supporting information for procurement durations. Particular 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 CM 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 CM 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 his responsibility to comply with the AASHTO 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, if required, shall be submitted within 20 calendar days after Notice to Proceed (NTP). The Contractor should be advised that payment can be withheld for work installed after the date that the construction schedule should have been received and accepted, until such acceptance has been achieved. The CM should give full attention to this matter since the establishment of a sensible, achievable schedule is critical to the installation of the work and the avoidance of delay claims.

6.2 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 look-ahead schedules being usual.

If the construction contract is not explicit on the requirement for look-ahead schedules, it can usually be interpreted as implicit and every effort should be made to require that the Contractor submit short-term schedules. 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 should insist upon short-term schedules containing specific, measurable activities. The Contractor may resist specificity in order to avoid being held accountable. Vagueness may be preferred to avoid being called to account for failure to achieve. A requirement for specificity demands 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 be to the benefit of all parties, not least 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 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. With this information available, quick resolution of problems can occur.

6.3 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 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.

6.4 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 in to the normal progress meetings. These meetings should be attended by the CM, Ward Team Leader, the Contractor's Superintendent, Contractor's field superintendents and superintendents of major subcontractors and senior CM field staff. When needed, other City 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 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.

6.5 PROCUREMENT CONTROL

Procurement control is normally the responsibility of the contractor. However, the CM should be aware that untimely procurement of critical items would delay the completion the project. Thus, the CM should exercise some monitoring over critical items. The CM 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 should monitor this list, delivery schedule, and the return time for any reviews at each progress meeting.

SECTION 7 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.

7.1 PROGRESS PAYMENTS

Most contracts stipulate that the work will be paid for at regular intervals, usually monthly, during the course of construction. The contract will stipulate the period for payment; the timing of submission for payment; the required documentation and amount of to be retained. The cut off date for quantities needs to be discussed and agreed to with the contractor. The essential requirements are that only acceptable work installed be paid for; 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© and/or FieldPad©, for processing interim payments to the Contractor. 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 or FieldPad would be done on a daily basis by the inspectors for uploading into the FieldManager by the CM 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 a snap 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.

7.1.1 METHOD OF PAYMENT

Payment for construction may be by several methods. These include unit price payments, lump sum payments, 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 the City, 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.

7.1.2 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, foundations for example. The CM 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 CM 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 on a daily basis, recorded on the FieldBook or FieldPad for uploading to Field manager. 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. Payment for items when they exceed the bid estimated quantity is permissible as long as the final contract amount does not exceed the original certification. A final change order or contingency allocation shall be processed to document these adjustments in quantities. The CM must constantly be aware of trends for quantity overruns of an item. The CM should review monthly data to recognize these trends and take positive action to mitigate or obtain additional funding from the PM.

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 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 - Download pay quantities into Field Pad computer.

Step 3 - Download pay quantities from Field Pad to Field Manager System at DDOT office.

Step 4 - Review copy of contractor's partial payment submitted to DDOT for payment with PM or designee.

Step 5 - Review copy of partial payment generated by DDOT Field Manager System with PM or designee.

Step 6 - After final review of both Field Manager partial payment and contractors partial payment, PM or designee to submit for payment with Field Manager copy to DDOT IPMA PM for processing.

7.2 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 procedures to be adopted to amend the contract to incorporate the changed condition.

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

The CM shall review all notifications of change from the Contractor and shall provide recommendations to the Contracting Officer and team leader. 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 should obtain approval for work to proceed from the Team Leader and the Contracting Officer and notify the Contractor and maintain time and material records.

A changed condition may involve an addition, deletion or modification of the work of the contract. A change may be due to an error, omission, or change in the design, which requires a change in the work. A change may be occasioned 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 change condition the CM may authorize work to proceed immediately with verbal approval from the Contracting Officer and follow up with a 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 the Contracting and Procurement Office.

The Contractor is required by the Standard Specifications to notify the Contracting Officer of changed site conditions or situations in writing. The CM and Field Staff should be alert to field conditions to anticipate potential conditions for change. The CM shall notify the Designer of the potential or actual changed conditions or situations that may lead to change orders.

The CM should request a detailed breakout of labor and material requirement and incidentals costs and avoid lump sum cost responses from the contractor. 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.

If the CM agrees with the Contractor's proposal, the proposal is forwarded for approval. If there is a difference between the CM estimate and the Contractor's proposal, the CM will attempt to negotiate with the Contractor.

An agreement on costs and/or time may not be achieved between the CM and the Contractor. In these circumstances the CM shall forward the CM estimate and the Contractor proposal with recommendations. The PM will determine if there is a basis for accepting the Contractor's proposal and shall so advise the Contracting Officer in writing. Alternatively, but not preferred, the PM may authorize the work be paid for on a time and material basis. He may also decide to perform the work using DC Force account or hire a separate contractor.

