

**BATTERY PARK CITY AUTHORITY**

**REQUEST FOR PROPOSALS**

**FOR**

**Ball Fields Service Reconstruction – Superstorm Sandy**

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## **I. SUMMARY**

Battery Park City Authority d/b/a Hugh L. Carey Battery Park City Authority (“BPCA”) requests proposals (each individually, a “Proposal” or collectively, the “Proposals”) from Contractors (each individually, a “Proposer” or collectively, the “Proposers”). The purpose of this RFP (as defined below) is for the reconstruction of the Ballfields electrical service that was damaged due to Super storm Sandy. The selected Contractor shall provide all labor, materials and equipment as required to complete the repair of electrical service as per the attached drawings entitled BALL FIELDS SERVICE RECONSTRUCTION – SUPERSTORM SANDY by Ensign Engineering, dated 4/19/13.

Minority-Owned Business Enterprises (“MBE”) and Women-Owned Business Enterprises (“WBE”) are encouraged to submit Proposals.

This request for proposals, the attachments and any additional information submitted herewith, (collectively, the “RFP”) does not obligate BPCA to complete the selection and contract award process. BPCA reserves the right: 1) to accept or reject any and all Proposals; 2) to request additional information from any or all Proposers to assist BPCA in its evaluation process; 3) to amend or withdraw this RFP prior to the announcement of the selected firm; and 4) to award the proposed services, in whole or in part, to one or more firms. In case of an amendment to the RFP, all Proposers will be provided with a copy of any such amendment(s) and will be afforded the opportunity to revise their Proposals in response to the RFP amendment.

## **II. DESCRIPTION OF BPCA**

BPCA is a public benefit corporation created in 1968 under the laws of the State of New York for the purpose of financing, developing, constructing, maintaining, and operating a planned community development of the Battery Park City site as a mixed commercial and residential community.

Under the Battery Park City Authority Act (the “Act”), BPCA has the following powers, among others: to borrow money and to issue negotiable bonds, notes or other obligations and to provide for the rights of the holders thereof; to acquire, lease, hold, mortgage and dispose of real property and personal property or any interest therein for its corporate purposes; to construct, improve, enlarge, operate and maintain Battery Park City; to make bylaws for the management and regulation of its affairs, and, subject to agreements with bondholders, for the regulation of Battery Park City; to make contracts and to execute all necessary or convenient instruments, including leases and subleases; to accept grants, loans and contributions from the United States, or the State of New York or the City of New York (the “City”), or any agency or instrumentality of any of them, or from any other source and to expend the proceeds for any corporate purpose; to fix, establish and collect rates, rentals, fees and other charges; and to do all things necessary or convenient to carry out the powers expressly granted by the Act. BPCA has no taxing power.

Since its inception, BPCA has caused the staged development of Battery Park City, in individual parcels, creating a richly diversified mixed use community providing residential and commercial space, with related amenities such as parks, plazas, recreational areas and a waterfront esplanade. Most individual parcels of land in Battery Park City were developed into residential and commercial buildings by tenants (“Ground Lease Tenants”) under long-term ground leases with BPCA. The Ground Lease Tenants are responsible for the maintenance, insurance and defense and indemnification of BPCA with regard to those leased parcels.

One of BPCA’s key responsibilities under the Act is to operate, maintain and repair the parks and opens spaces in and around Battery Park City’s residential and commercial areas. This function has been delegated by BPCA to the Battery Park City Parks Conservancy Corporation (“BPCPC”) through a written Management Agreement. The BPCPC carries out its mission by maintaining 36 acres of parks, playgrounds and open spaces, including a mile-long waterfront esplanade. The BPCPC also develops programs and manages public events for the Battery Park City community. BPCA owns and has built out a commercial condominium unit in a residential building in Battery Park City, which serves as the BPCPC headquarters.

To obtain a copy of BPCA's most recently completed audited financial statements, please visit BPCA's official website at [www.batteryparkcity.org](http://www.batteryparkcity.org). The audited financial statements and related reports found on BPCA's website will provide you with an overview of the operations for which BPCA is responsible and the areas of expertise in which the selected Proposer must be proficient. For an overview of BPCPC's operations, please visit its website at [www.bpcpc.org](http://www.bpcpc.org).

### **III. SERVICES REQUIRED**

A. All work to be performed by the selected Proposer shall be performed under the supervision of a Project Manager in charge of this engagement (the "Lead PM") who must ensure that the work completed for BPCA is performed competently and in a timely manner.

B. Proposer will be responsible for the services delineated in Exhibit A (the "Scope of Work"), attached hereto.

### **IV. KEY DATES, CONTRACT TERM AND MINIMUM QUALIFICATIONS**

#### **A. Key Dates**

The following is a list of key dates, up to and including the date Proposals are due to be submitted, which is subject to change at BPCA's discretion:

- Request for Proposals issued: Tuesday, May 21, 2013
- Pre-proposal meeting: Wednesday, May 29, 2013 at 1:30 PM. Meeting Location: BPCA Offices, 1 World Financial Center 24<sup>th</sup> Fl, New York, NY 10281 (attendance is highly recommended).
- Deadline to submit questions to BPCA: Friday, May 31, 2013 by 5:00 p.m. (by email only).  
All questions regarding this RFP should be submitted in writing via email to the "Designated Contact": Venus Callender, Battery Park City Authority, at [venus.callender@batteryparkcity.org](mailto:venus.callender@batteryparkcity.org).
- Deadline for BPCA's response to substantive questions: Wednesday, June 5, 2013 (via BPCA Website).
- **DUE DATE FOR RESPONSES TO RFP: Wednesday, June 13, 2013 by 3:00 p.m. (the "Due Date").**
- Selection and notification of successful Proposer: To be determined.
- Contract start date: July 2013.

#### **B. Anticipated Contract Term**

It is anticipated that the term of the contract awarded pursuant to this RFP (the "Contract") will be for a period of six (6) months. BPCA reserves the right to terminate the Contract at any time, with or without cause, upon thirty (30) days written notice.

#### **C. Minimum Qualification Requirements**

The firm must be licensed to do business in the City of New York. Proposals that fail to comply with these requirements will be rejected.

## **V. GENERAL REQUIREMENTS**

### **A. Questions regarding MBE/WBE participation, joint ventures and sub-contracting goals**

Please see Exhibit B (attached) (“Diversity Exhibit”) for contractor requirements and procedures for business participation opportunities for New York State certified MBEs/WBEs and equal employment opportunities for minority group members and women.

For questions relating to MBE/WBE participation, joint ventures and sub-contracting goals ONLY, please contact “MBE/WBE Designated Contact” Mr. Anthony Peterson at 212.417.2337.

### **B. Restricted Period**

Applicants are restricted from making contact with anyone other than the Designated Contact or MBE/WBE Designated Contact specified above during the period from the date of publication of the notice of this RFP in the New York State Contract Reporter through approval of the Contract by BPCA (the “Restricted Period”). Employees of BPCA are required to record certain contacts during the Restricted Period, including, but not limited to, any oral, written or electronic communication with a governmental entity under circumstances where a reasonable person would infer that the communication was intended to influence BPCA’s conduct or decision regarding the governmental procurement, and to make a determination of responsibility based, in part, upon any such contact. Failure to abide by this process may result in a finding that the firm is a non-responsive Proposer.

### **C. Submission of Proposals**

Proposals are due no later than 3:00 p.m. on June 13, 2013.

Proposers must submit four (4) paper copies of their Proposals and one (1) electronic CD-Rom copy in a sealed package clearly marked “**Proposal Enclosed – Ball Fields Service Reconstruction– Superstorm Sandy**” to the Designated Contact by messenger, overnight courier or certified mail to the following address:

Venus Callender  
Battery Park City Authority  
One World Financial Center, 24<sup>th</sup> Floor  
New York, NY 10281

BPCA is not responsible for any internal or external delivery delays which may cause any Proposal to arrive beyond the stated Due Date. To be considered, Proposals must arrive at the time and place specified herein and be time stamped by BPCA’s time stamp prior to the Due Date. Please leave ample time for building security, as late Proposals will not be accepted. Proposals submitted by fax or electronic transmission will NOT be accepted. A Proposer may, after submitting a Proposal, amend its Proposal by submitting a second, amended Proposal, clearly labeled “**Amended Proposal Enclosed – Ball Fields Service Reconstruction – Superstorm Sandy**,” as long as the amended Proposal is submitted by the Due Date.

Public access to Proposals shall be governed by the relevant provisions of the Freedom of Information Law, Article 6 of the New York State Public Officers Law, and regulations adopted pursuant thereto.

### **D. Mandatory Forms**

Proposers must complete and include with their Proposal all “Mandatory Forms,” which can be found at the following URL address: [http://www.batteryparkcity.org/pdf\\_n/Mandatory\\_Forms\\_Packet.pdf](http://www.batteryparkcity.org/pdf_n/Mandatory_Forms_Packet.pdf), by the Due Date.

These Mandatory Forms include the following:

- 1) NYS Standard Vendor Responsibility Questionnaire – Submit with the Cost Proposal (as described below), one (1) original unbound set of a completed NYS Standard Vendor Responsibility Questionnaire with original ink signatures. Do not include the Standard Vendor Responsibility Questionnaire in the bound copies of the Cost Proposal. The NYS Standard Vendor Responsibility Questionnaire must be notarized and signed by the individual(s) authorized to bind the firm contractually. Indicate the title or position that the signer holds within the firm.
- 2) State Finance Law § 139 Form 1 – one original unbound completed SFL 139 Form 1: Professional's Certifications Pursuant to SFL § 139-j and § 139-k with original signature. State Finance Law § 139 Forms 1 must be signed by the individual(s) authorized to bind the firm contractually.
- 3) W-9 form.
- 4) Statement of Non-Collusion.
- 5) Diversity Forms.

## **VI. PROPOSAL FORMAT AND CONTENTS**

### **A. Proposal Format**

The Proposal must be printed on either 8½" x 11" or 8½" x 14" paper. The Proposal will be evaluated on the basis of its content, not length. BPCA reserves the right to disqualify Proposals that fail to comply with any of these instructions.

### **B. Proposal Content**

A Proposal in response to this RFP must include the following sections in the order listed:

- 1) Cover letter, as follows:

The Proposal must include a signed cover letter from a person within the firm who is authorized to bind the firm. Cover letters must be signed. **Proposals with unsigned Cover Letters will be rejected.**

**The Cover Letter must include a representation by the Proposer that, except as disclosed in the Proposal, no officer or employee of the Proposer is directly or indirectly a party to or in any other manner interested financially or otherwise in this RFP.**

- 2) Corporate overview.
- 3) Firm's discussion of its understanding of the Services Required (see Section III).
- 4) Firm's responses to the RFP Questions and RFP Additional Information Request, set forth below.
- 5) Firm's Cost Proposal, as described below.
- 6) Schedule of Values for the project.

### **C. RFP Questions**

1. Briefly describe your firm's background, staff, and history as they may be relevant to the Services Required, with an emphasis on large electrical installations in New York City.
2. Describe your firm experience and expertise relevant to the project.

3. Please describe your experience working on large electrical service installations in parks, including artificial turf ball fields, in New York City.
4. Has your firm or any of the firm's partners/employees been disciplined or censured by any regulatory body or filed for bankruptcy or reorganization or has had bankruptcy proceedings initiated against it/them within the last 5 years? If so, please describe the relevant facts.
5. Are there any potential conflict of interest issues in representing BPCA?
6. Are any of your employees or principals former employees of BPCA? If so, please list their names, current titles, and dates of employment with BPCA.
7. List any professional or personal relationships your firm's employees may have with BPCA's Board and/or staff members of BPCA.
8. Identify the Lead PM who will be the primary contact and lead person in providing services to BPCA, and who will be listed as a "key person" in any contract with BPCA.
9. Describe your proposed team's experience (including both direct contract work and work performed under subcontracts) with similar work for other public agencies and authorities, with a particular emphasis on New York State and City agencies and authorities or Federal government agencies or authorities. Include contract dates, the nature of the work performed, the contracting agency, the contract number (if known) and the agency supervisor for each.
10. Submit a discussion of your approach to the work which shall briefly address your conceptual step-by-step approach towards completion of the work and outline the proposed procedures for executing the work.
11. Itemize the work you intend to perform with your firm's resources and/or workforce as well as the work for which you propose to utilize subcontractors.
12. Provide a list of all proposed subcontractors for the completion of the work.
13. Provide a list of all proposed suppliers for the completion of the work.
14. Provide a Schedule of Values with your proposal.
15. Submit a **bar chart schedule** for completion of the work. This should include sequencing of the work, manpower staffing level, work shifts, and show all project milestones and successful overall completion.
16. Discuss your ability to take stringent safety measures into account as to work done on public streets and in public parks.
17. Identify any and all exceptions taken to BPCA's standard form of contract attached hereto as Exhibit C detailing the reasons for such exceptions. No exceptions to the contract will be considered by BPCA after submission of the proposals. BPCA maintains the right to reject proposals based on non-conformance with the standard form of contract.
18. Please provide any additional information which would serve to distinguish your firm from other firms and that you believe may be relevant to this RFP and your capability to perform the services requested.

**D. RFP Additional Information Request**

1) Insurance/Bonding:

- a. Do you impose any limitations on liability through your contracts?
- b. Describe the levels of coverage for any insurance your firm carries. List the insurance carrier(s) or provide an insurance certificate showing your firm's coverage in accordance with the following:

Commercial General Liability Insurance limits shall not be less than \$1,000,000 per occurrence and \$2,000,000 in the aggregate. Excess Liability limits shall not be less than \$5,000,000 and Automobile Liability limits shall not be less than \$1,000,000, Workman's Compensation shall not be less than the Statutory Limits/\$1,000,000 Employers Liability, Contractors Pollution Liability of no less than \$1,000,000 with transportation coverage included. **The costs of the insurance shall be included in the Proposal.** BPCA, the Battery Parks City Parks

Conservancy (the “Conservancy”), and the State of New York shall be listed as Additional Insured’s on all certificates of insurance. Insurance policies should contain no limitations/exclusions for Labor Law claims.

All Sub-contractors must provide certificates of insurance naming the General Contractor, BPCA, the Conservancy, and the State of New York as Additional Insured’s for all coverage at a minimum of \$5,000,000.

- c. State whether or not you can provide payment and performance bonds, the amounts thereof (both single and aggregate) and the name of your bonding company. Provide a letter from your surety stating that you are able to provide 100% bonding for this project.

2) References:

Please provide at least three (3) client references for whom your firm has performed similar work to that requested in this RFP. For each client, please provide the name, address and telephone number for the client’s.

3) Appendices:

- a. Include resumes for all key management personnel listed in your Proposal.
- b. Provide a copy of each addenda submitted by BPCA with regard to this Proposal (if applicable) and a signed acknowledgment of receipt of each addenda.

4) Financial Statements: Please provide a copy of your firm’s most recent Audited Financial Statements (within the last year).

**E. Cost Proposal**

Each “Cost Proposal” must be a lump sum with an itemized schedule of values for the services contemplated herein. **To submit a complete Cost Proposal, Proposer must submit each of the following:**

- 1) Cost proposal in the form attached hereto as Exhibit D (“Cost Proposal Form”).
- 2) Labor rates in the form attached hereto as Exhibit E (“Labor Rates”).
- 3) An *itemized* cost proposal in the form attached hereto as Exhibit F (“Form of Schedule of Values”).

**VII. THE EVALUATION PROCESS**

**A. Objectives**

The primary objective of the evaluation process is to select a firm:

- That demonstrates a thorough understanding of the scope of the engagement and the specific responsibilities which it entails;
- Possesses adequate resources to handle assigned responsibilities and to handle unforeseen circumstances that may arise;
- Assigns highly skilled, experienced, diligent, responsible and professional personnel to perform the required services;
- Maintains high ethical standards and has an unblemished reputation;
- Has no conflict of interest between its representation of BPCA and that of other clients.



The selection process will begin with the review and evaluation of each of the written Proposals. The purpose of this evaluation process is twofold: (1) to examine the responses for compliance with this RFP and (2) to identify the complying firms that have the highest probability of satisfactorily performing the Services Required at a reasonable cost to BPCA. The evaluation process will be conducted in a comprehensive and impartial manner. The evaluation process will be conducted by a committee of BPCA's employees selected by BPCA (the "Committee"). **The Committee will evaluate the Proposals based upon the evaluation criteria for selection set forth below.**

BPCA reserves the right to reject and return unopened to the Proposer any Proposal received after the Due Date. All timely submitted Proposals will be reviewed to determine if they contain all required submittals specified herein. Incomplete Proposals may be rejected.

#### **B. Interviews**

BPCA reserves the right to determine whether interviews will be necessary for any or all of the Proposers. The purpose of the interview is to further document a Proposer's ability to provide the Services Required, and to impart to the Committee an understanding of how specific services will be furnished. The proposed Lead PM, as well as all other key personnel proposed to provide the services must be present and participate in the interview. The Proposer will be evaluated on the basis of whether the interview substantiates the characteristics and attributes claimed by the Proposer in its written response to this RFP and any other information requested by the Committee prior to the interview.

#### **C. Evaluation Criteria for Selection**

Selection will be based upon the following criteria:

- |   |  |     |
|---|--|-----|
| 1 | Cost Proposal:   | 35% |
| 2 | Expertise, Experience & Methodology:   | 30% |
| 3 | Schedule:  | 20% |
| 4 | Proposed MBE/WBE utilization plan (the "Utilization Plan") and/or Firm MBE/WBE status: | 15% |

#### **D. Basis for Contract Award**

The Contract will be awarded to the highest technically rated Proposer whose Proposal is determined to be responsive and in the best interests of BPCA, subject to a determination that the Cost Proposal is fair and reasonable.

### **VIII. NON-COLLUSION**

By submitting a Proposal, Proposers hereby warrant and represent that any ensuing Contract has not been solicited or secured directly or indirectly in a manner contrary to the laws of the State of New York, and that said laws have not been violated and shall not be violated as they relate to the procurement or the performance of the Contract by any conduct, including the paying or giving of any fee, commission, compensation, gift, or gratuity or consideration of any kind, directly or indirectly, to any member of the board of directors, employee, officer or official of BPCA.

## **EXHIBIT A**

### **SCOPE OF WORK**

The purpose of this RFP is for the reconstruction of the Ballfields electrical service that was damaged due to Superstorm Sandy. The following list of items generally describes the work and the accompanying drawings indicate in detail the specific work items. The Proposer shall provide all labor, materials and equipment as required to complete the repair of electrical service as per the attached drawings entitled BALLFIELDS SERVICE RECONSTRUCTION – SUPERSTORM SANDY by Ensign Engineering, dated 4/19/13. Unless otherwise noted, all labor, materials equipment, removal of debris and safety precautions are provided by the contractor. The two alternate work scopes are provided below as Scenarios A and B. Please provide alternate cost proposals and schedules for each of Scenarios A and B.

### **SCENARIOS A and B**

1. Ball & Brush existing conduits between service equipment and light poles in Ballfields. Remove all existing load side conductors, and clean and desalt conduits. All new conductors shall be provided and installed into clean and desalted conduit, tested and terminated.
2. Clean conduit of corrosive salts. TBD means and methods are to be submitted for review and MSDS should be included in the Proposal.
3. Shop drawing submittal for review.
4. Provide and install/erect a new platform for the electrical system.
5. Layout new equipment and provide structural and physical supports for new equipment lineup – please refer to structural drawings and specifications.
6. Extend conduit (Con Edison Feeder) duct bank vertically to bottom of equipment support platform. Maintain Con Edison's 6x4" conduit pattern, and encase Con Edison conduit/feeders in concrete duct bank as required by New York City electrical code and local regulations, and install platform and concrete slab. Extend new conduit stub up into CT cabinet 3" above surface of concrete slab.
7. Provide concrete slab at top of platform for securing equipment and leveling channels. Provide precast sleeves or core drill as required. Extend conduit 3" above surface of new concrete base. Coordinate all precast anchors and sleeves with all trades.
8. Install new equipment (Scenario A/Scenario B) lineup on new platform/slab.
  - a. Scenario A includes continuation of work to replace ice rink equipment; and
  - b. Scenario B eliminates ice rink equipment and eliminates platform raising ice rink equipment.
9. Connect and torque all connection on bus bars as per equipment manufacturer, NEMA standards and codes and NEC/NYC 2011.
10. Install remote Con Edison meter at lower level of platform for ease of reading and reporting without climbing platform stairs.
11. Megger existing Con Edison feeders. Pull out and replace existing Con Edison feeder conductor if indicated by Megger test that it needs to be replaced. Re-pull all original load side conductors, splice and terminate at all points required.
12. Terminate new Con Edison feeders at service CT cabinet EOL box.
13. Ground and bond conduit to ground loop/grind in earth adding required ground rods and water pipe clamps required by New York City code. Measure grounding system resistance and add rods if over 5Ω.
14. Terminate and test all new branch circuit conductors.
15. Terminate and reconnect all terminations.
16. Ground and bond all conduits, enclosures, etc.
17. Label all circuits, and create new panel directories.
18. Label conductors.
19. Provide a set of "as built" drawings.

20. Remove all load branch circuits up to the nearest junction box above an elevation considered compromised by seawater, which is approximately 8'6" above sea level, 3'0" above grade, for pole lighting up to the light control panel and for equipment outside of the Ball Park, at the nearest hand hole above an elevation of 12 feet above sea level."
21. Refer to the 2011 version of the NYC Electrical Code, all applicable sections for any questions.

SCENARIO A

1. Extend existing underground stub-up conduit to new elevated ice rink equipment on raised platform. See structural drawings and specifications. Coordinate with all trades.
2. Reinstall ice rink equipment on new platform supported concrete slab.

**EXHIBIT B**

**DIVERSITY REQUIREMENTS**

**CONTRACTOR REQUIREMENTS AND PROCEDURES FOR BUSINESS PARTICIPATION OPPORTUNITIES FOR NEW YORK STATE CERTIFIED MBEs/WBEs AND EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITY GROUP MEMBERS AND WOMEN**

Pursuant to New York State Executive Law Article 15-A, BPCA recognizes its obligation under the law to promote opportunities for maximum feasible participation of certified MBE/WBEs and the employment of minority group members and women in the performance of BPCA contracts.

In 2006, the State of New York commissioned a disparity study to evaluate whether minority and women-owned business enterprises had a full and fair opportunity to participate in state contracting. The findings of the study were published on April 29, 2010, under the title “The State of Minority and Women-Owned Business Enterprises: Evidence from New York” (the “Disparity Study”). The report found evidence of statistically significant disparities between the level of participation of minority-and women-owned business enterprises in state procurement contracting versus the number of minority-and women-owned business enterprises that were ready, willing and able to participate in state procurements. As a result of these findings, the Disparity Study made recommendations concerning the implementation and operation of the statewide certified minority- and women-owned business enterprises program. The recommendations from the Disparity Study culminated in the enactment and the implementation of New York State Executive Law Article 15-A, which requires, among other things, that BPCA establish goals for maximum feasible participation of New York State Certified MBEs/WBEs and the employment of minority groups members and women in the performance of New York State contracts.

**Business Participation Opportunities for MBE/WBEs and minorities and women** For purposes of this solicitation, BPCA hereby establishes an overall goal of 30% for MBE/WBE participation, 15% for MBE participation and 15% for WBE participation (based on the current availability of qualified MBEs and WBEs). A contractor (“Contractor”) on the Contract must document good faith efforts to provide meaningful participation by MBE/WBEs as subcontractors or suppliers in the performance of the Contract and Contractor agrees that BPCA may withhold payment pending receipt of the required MBE/WBE documentation. The directory of New York State Certified MBE/WBEs can be viewed at: <http://www.esd.ny.gov/mwbe.html>.

For guidance on how BPCA will determine a Contractor’s “good faith efforts,” refer to 5 NYCRR §142.8.

In accordance with 5 NYCRR §142.13, Contractor acknowledges that if it is found to have willfully and intentionally failed to comply with the MBE/WBE participation goals set forth in the Contract, such finding constitutes a breach of Contract and BPCA may withhold payment from the Contractor as liquidated damages.

Such liquidated damages shall be calculated as an amount equaling the difference between: (1) all sums identified for payment to MBE/WBEs had the Contractor achieved the contractual MBE/WBE goals; and (2) all sums actually paid to MBEs/WBEs for work performed or materials supplied under the Contract.

By submitting a bid or Proposal, a Proposer agrees to submit the following documents and information as evidence of compliance with the foregoing:

- A. Proposers are required to submit a Utilization Plan with their bid or Proposal. Any modifications or changes to the Utilization Plan after the Contract award and during the term of the Contract must be reported on a revised Utilization Plan and submitted to BPCA.

- B. BPCA will review the submitted Utilization Plan and advise the Proposer of BPCA's acceptance or issue a notice of deficiency within 30 days of receipt.
- C. If a notice of deficiency is issued, Proposer agrees that it shall respond to the notice of deficiency within seven (7) business days of receipt by submitting to BPCA, at the address specified in this RFP, or by facsimile at 212-417-2279 a written remedy in response to the notice of deficiency. If the written remedy that is submitted is not timely or is found by BPCA to be inadequate, BPCA shall notify the Proposer and direct the Proposer to submit, within five (5) business days, a request for a partial or total waiver of MBE/WBE participation goals. Failure to file the waiver form in a timely manner may be grounds for disqualification of the bid or Proposal.
- D. BPCA may disqualify a Proposer as being non-responsive under the following circumstances:
  - 1) If a Proposer fails to submit a Utilization Plan;
  - 2) If a Proposer fails to submit a written remedy to a notice of deficiency;
  - 3) If a Proposer fails to submit a request for waiver; or
  - 4) If BPCA determines that the Proposer has failed to document good faith efforts.

Contractors shall attempt to utilize, in good faith, any MBE/WBE identified within its Utilization Plan, during the performance of the Contract. Requests for a partial or total waiver of established goal requirements made subsequent to the Contract award may be made at any time during the term of the Contract to BPCA, but must be made no later than prior to the submission of a request for final payment on the Contract.

Contractors are required to submit a Contractor's MBE/WBE Contractor Compliance & Payment Report to BPCA on a monthly basis over the term of the Contract documenting the progress made toward achievement of the MBE/WBE goals of the Contract.

#### **Equal Employment Opportunity Requirements**

The Contractor is required to ensure that it and any subcontractors awarded a subcontract over \$25,000 for the construction, demolition, replacement, major repair, renovation, planning or design of real property and improvements thereon (the "Work") except where the Work is for the beneficial use of the Contractor, shall undertake or continue programs to ensure that minority group members and women are afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status. For these purposes, equal opportunity shall apply in the areas of recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff, termination, and rates of pay or other forms of compensation. This requirement does not apply to: (i) work, goods, or services unrelated to the Contract or (ii) employment outside New York State.

Proposer further agrees to submit with the Proposal a staffing plan identifying the anticipated work force to be utilized on the Contract and if awarded a Contract, will submit to BPCA a workforce utilization report identifying the workforce actually utilized on the Contract. Contractor will be required to make good faith efforts to achieve a participation goal of 30% of the total number of employees required for the work who are minority group members and a participation goal of 5% of the total number of employees required for the work who are women to perform the work.

Further, pursuant to Article 15 of the Executive Law (the "Human Rights Law"), all other New York State and Federal statutory and constitutional non-discrimination provisions, the Contractor and sub-contractors will not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, military status, age, disability, predisposing genetic characteristic, marital status or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest.

Please Note: Failure to comply with the foregoing requirements may result in a finding of non-responsiveness, non-responsibility and/or a breach of the Contract, leading to the withholding of funds, suspension or termination of the Contract or such other actions or enforcement proceedings as are allowed by the Contract.

For questions on MBE/WBE participation, joint ventures and sub-contracting goals ONLY, please contact Mr. Anthony Peterson at 212.417.2337.

**EXHIBIT C**

**BPCA STANDARD CONTRACT FORM**

(attached)

**CONSTRUCTION AGREEMENT**

**between**

**BATTERY PARK CITY AUTHORITY,  
d/b/a HUGH L. CAREY BATTERY PARK CITY AUTHORITY**

**and**

**CONTRACTOR COMPANY NAME**

**Dated as of \_\_\_\_\_  
Contract No. ????**

**(PROJECT NAME)**



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## EXHIBITS

## CONSTRUCTION AGREEMENT

AGREEMENT made as of the \_\_\_\_\_ day of \_\_\_\_\_, 2011, between BATTERY PARK CITY AUTHORITY, d/b/a HUGH L. CAREY BATTERY PARK CITY AUTHORITY, a body corporate and politic, constituting a public benefit corporation and having a place of business at One World Financial Center, 24th Floor, New York, New York 10281 ("Authority," "BPCA" or "Owner") and CONTRACTOR COMPANY NAME, a corporation incorporated under the laws of STATE, having an office at Street Address, City, Zip, Phone, ("Contractor").

### W I T N E S S E T H:

WHEREAS, BPCA has fee title to certain real property located in the City, County and State of New York, generally consisting of approximately 92 acres of land located on the west side of lower Manhattan, bounded by Pier A to the South, the westerly extension of Reade Street to the North, the United States Bulkhead Line to the East and the United States Pierhead Line to the West (collectively, "Battery Park City"); and

WHEREAS, BPCA has caused the staged development of Battery Park City, in individual parcels, creating a richly diversified mixed use community providing residential and commercial space, with related amenities such as parks, plazas, recreational areas and a waterfront esplanade; and

WHEREAS, BPCA intends to hire a contractor to perform type of services services, consisting of the Work, as hereinafter defined, for the location (the "Project"), located in and adjacent to location, in Battery Park City, in the Borough of Manhattan, County, City and State of New York (the "Site"); and

WHEREAS, Contractor has been selected to perform the Work, as hereinafter defined, upon the terms and conditions hereinafter provided; and

WHEREAS, Contractor and BPCA entered into a Letter of Intent, dated as of August 31, 2011 (the "Letter of Intent"), under which BPCA authorized Contractor to perform the Work, as hereinafter defined, up to a funding maximum of \$50,000. The terms and conditions of such Letter of Intent are hereby superseded by the terms and conditions set forth herein; (if there is no Letter of Intent, omit this Recital).

NOW, THEREFORE, in consideration of the mutual covenants hereinafter set forth, Contractor and BPCA hereby agree as follows:

## **ARTICLE 1 - DEFINITIONS**

The following terms, wherever used in the Contract Documents, as defined herein, shall have the meanings set forth below or in the Section enumerated below next to each term:

- (a) Agreement - as defined in Section 2.2(a).
- (b) Agreement Termination Date - as defined in Section 3.1(a)
- (c) Architect - