



Department of
Design and
Construction

**NEW YORK CITY
DEPARTMENT OF DESIGN + CONSTRUCTION**

April 2015

QUALITY ASSURANCE AND CONSTRUCTION SAFETY

Operations Manual

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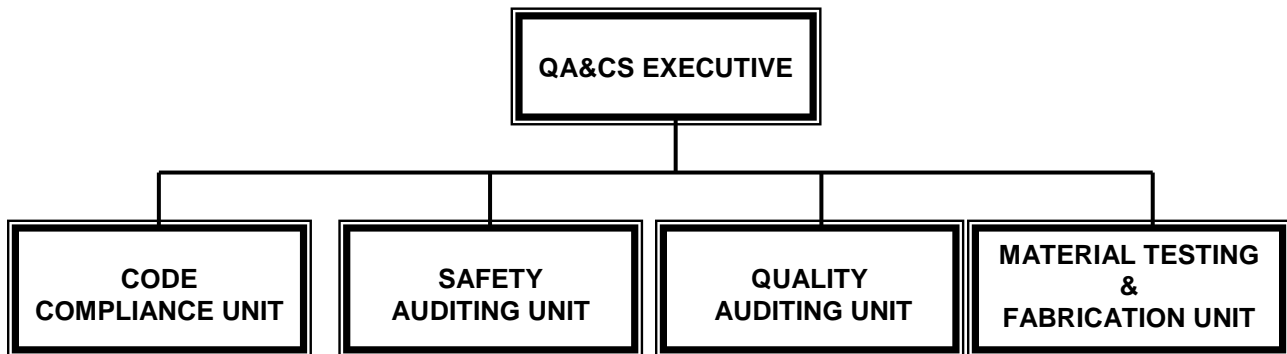
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SECTION I – INTRODUCTION

A. MISSION STATEMENT

The goal of the Quality Assurance and Construction Safety Bureau is to ensure the safety and quality of construction projects and their conformance to regulations, specifications, plans and referenced standards. This is accomplished by monitoring construction activities from material testing and fabrication review stage to project substantial completion. Various scheduled safety and quality inspections and audits are performed during construction activities to ensure that work complies with the applicable regulations. The quality of materials is verified by performing inspections of fabrication plants during production and performing materials testing inspections in the field. Lists of qualified private laboratory technicians, construction inspectors, and approved vendors are maintained.

B. ORGANIZATION CHART OF QUALITY ASSURANCE AND CONSTRUCTION BUREAU



C. KEY PERSONNEL AND CONTACT INFORMATION

The Bureau of Quality Assurance and Construction Safety consists of 22 Engineers, Quality Assurance & Safety Auditors and administrative staff located on the fifth floor of 30-30 Thomson Avenue, Long Island City, NY 11101, 24 hour emergency telephone (718) 391-1911. The Bureau is organized into the following sections: Executive, Code Compliance, Safety Auditing, Quality Auditing, and Material Testing & Material Fabrication Inspection Units.

The responsible personnel of these sections and contact persons for Quality Assurance and Construction Safety Bureau:

1. Executive

John M. DeVito, Director

(718)391-1395; (718)391-2885 (fax)

Alla Ayzenshtat, Deputy Director

(718)391-1624; (718)391-2885 (fax)

Geneva Payne-Nathaniel, Executive Assistant

(718)391-1153; (718)391-2885 (fax)

2. Code Compliance Unit

Robert Holub, R.A., Senior Auditor

(718)391-1068; (718)391-2885 (fax)

(347)416-3182 (cell)

3. Safety Auditing Unit

Kurt Findeisen, Senior Investigator

(718)391-2149; (718)391-2885 (fax)

(347)203-3719 (cell)

4. Quality Auditing Unit

Eric Zweier, Senior Auditor, Infrastructure

(718)391-2245; (718)391-2885 (fax)

(347)203-7068 (cell)

Clifton Oates, Senior Auditor, Public Buildings

(718)391-1954; (718)391-2885 (fax)

(347)231-0007 (cell)

5. Material Testing and Fabrication Inspection Unit

Richard Jones, Engineer-In-Charge

(718)391-1417; (718)391-2885 (fax)

(646)463-3072 (cell)

D. ROLE OF QUALITY ASSURANCE AND CONSTRUCTION SAFETY BUREAU

The Quality Assurance and Construction Safety (QA&CS) Bureau plays an active role in Infrastructure and Public Buildings projects during pre-construction, construction and post-construction phases. The following activities are performed by each of the QA&CS Units during various project phases:

1. CODE COMPLIANCE UNIT

- Contractor's Safety Questionnaire Reviews
- Contractor's Safety Program/Site Safety Plan Reviews
- ADA Code Compliance Audits
- ADA Code Compliance Verification Audits
- Participate in Construction Meetings
- Review of Applicable Drawings and Specifications
- Development of Safety Advisories, Procedures, and Guidelines

2. SAFETY AUDITING UNIT

- Pre-construction Meetings
- Safety Inspections
- Participate in Comprehensive Audits
- Verification Audits
- Emergency Response
- Accident/Incident Investigations
- Special Safety Audits
- Complaints Review

3. QUALITY AUDITING UNIT

- Comprehensive Audits
- Quality Inspections
- Critical Phase Meetings
- Progress Meetings
- Substantial Completion Inspections and Sign off
- Management and Record Reviews

4. MATERIAL TESTING & FABRICATION INSPECTION UNIT

- Mix Design Reviews
- Plant, Laboratory and Vendor Approval
- Certification Program
- Sampling and Testing
- Plant Inspections
- Fabrication, Production and Verification Inspections
- Certification of Welders and Procedures
- Material Acceptance and Product Acceptability

E. INFRASTRUCTURE/PUBLIC BUILDINGS QUALITY AND SAFETY INTERFACE REQUIREMENTS

Execution of the Quality Assurance and Construction Safety Program requires close cooperation between QA&CS personnel and Infrastructure/Public Buildings construction personnel to allow for orderly and timely access to activities, information records and meetings. This is to facilitate QA&CS inspections and audits of construction, manufacturing and fabrication, accident and incident investigations, approval and certification of suppliers, examinations of records and project documentation, and participation in various construction meetings.

The following guidelines are provided to acquaint the Resident Engineers and Construction Project Manager with the specific matters and notices that QA&CS requires to perform its mandated duties:

1. Accident/Incident Notifications

2. Meetings Notifications to QA&CS:

- a. Pre-Construction
- b. Progress
- c. Critical Phase
- d. Substantial Completion/Final Inspection

2. Activity Notifications to QA&CS:

- a. Daily Concrete and Asphalt Placement
- b. Daily Backfill Operations
- c. Confirmation for Scheduled Inspections/Audits
- d. Progress Schedule for ADA Construction Activities

3. Postings

The Resident Engineer and/or Project Manager is responsible to post the following documents in the project field office:

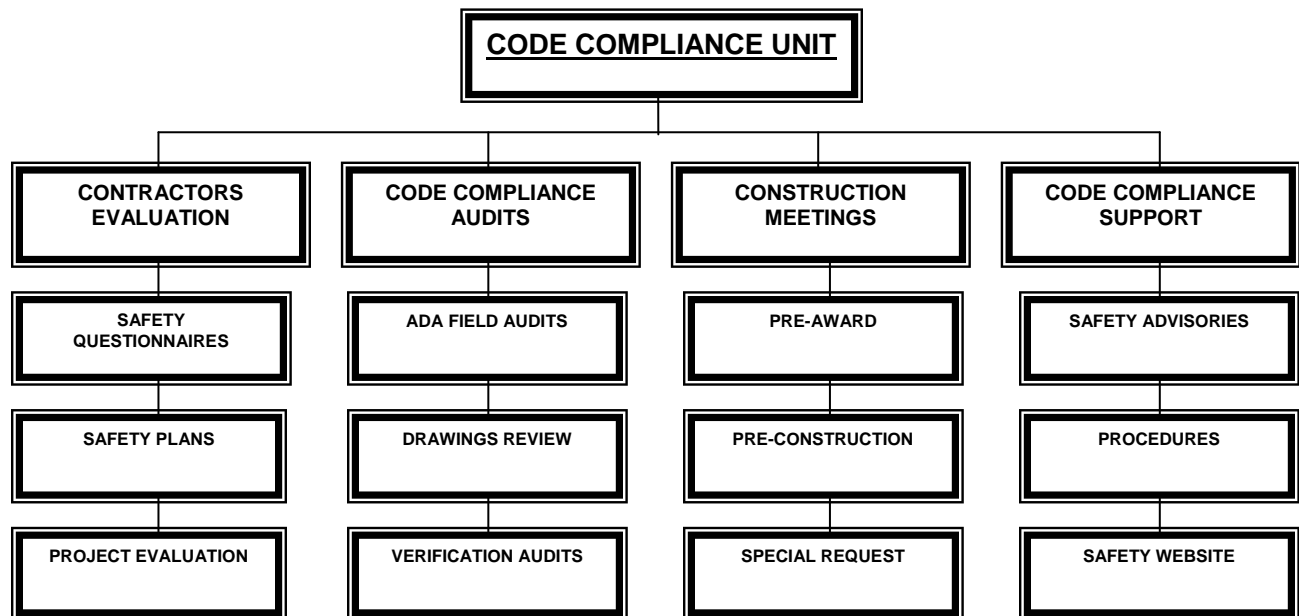
- a. Emergency and Accident Notification and Response Protocol
- b. Project Key Personnel Contacts
- c. NYS DOL Job Safety and Health Protection Poster
- d. Notice of Public Works Project Poster

SECTION II – OVERVIEW AND FUNCTIONS OF FIELD AUDITING UNITS

A. CODE COMPLIANCE UNIT

1. OVERVIEW AND ORGANIZATION

The Code Compliance Unit performs contractors' performance review, conducts various code compliance audits, including ADA, attends various project meetings, develops safety advisories and procedures, and provides code compliance support to Infrastructure and Public Buildings Divisions.



2. FUNCTIONS

2.1 Contractors Evaluation -The Code Compliance Unit performs contractor's performance evaluation during various project phases, including safety questionnaires review during the pre-award process, safety program/plan review during the pre-construction phase and periodic evaluation during the construction activities.

- Safety Questionnaire - All contractors are required to complete the safety questionnaire form included in the contract bid package. The Code Compliance Unit performs comprehensive review of the submitted safety questionnaires information, including contractor workers' compensation experience modification rating, incident rates, OSHA violation history, OSHA 300 and 300A logs, and previous contractor's performance on DDC projects. Based on the review results, the Code Compliance Unit submits recommendations regarding the

contractor award process to DDC ACCO. The safety questionnaire reviews are performed in accordance with the QA&CS Safety Questionnaire Review Procedure.

- Safety Program/Site Safety Plan - The Contractor shall file a Safety Program and Site Safety Plan with the RE/CPM/CM as indicated in the DDC Contract Safety Requirements or as directed by the Code Compliance Unit. The Safety Program and Site Safety Plan must be supplied to the Code Compliance Unit for review and comment. The Safety Program shall cover all operation of that contractor and establish the contractor's overall safety police, regulatory compliance plan and minimum safety standards. The Site Safety Plan shall apply to all contractor and subcontractor project specific operations, and shall have safety procedures for all construction activities outlined in the project work scope. Each element shall be described in a separate section in the written document. The Code Compliance Unit is responsible to review the Safety program/Site Safety Plan and submit review results to the applicable project staff. The Safety Program/Site Safety Plan review status (Complete/Incomplete) is recorded on the Safety Program and Site Safety Plan Review forms. If the contractor fails to provide required safety procedures, the Safety Program/Site Safety Plan will be returned to the applicable project staff and contractor for the document revision.
- Project Evaluation – Regular projects evaluation is performed on a monthly basis by the Code Compliance Unit. If the Code Compliance Unit will observe high number of deviations, high number of accident/incidents, lack of cooperation, and repeat occurrences of non-compliance with DDC requirements, including implementation of corrective actions, the comprehensive project (contractor) performance review will be performed.

2.2 Code Compliance Audits (ADA) The Code Compliance Unit auditors perform ADA code compliance field audits of DDC construction projects in order to determine the level of compliance with 28 CFR Part 36, ADA Code Requirements. The auditors conduct periodic review of active DDC projects to identify needs for ADA field audits based on established criteria.

The project selection criteria include, but not limited to:

- Exterior Work: Ramps; Stairs; Wheelchair Lifts and Platform Lifts; Curb Ramps; Pedestrian Ramps; Parking Spaces.
- Interior Work: Accessible Routes/Space Allowance (Hallways, corridors, etc.); Elevator; Ramps; Stairs; Drinking Fountains and Water Coolers; Storage Areas; Kitchens; Doors; Toilet Rooms; Signage; Locker Rooms; Showers.

The auditors send ADA audit notification e-mails to applicable DDC project staff, in advance, for assigned projects indicated on the weekly ADA audit schedule, to confirm the project status, the audit date and request necessary drawings/specifications.

During the field ADA audit, auditors are required to verify ADA code compliance of items included in the project work scope utilizing the appropriate checklist. The applicable drawings/specifications are reviewed, in order to determine if a deviation occurred due to design error or construction error. All deviations are documented including photographs and field dimensions. The Exit Conference is conducted by an auditor with the project staff and a hardcopy of the Field Exit Report (signed by the project staff) is provided to the project staff after the field ADA audit completion for remedial measures.

In addition to regular ADA inspection, the follow-up verification inspections shall be scheduled and conducted within 30 days to verify implementation of necessary corrective actions.

The auditors prepare necessary reports (detailed Executive ADA Audit report and ScoreCard report) to capture observed deviations with references to the project drawings and field sketches.

2.3 Construction Meetings – The Code Compliance Unit participates in the Pre-Award, Re-Construction and Special Request meetings. The project staff shall notify the Code Compliance Unit via fax and/or e-mail at least one week prior to the date of a meeting.

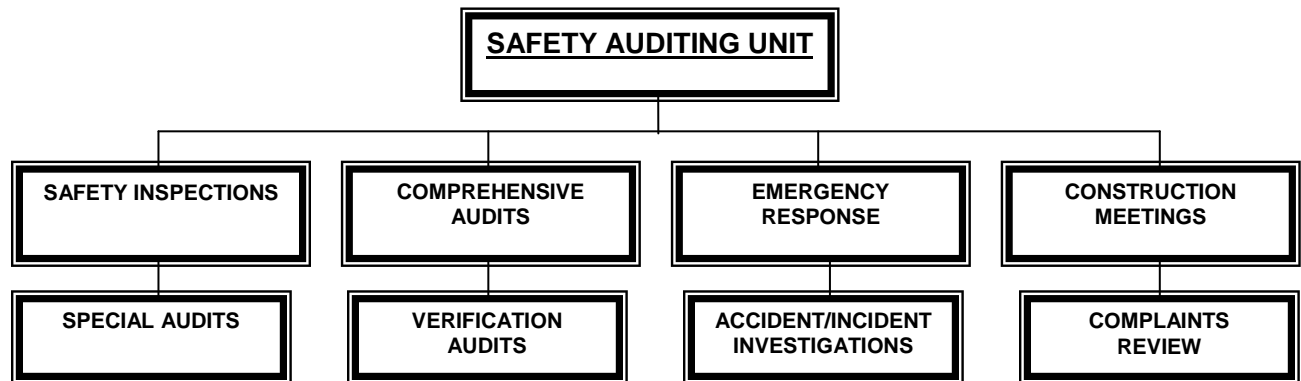
- Pre-Award Meetings – The Code Compliance Unit attends the project Pre-Award meeting if the contractor's performance evaluation revealed safety related issue(s) to prohibit continuation of the award process.
- Pre-Construction Meeting – The Code Compliance Unit participates in the Pre-Construction meeting in order to provide necessary handouts to the project staff and contractor, and outline safety and quality requirements on DDC projects.
- Special Request Meetings – The Code Compliance Unit attends and/or requests meetings related to accident/incident, unacceptable contractor's performance, corrective actions implementation, etc.

2.4 Code Compliance Support – In order improve safety awareness on DDC projects, present code and regulations updates, and provide safety guideline, the Code Compliance Unit develop and distribute various safety advisories, QA&CS Bureau's procedures, weather and safety alerts through e-mail, meeting and DDC Safety website.

B. SAFETY AUDITING UNIT

1. OVERVIEW AND ORGANIZATION

The Safety Auditing Unit performs scheduled safety field inspections and verification audits, participates in comprehensive audits of construction projects, responds and investigates construction accident/incidents, conducts complaints reviews, and attends various construction field meetings. The Resident Engineer and Project Manager are responsible to escort the Safety Auditors during the inspection and provide full access to the construction site and applicable records.



2. FUNCTIONS

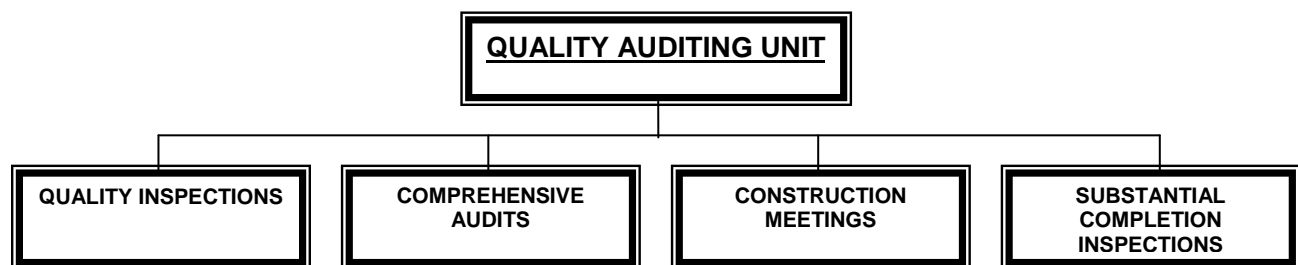
- **Safety Inspections** – Safety Auditors perform scheduled safety inspections of field construction activities and scheduled record review audits. The safety inspections are short duration construction site visits with the emphasis on on-going construction field activities. The purpose of the safety inspections is to detect significant safety deviations, assign a level of risk, identify needs for corrective actions and develop the data needed for an overall project safety evaluation. QA&CS goal for safety inspections frequency is to perform field audits at least twice per construction phase, however, all active DDC projects will receive at least one quality inspection during the fiscal year.
- **Comprehensive Audits** – Safety Auditors participate in Public Buildings/Infrastructure comprehensive audits and perform detailed project safety performance review including construction activities and records assessments.
- **Verification Audits** – Safety Auditors are responsible for completion of verification audits to confirm implementation of remedial measures for deviations identified during the comprehensive audits.

- **Special Audits** – Special audits are include but not limited to unacceptable contractor's safety performance, executive management request, complex projects, etc.
- **Emergency Response** – In the event of a construction safety emergency on DDC projects, Safety Auditing Unit will receive notifications and respond to the construction sites to assist project staff and emergency services.
- **Accident/Incident Investigations** – The Safety Auditing Unit is responsible to handle all construction accident/incident occurred on DDC construction projects, including initial notification, response, investigation, interviews and report preparation.
- **Construction Meetings** – The Safety Auditing Unit represents QA&CS Bureau during various construction meetings in order to provide necessary safety directions to the project staff and ensure contractor's compliance to all applicable safety rules and regulations.
- **Complaints Review** – The Safety Auditing Unit performs review of construction work related complaints. The complaint review process includes field and record review, hazard assessment, and development of applicable recommendations.

C. QUALITY AUDITING UNIT

1. OVERVIEW AND ORGANIZATION

The Quality Auditing Unit performs scheduled quality field inspections and comprehensive audits of Public Buildings and Infrastructure construction projects for conformance to the established practices, specifications and referenced standards. This Unit identifies quality deviations and develops the data needed for an overall project evaluation. It also participates in various construction meetings such as pre-construction, progress and critical phase, and conducts Infrastructure substantial completion inspections and sign offs. The Quality Auditing Unit consists of Public Buildings Quality Auditing and Infrastructure Quality Auditing. The Quality Auditing Unit goal is to visit all construction projects during the active construction phase.



2. FUNCTIONS

- **Quality Inspections** – Quality Auditors perform scheduled daily inspections of construction projects. The quality inspections are short duration site visits with emphases on on-going construction field activities. The Resident Engineer and Project Manager are responsible to escort the Quality Auditors during the inspection and provide full access to the construction site and applicable records. The purpose of the quality inspections is to detect significant quality deviations, assign a level of risk, identify needs for corrective actions and develop the data needed for an overall project evaluation. QA&CS goal for quality inspections frequency is to perform field audits at least twice per construction phase, however, all active DDC projects will receive at least one quality inspection during the fiscal year.
- **Comprehensive Audits** – The Quality Auditing Unit conducts comprehensive audits of all Public Buildings and Infrastructure projects to assess an overall project evaluation. Comprehensive audit include a detailed evaluation of the various phases of construction including but not limited to: examination of applicable drawings and plans; construction specifications and records review; material testing and jobsite visits. The audit findings are captured in the QA&CS database (ScoreCard). In addition, the Executive Comprehensive Audit reports are utilized to document observations, deviations and actionable recommendations.

The report are posted on DDC Intranet Safety Site and submitted to the project staff for implementation of corrective actions and follow-up response. In order to determine what projects require a comprehensive audit, the project selection filters, such as number of accidents/incidents, quality and safety performance on DDC projects, OSHA history, project cost, project duration, etc. are applied to all active projects within the fiscal year. The collected information is incorporated into a risk assessment model to help prioritize the needs for comprehensive audit. Once all inputs have been collected and reviewed the Comprehensive Audit Work Plan for the fiscal year will be developed. This plan is a living document with flexibility built into it to enable the handling of special requests (mayor, clients, etc.), poor performance noted during QA&CS assessments and accident/incident project history. The Comprehensive Audit Work Plan is reviewed on a quarterly basis.

- **Construction Meetings** - The Quality Auditing Unit shall be invited to the Pre-Construction, Progress, Critical Phase meetings to provide information on DDC QA&CS Program, to outline the QA&CS expectations and to ensure closure on QA&CS deliverables at the end of the project. The Resident Engineers and Project Managers shall notify the Quality Auditing Unit via fax or e-mail at least one week prior to the meeting.
- **Substantial Completion Inspection and Sign Offs** – The Infrastructure Division project staff shall notify the Quality Auditing Unit via fax at least one week prior to the project substantial completion field inspection. The Quality Auditing Unit will attend the substantial completion field inspections and document observed nonconformance. The Infrastructure Division project staff shall generate and forward to the Quality Auditing Unit a punch list with all identified items and corrective actions for final acceptance.

D. DUTIES AND RESPONSIBILITIES OF SAFETY AND QUALITY AUDITORS

1. PHASE I – AUDIT PREPATION

- Auditors shall contact (phone call, email, etc.) applicable DDC project representatives, in advance, for all assigned projects indicated on the weekly schedule, to confirm the project status and the audit date.
- Auditors shall print out and review the previous quality & safety audit reports for the assigned project/s. Auditors must take hard copies of the previous audit report/s and photographs to the field in order to verify if the previously documented deviations were corrected. Unresolved/repeat deviations must be captured in their new reports. Repeat deviation Scorecard entries must include the following sentence. “This was a repeat deviation noted in an audit dated x/x/x.”

2. PHASE II- FIELD AUDITS

- Auditors must not walk a project unescorted. Auditors may be escorted by DDC CPM, CM, EIC/RE or DDC designated alternate. Upon arrival at the site, the auditors shall notify a member of project staff of the purpose of the visit and inquiry about the construction activities scheduled for the day.
- Auditors are required to conduct inspections using the appropriate QA&CS checklist, paying special attention to their discipline. The checklist, a product of the QA & Construction Safety Bureau is organized into six parts: Management and Recordkeeping, Safety, Quality Infrastructure, Quality Public Buildings, ADA Code Compliance, and Material Testing.
- Auditors are responsible to assign risk level (high, medium or low) to all deviations identified during the inspection/audit. When hazardous conditions are encountered requiring immediate action, auditors shall inform the project staff and request immediate corrective actions.
- Auditors must call their direct supervisor and notify them of critical deviations, immediately upon discovering them.
- Auditors shall report their findings based on the scope of the work, construction quality, OSHA standards, applicable drawings, project requirements, DDC and DOB specifications, etc.
- Auditors shall take photographs of all deviations. At least one photograph of the active jobsite is required even if no deviations were found.
- Auditors shall prepare a clear and comprehensive written Exit Conference Report for the DDC CPM, CM, EIC/RE or DDC designated alternate’s review, written response and should be signed by project staff along with printed name.

- All items on the Exit Conference Report should be completed in the field and should include the deviation number/s and/or description of work activities. An Exit Conference Report is required even if no deviations were found.
- The white copy is DDC's copy. The yellow copy of this report shall be provided to the DDC CPM, CM, EIC/RE or DDC designated alternate onsite. The pink copy is to be retained by the QA&CS auditor.
- An Exit Conference shall be held between the QA&CS auditor and project staff. The discussion shall include the observations and findings, an explanation of the cautionary and high risk ratings of checklist items.

3. PHASE III – REPORT COMPLETION AND CORRECTIVE ACTIONS

- Auditors shall enter their audit results into Scorecard, including project information, deviations, photographs and project staff responses. The photographs must include the project number and deviation number.
- Scorecard is an internal database utilized by QA & Construction Safety Bureau to capture quality and safety audit results and corrective actions.
- The completed Scorecard reports are distributed to the applicable project staff for corrective actions.
- The DDC project staff shall respond to the distributed ScoreCard audit reports via e-mail and submit corrective actions for all deviations previously identified during the audit.
- All high risk deviations cited during the audit require an immediate response from DDC project personnel to QA&CS detailing steps taken to mitigate the deviations. Responses received by QA&CS will be evaluated and entered into the ScoreCard database as part of the project file records.

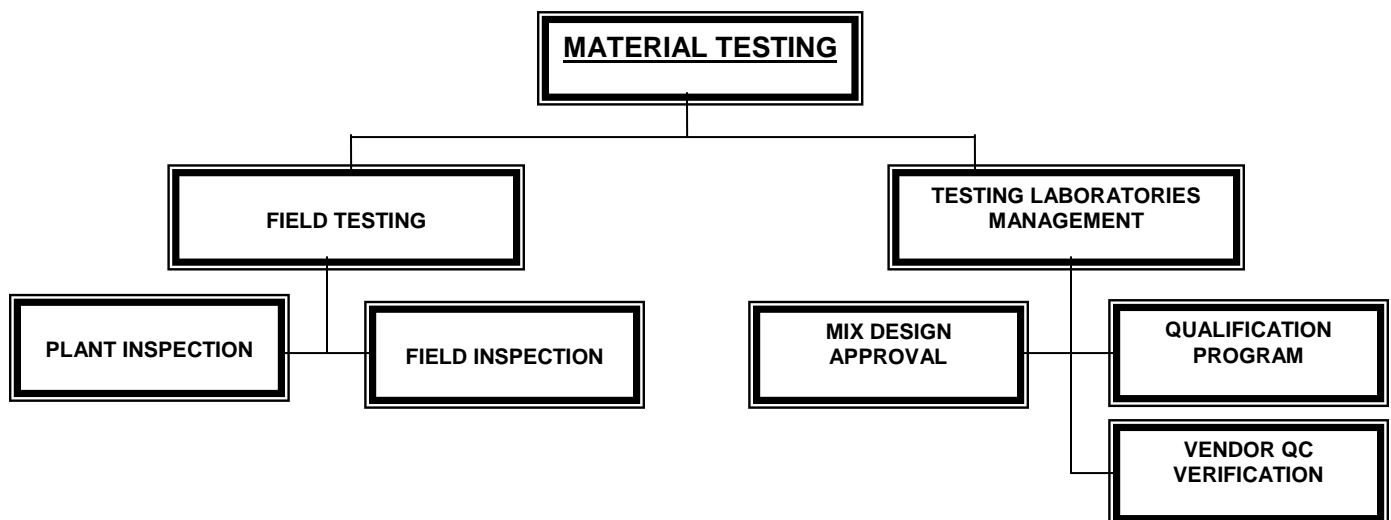
SECTION III – MATERIALS TESTING & FABRICATION INSPECTION UNIT

A. MATERIAL TESTING

1. OVERVIEW OF FUNCTIONAL AREAS

The Material Testing Section retains the services of Material Testing laboratories to perform field and laboratory verification testing of materials incorporated in construction, as well as the final Commissioner concrete and asphalt core testing for payment. This section also qualifies private testing laboratories and technicians, approves concrete and asphalt plants, and performs independent quality assurance sampling and testing in the field to ensure compliance with specifications.

2. ORGANIZATION OF FUNCTIONAL AREAS



3. MAIN FUNCTIONS

All the tests are currently being performed by consulting laboratories on contract with the QA & Construction Safety Bureau.

3.1 Concrete Testing

a. Compressive strength testing of standard concrete cylinders provided by the contractor and verified by the Resident Engineer that they have been stored in a proper curing box is performed to: Test for compliance of QACS approved concrete mix designs; Verify production concrete strength.

b. Concrete cores provided by the contractor and verified by the Resident Engineer are tested to determine the strength and thickness of concrete sidewalk and roadway base is determined for final acceptance by the Resident Engineer.

3.2 Asphalt Testing

a. Asphalt bag samples provided by the contractor and verified by the Resident Engineer are tested for compliance of QA&CS approved mix design.

b. Asphalt cores provided by the contractor and verified by the Resident Engineer are tested to verify the strength, thickness and compaction of the in-place asphalt and corroborate data taken by others. The Resident Engineer is responsible to evaluate the data for final payment purposes determine the thickness, strength and degree of compaction obtained.

c. Verification of Asphalt

Samples of asphalt delivered to the site are tested to evaluate the aggregate gradation and asphaltic cement content determined.

3.3 Soils (Backfill) Testing

Tests are performed to determine if the proposed foundation material, backfill, sand, and stone, which may exist on site or be trucked in, conform to project requirements and are suitable for use. Sieve analyses are performed to determine gradation, and Proctor tests are performed to ascertain optimum maximum dry density and optimum moisture content. Material Plasticity and Organic/ Contamination tests are performed when needed. Corroborative testing to verify results obtained by other laboratories is also performed. Samples are provided by the contractor and verified by the Resident Engineer; QA&CS auditors may also provide samples on material that appear to be substandard or non-complying.

3.4 Rebar / Steel Testing

Verification testing is performed for steel reinforcing bar, manhole steps and other castings. Samples are provided by the Resident Engineer.

3.5 Chemical Testing

The chemical composition of construction materials (asphalt, cement, and curing compounds, tack coat, expansion joint filler, topsoil, and stainless steel etc.) are tested for conformance to specifications.

3.6 Mix Design Approval

Review contractors' submittals (via RE or EIC) of mix designs of concrete and asphalt that are conducted by QA&CS approved third party laboratories. Records for each vendor's

approved mix designs are maintained by Project ID. Verification testing is performed as described above.

3.7 Concrete Training Requirements

Consultants and project inspectors are required to perform tests such as air content and slump tests on concrete delivered to the site. The Infrastructure Division requires that their staff be familiar with these procedures and have applicable certification. Qualification cards are issued by DDC QA&CS upon successful verification of the applicable Concrete Testing certification.

3.8 Laboratory Inspector Qualification Program

All approved private testing laboratory personnel inspecting soil and asphalt compaction on DDC projects must have a qualification card from DDC QA&CS.

The qualification cards are issued after verification of applicable Concrete and Soil/asphalt Testing certification and training requirements.

All laboratories performing Quality Control & testing of concrete, soil and asphalt in all DDC projects shall have the following certification and accreditation:

- Licensing from the Department of Building
- Accreditation from American Association of State Highway and Transportation (AASHTO)/AMRL
- Accreditation for Cement and Concrete Laboratory (CCRL)

3.9 Plant Inspection

Unscheduled visits to plants that supply concrete and asphalt to city projects are being conducted to ensure that mix designs and materials documentation comply with contract requirements. A list of all approved concrete and asphalt plants, and private laboratories is maintained.

3.10 Miscellaneous

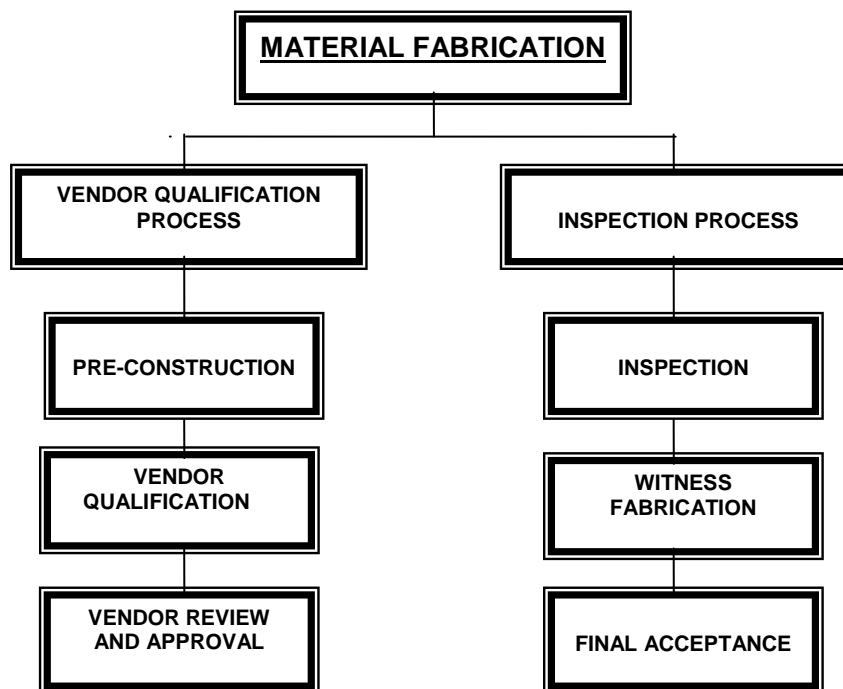
Acceptance testing of miscellaneous Construction Materials such as bricks, curing compound, tack coat, precast units, etc. is also performed as requested.

B. MATERIAL FABRICATION

1. OVERVIEW OF FUNCTIONAL AREAS

The Material Fabrication Section performs on-site inspection of pipe and appurtenances at the various fabricators and manufacturers plants to verify compliance with the specifications. Unless waived, these inspections are a prerequisite to the release of materials for shipment to the job sites. This Section reviews and approves the qualifications of the vendors proposed by contractors on DDC projects or wishing to establish their credentials for future work. A list of qualified vendors is maintained.

2. ORGANIZATION OF FUNCTIONAL AREAS



3. VENDOR QUALIFICATION PROCESS

3.1 Pre-Construction Meeting

Discussion of the QA Program explaining the procedures associated with the approval of vendors and materials including:

- Drawing submittal for approval by design.
- Contractor submittal of proposed vendors for approval.
- Inspection and approval of materials for shipment to job site.

3.2 Vendor Qualification

a. Vendors proposed by Contractors or requesting approval for work on DDC projects are required to submit the following information.

- Location of fabricating/manufacturing plants and foundries.
- Location of the warehouses if materials are not shipped from plants.
- Description of fabrication/manufacturing plant's capabilities/facilities proposed to supply DDC projects.
- The Quality Control/Quality Assurance protocols in effect at the above facilities.
- List of customer references

b. The Material Fabrication Section will review the information submitted and if needed will inspect the plant or warehouse facilities of a new vendor.

c. DDC inspection procedures will be discussed with the vendor and a meeting will be held to cover the applicable specifications and inspection protocol to assure that the vendor understands and complies with the established requirements. Upon satisfactory completion of vendor audit, an approval letter signed by the Director of QA&CS will be sent to the facility.

d. Vendors satisfying the above requirements are placed on DDC vendor's approval listing.

3.3 Vendor Review and Approval

The Contractor shall submit the name(s) of proposed vendors to the RE/EIC. The RE/EIC of the project shall perform a preliminary review and then send the vendor list to QA&CS for approval. Material Fabrication Section will:

- Check the list of approved vendors or provide vendor qualification as described in section 2, above.
- Review vendor's documents for procedures such as: welding, painting for conformance to project specifications.
- Advise the RE and Contractor of vendor approval/disapproval.

4. INSPECTION PROCESS

The Contractor informs the RE of the established delivery schedule with the approved vendor(s). The Pipe Fabrication Section will work directly with the vendor to establish dates for inspection or to inform the vendor when inspection is waived. The vendor/manufacturer shall notify QA&CS of the inspection requirement by means of properly filled in "Inspection Request Form".

4.1 Perform Inspections

QA Inspectors are assigned to:

- a. Perform inspections of pipe, fittings, valves and other appurtenances
- b. Review documentation of physical and chemical properties and vendors Quality Control test results
- c. Record activities in a daily log book
- d. Issue a daily/weekly inspection report

Problems that cannot be resolved by the Inspector will be referred to the Assistant Director of the Material Fabrication Section

4.2 Witness Fabrication and Tests

Inspector is required to perform the following:

- a. Review, qualify and approve subcontractors used by vendors.
- b. Inspect all materials to ensure that they meet the material specifications. Review material traceability.
- c. Witness hydrostatic and leakage tests on
 - Ductile Iron Pipes
 - Pre-stressed concrete Pipe
 - Metropolitan Gate Valves
 - Butterfly Seated Gate Valves
 - Stainless Steel Bolts and Tapping Sleeves
 - Expansion Joints
 - Steel Pipe
 - Resilient Valves
 - Check Valves
 - Pressure Control Valves
 - Special Hangers and Supports
 - Fire Hydrants
- d. Qualify welders and inspect welding procedures.
- e. Perform any additional procedures required by NYC specifications.
- f. Review all drawings and check the overall dimensions on all products.
- g. Inspect finished products by witnessing, performing specified acceptability tests such as sandblasting test, coating thickness test, etc.

4.3 Final Acceptance

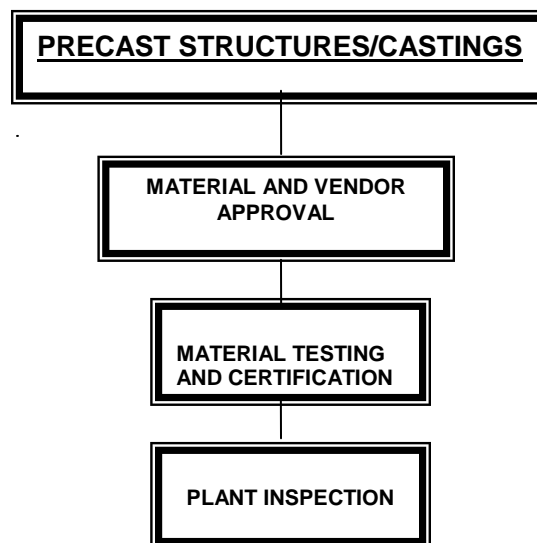
Upon final acceptance of all inspected materials including replacement/correction of rejected pieces the inspector will issue a shipping authorization. The project RE shall not accept any materials listed in DDC Infrastructure SCOP 05-011G without an approved written shipping authorization by QA&CS staff.

C. PRECAST STRUCTURES / CASTINGS

1. OVERVIEW OF FUNCTIONAL AREAS

This Section provides for Quality Assurance oversight services on the sewer and highway components of DDC Infrastructure projects such as precast structures, castings and pipes. Material test reports submitted by manufacturers, vendors and laboratories are reviewed to verify conformance with specifications and selected tests are witnessed. Similarly the qualifications and operations of manufacturers, vendors and laboratories performing work on DDC projects or requesting to be considered are evaluated, and a list of qualified firms is maintained.

2. ORGANIZATION OF FUNCTIONAL AREAS



3. MATERIAL AND VENDOR APPROVALS

3.1 Vendor Qualifications and Approvals

- a. The Contractor is required to inform the RE of the proposed vendors and manufacturers producing materials and products for the projects. The RE is required to submit the information to Quality Assurance for approval.
- b. Vendors and manufacturers are qualified after satisfactory review and evaluation of their quality assurance and quality control procedures, experience record and references, and examination of their facilities if warranted. The section maintains a list of approved vendors and manufacturers. New vendors requiring approval will be evaluated and qualified by the above procedures. Approvals are granted by the

- c. Combination of product/materials and the manufacturer, based on the premise that a certain manufacturer may qualify for certain products/materials only.

3.2 Materials Approvals

Materials subject to QACS oversight include but not limited to:

- a. Precast Structures
 - Box culverts
 - Manholes
 - Catch Basins
 - Seepage basins
 - Other, special purpose structures
- b. Castings
 - Manhole Covers
 - Catch Basin grates and hoods
 - Manhole steps
- c. Pipe
 - Concrete Pipe
 - Vitrified clay pipe
 - Ductile iron pipe

4. MATERIAL CERTIFICATION AND WITNESS TESTING

- a. QA&CS reviews all material test reports and documentation submitted by manufacturers, vendors and laboratories to assure that materials and products conform to the specifications and laboratory certifications.
- b. QA&CS witnesses the testing of selected products at the testing facility to verify test procedures and results.
- c. Observes and notes deficiencies in test, data or procedures requiring correction that may result in rejection of materials or products and advises the RE, contractor and vendor of their findings and actions taken.

5. PLANT INSPECTIONS

- a. Inspection of precast concrete manufacturing plants, casting plants, ready mix concrete plants, testing laboratories, etc. are performed to check the vendors' operations against the established quality control program.
- b. Visual examination and testing of the materials and products and their compliance with DDC established standards is determined during plant inspections.
- c. QA&CS notifies the facility on the acceptability of the observations and tests, and/or of noted deficiencies, procedures requiring correction and unacceptable test results.

APPENDIX – QA&CS BUREAU OPERATIONS MANUAL

A. FIELD AUDITING UNITS – SAMPLE FORMS

1. DDC Contract Safety Requirements
2. Safety Questionnaire
3. Site Safety Plan Checklist
4. Safety Program Checklist
5. QA&CS Auditing Checklist
6. Exit Field Conference Report
7. QA Substantial Completion Sign-Off Form

B. MATERIAL TESTING & FABRICATON INSPECTION - SAMPLE FORMS

1. Exit Conference Report
2. Concrete Plant Inspection Checklist
3. Asphalt Plant Inspection Checklist
4. Laboratory Audit Checklist
5. Mix Design Approval
6. Mix Design Disapproval
7. Chain of Custody Form
8. Inspector's Daily Log
9. Inspector's Weekly Summary Log
10. Material Release & Shipping Authorization
11. Checklists and Charts for various fabricated items (available for reference at QA&CS)
12. Material Inspection/Release Request