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

Change Orders and potential claims should be discussed with the FHWA DC Division Staff when they arise on a project.

7.3 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 evolves, every party involved in the project has played a role in its formation. A contractor or subcontractor should only submit a claim when he believes he will not receive compensation for something to which he believes he is entitled, and has exhausted the available contract remedies. The Standard Specifications require the Contractor to notify DDOT when a potential claim is anticipated.

There is reference material related to claims handling in the FHWA (online) Contract Administration Manual. This includes the regulations that apply to FHWA funded projects.

7.3.1 CLAIMS AVOIDANCE

Claims avoidance procedures should have started early in the design process. Through constructability and bidability 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 CM's first efforts at claims avoidance is total familiarity, by all of 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 stems 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 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's document record. The CM'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 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 or staff as evidence for future use.

7.3.2 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.

7.3.3 CLAIMS 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 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 shall acknowledge receipt of notice of intent of claim, in writing, without any commitment or even indication of the CM'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 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 CM 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 may provide any alternative strategies that will mitigate the cost of the claim, and include his recommendations. The CM should present the claim to the PM and Contracting Officer along with a recommendation for settlement and request a final decision on payment. The CM should notify the contractor of the final decision. If the decision involves an increase in time and/or money the CM should process a Change Order.

SECTION 8 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 Vocabulary. It is also important to define “Quality” so that we all 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.

8.1 RESPONSIBILITIES

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 invalidate 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 CM. The CM will be assisted by trained and experienced inspectors capable of documenting the operation and results of the QA/QC program. The CM 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.

8.2 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 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.

QC Plans should be reviewed by the CM, DDOT IPMA office of QA/QC and discussed with the Contractor. When satisfactory, they should be copied to the Designer of Record (DOR). Compliance with the approved plan should be monitored and recorded.

8.3 INSPECTION

It is the duty of the CM 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 CM 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 with the Contractor's input to the schedule. Inspectors shall provide details of inspections, tests, sampling performed, and conditions observed. Status of progress in fabrication/production and conformance with required schedule should be noted and the CM informed of any potential for delays due to quality or production problems.

Inspection staff members are required to inspect all materials delivered to the work-site 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. As such, the Inspection staff constitutes a valuable resource to the project. They will be called upon to assist in the interpretation of plans and specifications and can offer valuable insight on methods and techniques of construction. 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 are required to be familiar with the duties and responsibilities as stated in the CM Inspectors Manual and shall be familiar with standard practice and procedures for installation of the related work as referenced in other manuals provided to them by the CM.

8.4 TESTING

The CM 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.

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, that such work is not acceptable, 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 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 CM or QA/QC Section should be consulted with regard to matters arising out of unsatisfactory test results.

8.5 COORDINATION WITH STATUTORY AUTHORITIES

The CM should be aware of other statutory authority's inspection and testing requirements, and must verify that the Contractor has coordinated with the proper statutory agency to inspect the work.

8.6 SURVEY CONTROL

The PM and the CM must ensure that all survey reference information are included in the design plan. This information includes all lines, grades and measurements for grading and paving, and baseline and bench marks for bridge 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 CI and surveyors should do regular spot checks of measurements and elevations including pile locations; foundation elevations; anchor bolts for structural framing and major equipment; rooms, recesses and closets to receive furniture, fixtures and equipment fabricated off-site; ceiling heights and space for utilities.

Final pay items that can be verified should be measured and documented by the DC Contractors at the completion of the project.

8.7 NON-COMPLYING 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 compliance; that the corrective action was, where required, pre-approved by CM; that the corrective action was

observed and the finished work was re-inspected, re-tested or re-assessed and found to be in compliance.

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-compliance shall be issued. Where there is a major non-compliance, a written notification to the Contractor shall be issued by CM. Where a test result does not meet specified minimum requirements, a written notification of non-compliance for the work represented by the test result shall be issued.

Notification of non-conforming work shall be by means of a Non-Compliance Notice (NCN). The NCN shall identify the non-conforming work or non-compliance 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 CM and, if acceptable, the Contractor will be notified.

All NCNs shall be logged and tracked. The status of NCNs 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 CM should not allow corrective action to be delayed and should refuse to approve for payment the maximum amount of work associated with the NCN. Any direct costs incurred by the City caused by non-conforming work should be the responsibility of the contractor.

8.8 QUALITY PROMOTION

The CM 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 tear out work that one has worked hard to install. The inspection/testing program should be seen as only one element in a total quality program designed to assist all participants in achieving superior levels of quality.

SECTION 9 SAFETY AND LOSS CONTROL

The subject of safety on the construction project is complicated and requires diligent study by the CM. In general, the construction 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, State, and Local Authority ordinances, 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.

9.1 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 Sections 103.01, 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.

9.2 MONITORING COMPLIANCE WITH CONTRACT REQUIREMENTS

Safety should be an agenda item at the Progress Meetings and safety issues should be discussed and recorded in their minutes.

1. 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 CM. The CM 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 CM 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.

2. Copies of all accident reports and other reports shall be required from the Contractor. CM 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 CM shall notify the PM and the appropriate safety personnel.

9.3 CITIZENS' CLAIMS PROCEDURES

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

9.4 ENVIRONMENTAL ISSUES

In addition to safety of the individual, increasing emphasis is being placed on protection of the environment and the clean up 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 PM is to be immediately informed and authorization obtained to stop the work and make the area secure. The CM should contact the City Department of Health (DOH) to get direction on how the situation will be remedied. If costs are involved the CM should get approval from the PM to proceed and check with the Contracting Officer to verify funds are available and certified. The CM 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 coordinate with the DOH.

SECTION 10 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 works that affect their community. As a result, the CM 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 CM and staff must not respond negatively to provocation but should remain calm and respectful at all times.

10.1 CONTACTS WITH THE DEPARTMENT OF TRANSPORTATION

The CM must keep the PM and the team leader aware of progress, potential problems and proposed action, and cost/schedule forecasts.

10.2 CONTACTS WITH THE PUBLIC

The CM and CI should introduce themselves to local businesses and residences most impacted by the presence of the project. These community representatives should feel they can approach the CM and Inspectors with any complaints, questions or suggestions. The CI should note any contacts and subsequent actions with the public on their Daily Diary.

Legitimate complaints should be dealt expeditiously by the CM and staff. If the complaint is regarding Contractor operations involving dust, mud, noise, obstruction, or trash accumulation, the Contractor should be instructed, to rectify the condition forthwith.

The CM should make use of the diary to document complaints. As complaints are resolved, the details, date, and time of corrective action can be recorded in the report and maintained on file. Complaints received by other agencies should be acted upon promptly.

The CM should treat every complaint seriously. Swift resolution of complaints will do a great deal for maintaining good community relations. Complaints about matters that one can do nothing about should be received sympathetically and, to the extent possible and prudent, an explanation given as to why the problem cannot be mitigated. The complainant should be advised that every effort is being made to complete the work in the shortest time possible in an effort to remove the nuisance or concern as quickly as possible. Sometimes, a sympathetic ear is all that is needed.

10.2.1 PUBLIC INVOLVEMENT IN DIFFERENT PHASES OF PROJECT

Public involvement should be carried out in all phases of the project.

The public involvement plan should address the following issues:

1. Communication -
 - a. Who will be responsible for communicating with the community during the construction project? What is their contact information, i.e., phone and e-mail.
 - b. What updates will be provided?
 - c. In what format will the updates be provided?
 - d. With what frequency will the updates be provided?

- e. Will there be any necessary community involvement (i.e., passing on of information in an effort to partnership with the community)
 - f. Will there be periodic meetings?
 - g. Will there be a log of complaints and response to those complaints?
 - h. Will there be an available website?
2. Parking -
 - a. How much parking will be restricted during construction.
 - b. Is there alternative parking provided?
 - c. Will towing be enforced for violators?
 - d. What type of notification will be posted?
 3. Traffic –
 - a. Will there be a required traffic detour.
 - b. Will it be properly marked?
 - c. Will there be pedestrian access?
 4. Staging –
 - a. Where will the contractor stage their equipment?
 - b. Will this take additional parking away from the community?
 - c. Can we require the equipment be stored off-site?
 5. Trash Pickup –
 - a. Will construction adversely affect trash pickup?
 - b. Will the DDOT trucks be able to access the dumpsters and garbage cans?
 6. Contact –
 - a. Who will be the main contact for complaints and problems on-site during construction?
 - b. What hours is this person available?
 - c. Is there a number the business/resident can call after work hours?
 7. Duration –
 - a. What is the duration of the construction?
 8. Hours –
 - a. What are the hours of construction?
 9. Deliveries –
 - a. Will businesses/residents be able to receive deliveries during construction? Will there be a loading zone made available?
 10. Site Conditions –
 - a. Who will be responsible for maintaining the work zone?
 - b. What are the required off-hour maintenance for materials and equipment?
 - c. If the contractor labor is rude or makes or is heard to make inflammatory statements whom should the business/resident contact?
 11. Noise –
 - a. What noise should the community expect to hear during construction?
 - b. Will there by any flexibility due to business or residential constraints?
 12. Vibration from Equipment –
 - a. Will there be a survey of property prior to construction?
 - b. If there is perceived damage to the property whom should the business/resident contact?

Further clarification on specific needs unique to that community can be addressed during future public meetings and discussions.

10.2.2 CONSTRUCTION

Public participation should be carried out during the construction phase of the project.

10.3 CONTACTS WITH THE NEWS MEDIA

If contacted by the Media the CM and Staff should decline comment and refer them to the DDOT P.I. office and immediately contact the IPMA PM. The CM should not provide any written documentation to the media unless it is requested in writing by the Chief Engineer or Director of the Department of Transportation.

10.4 ENHANCEMENT OF PUBLIC IMAGE

As the public takes more interest in matters affecting their community, public perception becomes more important to the construction process. Media and general public attention can be expected to focus more attentively on projects, particularly those that will have a major impact on the environment, public amenities, local economy and tax base. The CM and field staff need to give adequate attention to promoting and maintaining a positive and professional public image.

SECTION 11 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, there can be a slackening off of 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, it must be expected that the number of people on the project will be reduced, and this is normal and proper. What is essential is that there be a clearly defined closeout plan and 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 should, 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 of notification. This will avoid a build up 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.

11.1 CLOSEOUT PROCEDURES

Each project will normally specify the closeout procedures in the construction contract. The CM should 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 I) should be used during planning and during the closeout process.

The CM 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 PM, Design Engineer, and FHWA DC Division office.

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

The CM shall do a final inspection. The PM should be encouraged to participate in the final inspection. The FHWA Area Engineer should be invited to participate in the Final Inspection.

The CM 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 utilize the project for the specific intended use. This date also starts any applicable warranties required by the contractor. The date of commencement of warranties for items on the punch list will be the date of final payment unless otherwise agreed. Send a Substantial Completion letter (as shown in Appendix J) to the FHWA DC Division office.

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

11.2 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 CDs and drawings and delivers them to the CM on completion of the project.

Whatever is required, the CM should take responsibility for ensuring that the complete as-built, record plans are delivered to appropriate Project Manager and receipt acknowledged in writing.

11.3 WARRANTIES, GUARANTEES, AND OPERATING START-UP

The technical specifications normally stipulate the requirements for warranties and guarantees. The CM should 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 should 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 the Client.

Warranties/guarantees usually become effective on the date of Substantial Completion.

During the preparation of the Closeout Plan, the CM should review the construction contract documents to see if this issue is addressed. The contract may allow commencement of the warranty/guarantee period from date of start-up of equipment put into early use, particularly if this is for the benefit of the City.

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 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 specification. Attention must be given to the fine print to ensure that there are no provisions that would limit or reduce the protection to the City as stipulated in the specifications. The CM will reject such warranties/guarantees and advise the Contractor that Final Certificate and Final Payment cannot be released until all warranties/guarantees are in conformance with the contract. All warranties shall be transmitted to the PM.

For projects with Mechanical and Electric equipment that require start up by the contractor, the CM should be familiar with those requirements and should notify the maintaining agent and PM of any training, and testing to be supplied by the contractor for operation start-up.

11.4 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 should 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 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.

11.5 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 and CI should coordinate the reconciliation.

11.6 CLOSEOUT DOCUMENTATION

For the CM, 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 should utilize a Closeout Checklist in coordinating the closeout.

The CM should 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 should not recommend release of final payment until the checklist is complete.

The second phase of closeout documentation involves the transfer of the contract records. The project document records will include all files relevant to the project that will have been determined early in the project.

The CM will ensure that all document files are indexed and inventoried, securely boxed.

Prior to boxing, the CM and field office staff should carefully review the files and remove unnecessary duplicate copies. Caution must be exercised to prevent originals or only copies from being discarded. It is always to be preferred to ship more copies than required than to be missing one vital document.

11.7 ARCHIVING FILES AND DRAWINGS

Documents will be divided into two categories. Documents necessary for operation and maintenance of mechanical and electrical equipment will be provided to DC government representatives who are responsible for operating and maintaining the systems. Other documents related to the construction contract administration will be boxed properly with contents listed on inventory forms and box contents marked clearly. These contract administration documents will be sent for archiving.

11.8 PROJECT FINANCIAL FILE

In addition to the CM's file, the Contracting and Procurement Office maintains a financial file for each project. Upon completion of the project, this file shall be included in the project file. Portions of this file will be duplicated in the CM's file. The CM can reference this file if they choose to keep those duplicate files blank in the standard project file folder.

11.9 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 Ward Team Leader. In that report, the requirements for moving forward to a FHWA Final Acceptance Report will be spelled out.

All projects require a Material Certificate that documents 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.

SECTION 12 MATERIALS AND PLANT

Section 106, “Control of Materials”, of the Department’s Standard Specifications for Highways and Structures, contain specific instructions concerning testing and inspections of materials and plants. The CM staff will be required to coordinate their testing and inspection activities with representatives from one or more of the following DDOT departments or businesses: Infrastructure Project Management Administration (IPMA), Quality Assurance/Quality Control Division (QA/QC), or DDOT’s Consultant, designated Material Testing Laboratories (MTL), and approved Plants.

12.1 MATERIALS INSPECTION

The goal of the CM or CI is to assist the Contractor in meeting quality requirements the first time so that the Contractor can maximize production while delivering the quality that is defined in the Contract Documents. This proactive approach is intended to avoid situations that could cause delay. It demands heightened interaction with the Contractor and an emphasis on planning. All those involved in the Project’s construction at various levels of authority must constantly appraise themselves with the Contractor’s schedule, anticipate issues, and address them before they start impacting the schedule.

The CI is the first line of review for day-to-day decisions regarding the acceptance or rejection of construction items, including materials. Inspectors will conduct “receiving inspections” when material is delivered to the Project. The goal of receiving inspections is to verify that the materials received by the Contractor are accompanied by documentation noted by the source of supply and are in conformance with the Contract Documents. A receiving inspection may reveal issues with the material that would affect project quality, including damaged or missing components, inadequate protection for storage, or material from an unapproved source. Receiving inspections are invaluable for avoiding delays. For example, if a supplier delivers a load of concrete pipe that is damaged, significant delays can be avoided by rejecting the pipe while it is still on the delivery truck.

12.1.1 SAMPLING AND TESTING FREQUENCY

These procedures prescribe the minimum amount of job quality control testing that must be accomplished to assure that the materials and workmanship incorporated in DDOT projects meet the specified contract requirements.

All materials and workmanship incorporated in a DDOT project must substantially conform to the Contract Documents and project records must document this fact. As part of the process and supplement inspection, an adequate number of tests must be performed on the materials furnished and the work produced by the Contractor.

Sampling and testing is generally performed in one of the following four ways:

1. Acceptance Tests: These tests form the basis for any construction contract and are a routine function of the CM staff. The tests are made to determine the quality and acceptability of the material and workmanship that are being incorporated in the project. The IPMA has the primary responsibility to see that a proper number of acceptance tests are performed, and accept or reject the work. IPMA can solicit assistance from representatives of the QA/QC or Consultants employed by the DDOT.

Acceptance testing is achieved through a combination of four different types of processes according to their purpose or objective, as defined below:

- a. Source Approval (SA) – Sampling and testing of materials is conducted to pre-qualify the sources, which the Contractor intends to use and has formally advised the PM. The PM must notify QA/QC or Consultant to perform these tests. Source approval is not final acceptance of the material. QA/QC will periodically re-evaluate the material source for suitability of the intended use.
 - b. Process Control (PC) – These ‘check’ tests are conducted to control the methods used by the Contractor for delivery, handling, and placement of materials. The results of process control test are not to be used as a basis to accept a material and only rarely should they be used to reject a material. The tests are conducted by QA/QC DDOT personnel.
 - c. Acceptance (AC) – These tests are the basis for acceptance or rejection of the material or workmanship. QA/QC DDOT staff performs these tests.
 - d. Certification (CA) – These tests are performed to verify the materials certifications submitted by the Contractor or supplier. If the results of these tests indicate non-conformance to the Specifications, the material corresponding to the certification will not be accepted and the approval of the source suspended. The QA/QC Division is responsible for certification test when needed.
2. Independent Assurance Samples and Tests: These are independent samples and tests performed by QA/QC personnel and/or consultants to check the reliability of results obtained by acceptance testing.
 3. Referee Tests: At times, a dispute between the Contractor and DDOT on the validity of a test result may arise. When this occurs, the Chief Engineer will request QA/QC, in writing, to perform ‘referee tests’ to establish final judgment on behalf of the DDOT. The test frequency and methods of referee testing may not be the same as that specified for acceptance testing.
 4. Record Tests: On Federal Aid Projects, samples obtained and tested at the request of Federal Highway Administration, which are in addition to other project testing, are record tests. Either CD or QA/QC personnel may perform these tests depending upon the request.
 5. Equipment: All testing equipment on each project shall be properly calibrated per AASHTO requirements by an independent laboratory with an updated certification furnished to the Engineer.

The CM shall ensure that the minimum number of acceptance samples and tests as defined in the Contract Documents are performed and made part of the record. This should not preclude the taking of any number of tests which may be necessary to provide adequate control when difficulties are being experienced with a particular phase of construction or material. The increase of testing frequency should not be considered as a substitute for the visual inspection of material and workmanship that must be maintained constantly if uniform and satisfactory results are to be obtained.

When the minimum amount of tests specified cannot be performed due to unusual circumstances, a written explanation of the circumstances should be transmitted by the CM for approval of the Program Manager and a copy placed in the contract file.

The CM may order additional tests when there is a reason to believe the material or workmanship was incorrectly sampled or tested. Samples of materials submitted to QA/QC for testing should include a tag with the following information:

- a. Project
 - 1) Name
 - 2) Sample Number
 - 3) Engineer PM

- b. Material or Product
 - 1) Name / Designation
 - 2) Use
 - 3) Source
 - 4) Location where material or product is placed

- c. Date and Person
 - 1) Sampled Date: By:
 - 2) Submitted Date: By:
 - 3) Time sample taken

12.1.2 MATERIALS ON FEDERAL AID PROJECTS

A material certification must be sent to FHWA at the conclusion of each and every federal aid construction project. According to FHWA and federal regulations, D.C. must certify the materials and workmanship incorporated in the project substantially meet the approved Contract Documents; further, that independent testing (assurance testing) results compare favorably with the acceptance testing. Therefore, the certification is to be based on the results of the acceptance tests and the independent assurance tests conducted by QA/QC.

When the materials used are not substantially in accordance with the Contract Documents, their acceptance and use must be thoroughly documented in the project records, and a statement to this effect shall be made in the certification sent to FHWA.

A letter sent to the FHWA Division Administrator and signed by the QA/QC Chief of Materials provides the D.C. certification.

The following steps are required for certification to FHWA:

- 1 During the course of construction, the PM shall see that a prompt comparison is made between the results of the acceptance tests and those independent assurance tests conducted by QA/QC.
- 2 In the event that the QA/QC Chief of Materials authorized the use of materials which did not fully meet the requirements of the Contract Documents, reasons for such use must be thoroughly documented in the project records.
- 3 The Program Manager (PM) shall, at the conclusion of each and every federal-aid construction project, prepare and submit a material certification to FHWA with a copy to QA/QC. It shall certify the following:
 - a. The results of tests on samples taken for job quality control (acceptance testing) indicate the materials and workmanship incorporated in the construction project substantially conform to the approved plans and specifications.
 - b. Such results compare favorably with the results of independent assurance sampling and testing.
 - c. Exceptions to this certification are documented in the project record.

12.1.3 MATERIAL NON-CONFORMANCE

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 believes that the test results indicate a minor variation and acceptance is still warranted. If this occurs the CM should request the approval of the QA/QC Chief of Materials .

INSTRUCTIONS:

- 1 As prudent, the CM will use Non-Conformance Notices (NCN's) 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 NCN may apply would be a concrete cylinder break that did not meet Contract Documents. This would warrant an NCN 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 NCN are a failing backfill test that the Contractor proceeded to recompact promptly, or a load of concrete that is rejected before it is placed.
- 2 Only the PM, CM or his designee is authorized to generate an NCN. Each NCN 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 or Inspector will include the NCN log in the Contractor coordination meeting agenda so that acceptable measures are taken to rectify the non-complaint portions of the work.
- 3 The CM shall immediately submit to the PM and QA/QC the test results for a material which he wishes to employ but are not otherwise fully complaint with the Contract Documents.
- 4 The PM shall review the tests and will either authorize or deny the use of those materials or workmanship. The Team Leader 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 end result. When such material is accepted, the Chief Engineer will indicate authorization by initialing the test result, writing a statement of the disposition of the material and remedial actions taken to correct the deficiencies. This statement should support the reason(s) for allowing the material to be used.
- 5 When certain materials are used which do not substantially meet the provisions of the Contract Documents, the Team Leader 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.
- 6 The QA/QC is required to forward copies of the test reports to the appropriate PM 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 Material Engineer will make recommendation as to acceptance or rejection. Actual acceptance or rejection is the responsibility of the CM.
- 7 The CM should seek FHWA concurrence when non-conforming items have been incorporated in federal aid projects.

12.1.4 PROCUREMENT OF CRITICAL MATERIALS

Procurement of construction materials is normally the responsibility of the Contractor. However, there are occasions where the CM should have some control in the procurement of materials that are critical to the project schedule, as long as 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 sequence they must be constructed under, 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 so as to serve as advance notification for all those who would be involved in material submittal reviews and acceptance.

12.2 PLANT AND OFF-SITE MATERIAL INSPECTIONS

DDOT, through its quality assurance/quality control (QA/QC) programs, will self-perform, or engage independent 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, as well as sampling and testing of concrete, asphalt, and aggregate at producers' facilities, will be performed by DDOT.

SECTION 13 UTILITY INSTALLATION

These guidelines should be read in conjunction with “Underground Facilities Protection Amendment Act of 2000” (D.C. law 13-114, effective on 5/23/2000) and Evaluation Tests of Pavement Breakers published by DDOT. It is intended that these guidelines would provide a framework for all construction engineering and inspection staff for coordination and monitoring of utility installation work.

13.1 UTILITY COORDINATION

The need for intense utility coordination throughout the project duration should never be overlooked or underestimated. Frequently, the utility work drives all other work. Additionally, the work performed by public utility companies themselves is the driver for all other transportation and infrastructure work. Therefore, it is natural to expect that utility work will be a dominant topic of any progress meeting.

The D.C. code requires the various public utility companies to install all their lines and connections before a roadway is permanently paved. This generally puts the utility work on critical path for other work to follow. The utility construction inspector must, therefore, be fully aware of the full scope of work to be performed by the utility companies, their work sequence and schedule, and how the DDOT Contractors’ schedule interfaces with the utility work schedule(s). It is expected that the following guidelines would serve as ‘best practices’ for any construction inspector.

13.1.1 PUBLIC UTILITY COMPANY CONTACT INFORMATION

Below are the primary utility companies impacting DDOT projects:

- PEPCO
- Washington Gas
- Verizon
- WASA
- Miss Utility

13.1.2 COORDINATION GUIDELINES

The Utility Engineer or Utility Construction Inspector shall report to CM, immediately after being assigned to design and/or supervise the utility construction work, proceed to do the following:

- 1.
2. Ascertain the full scope of utility relocation, removal, or (first time) installation. This includes a thorough review of the contract documents (signed contract, plans, specifications, any special provisions, and construction schedule) and, where applicable, the ditto plat. The ditto plat will provide a paving schedule number, project limits and the type of work proposed.
3. Find out the name of responsible design engineers and, where applicable, the utility company design engineer(s) (if utility work is to be performed by the utility company under IPMA monitoring).
4. Meet with the design engineer(s) to fully understand the overall design intent and phasing of the work.
5. Be informed about the advertisement and contract commencement dates. Generally the starting date will follow 90 days after the bid opening. If the contract has already been

- awarded, find out all details of the contract and contact information of Contractor's responsible persons.
6. Determine the status of permits for the utility companies or their Contractor. Keep abreast of, and expedite, all phases of preparatory work prior to issuance of utility permits.
 7. With ditto plat in possession, field check the project and plot existing features or conditions that may affect utility work.
 8. The CM should keep utility inspectors informed concerning the status of obstruction notices. Inspectors should promptly inform the CM if obstructions may have been overlooked. This oversight exercise will be helpful in preventing possible delays and cost impacts.
 9. Be informed about any adjoining utility work scope and its schedule, anticipate any mutual conflicts with schedule and/or physical tie-ins, and be prepared to mitigate these issues in advance.
 10. Set up and attend on site kick-off meetings with the utility company representative(s) for the purpose of establishing job control on matters of traffic handling, working conditions and safety requirements.
 11. Understand DDOT and your own responsibilities, concerning the handling of vehicular and pedestrian traffic during utility work and during emergency conditions.
 12. Maintain a current set of approved shop drawings and as-builts. Perform a timely review of shop drawings if this work is assigned to you.
 13. Ensure the safety of all utility work, workers, and public during performance of utility work.

DURING UTILITY CONSTRUCTION

1. Utility inspector shall check work constantly for safety violations. Refer to DDOT safety procedures and guidelines provided in this manual. Specifically the following should be given detailed attention:
 - a. Improper shoring of ditches
 - b. Working in the vicinity of high-tension wires, whether overhead or underground.
 - c. Improper traffic control.
 - d. Working in the vicinity of high pressure natural gas lines.
 - e. Working in the vicinity of high pressure steam lines.
 - f. Inadequate pedestrian maintenance of traffic
 - g. Large water mains
 - h. Improperly maintained worksite (dangerous construction debris)
 - i. Night work
 - j. Security
2. Assure that work is being performed as per the approved permit drawings and contract documents. Understand the contract requirements concerning the permit drawing and material submittals.
3. Check bridging plates for safety, firmness, and adequacy to support load. NOTE: Plates can become noisy if loosened by traffic and be a source of complaint particularly at night.
4. If the utility is to be supported on a bridge, understand the support mechanism for the utility and any relevant information about the bridge. (Under no circumstances is welding to be allowed on any primary member of the bridge. Diaphragms and other secondary members can be welded to).
5. Underground utility construction is often performed by employing specialized techniques which limit, or completely forego, traffic disruptions. Common methods include microtunneling, jacking/boring, or directional drilling. If any of these methods are requested DDOT IPMA will need to assign those inspectors who are qualified to monitor the work. A

- clear understanding of potential difficulties or risks associated with these techniques will better prepare the inspection staff for the task at hand.
6. Utility inspector shall check traffic maintenance at least daily for safety, signing and barricading, and condition of traveled roadway.
 7. Constantly check the passageway provided for pedestrians through construction. (Minimum desirable width – 4 feet)
 8. Assure that only equipment, which has been approved by the District of Columbia for pavement breaking, is being used.
 9. Make certain that designated storage areas are used only for that purpose and are maintained in an orderly fashion.
 10. Check as built location of the utilities to determine if they agree with plans.
 11. Backfill of cuts must be made with material Meeting specifications. Saturated material or predominately clay material will not be permitted.
 12. Check backfilling operations as often as time permits. Backfill material must be properly compacted with a pneumatic tamp or other approved earth compaction device. Puddling or jetting will not be permitted. Compaction test should be taken on all trenches over 50 ft. in length or more often if necessary. Flowable fill may be used if approved. Refer to the contract specifications for additional information.
 13. Where utility work will cause total black out of streets, alert the team so that possible alternatives such as temporary power/generator could be considered. Also refer to Section 107.08 of the Standard Specifications for Highway and Structures for emergency process.
 14. It is important that the Contractor maintains the roadway cut in a relatively smooth and a safe condition pending permanent repair or start of work. If utility work is completed far in advance of paving (3 months or more), maintenance of the cut may become a problem. Should this be the case, refer the matter to the PM.

13.2 CARE DURING PAVEMENT REMOVAL

Most of the D.C. streets have a large number of utilities a short depth below the pavements, many of them encased in concrete. In some instances, the pavement lies directly on top of the encasement. A heavy impact to a concrete pavement could cut off communications to a strategic agency, drain the coolant from an electrical line, cause a break in the gas line resulting in an explosion, or cause similar problems when other utilities are damaged. For this reason, extreme care must be used when breaking up hard surface pavements in preparation for removal. The machines that are used must have specific approval of the IPMA and be operated a safe distance from the utility lines. Inside this safe distance only hand held pneumatic or hydraulic hammers may be used. In any event, presence of underground utilities must be ‘mapped out’ either by means of available as-built drawings and physically located by ‘Miss Utility’ prior to any pavement removal.

INSTRUCTIONS:

1. Notify “Miss Utility” at least 48 hours in advance before breaking pavements.
2. Determine the horizontal and vertical location of all utilities in the area of pavement removal; such determination is to be based not only on a thorough check of available records (permits, as-built plans, Miss Utility, etc.), but also on a physical examination of the area of pavement removal. This must be done before pavement removal starts.
3. Contractor shall submit a list of equipment to be used for DDOT approval.
4. Contact the PM or his representative to determine the safe operating distance from the utility lines for the proposed pavement-breaking machine.
5. Familiarize with operation of equipment being used.

6. Continually check equipment to determine if proper operating controls are being used.
7. Do not use a “headache ball”, explosives or chemical expansive and/or non-explosive demolition agents, unless approved by the Chief Engineer.
8. Pavement removal may be accomplished at any time by use of a pneumatic jack hammer.
9. Exposure to noises produced by paving breakers for any appreciable duration of time may cause permanent hearing damage; so, protective devices are to be worn during any extended periods of exposure. Regarding noise exposure level, refer to Section 107.17 of the Standard Specifications for Highway and Structures for details.
10. When warranted, the PM should require the use of a protective shield to enclose the machinery in operation to avoid personal injury or damage to property. In general the contractor must comply with Article 27 of the Standard Specifications for Highway and Structures.
11. The Contractor is expected to break out the concrete along a specified neat line. Extra removal costs should be assigned to the Contractor as per the contract.
12. Notify the Traffic Safety Division when loop detectors are located in a section of the roadway prior to the removal of the hard surface material.
13. The pavement to be removed must be properly sawed, punched, or drilled prior to lifting for removal. Breaking by means of lifting or dropping of slabs on sub-grade is not permitted when utilities are present.
14. Check proper placement of barricades to insure safety of public and other workmen from flying fragments during breaking operations. All traffic control devices and setups must conform to the DC Standard and MUTCD.
15. Material removed from work site must be transported away from the work site and properly stored or disposed according to all Federal and DC environmental requirements.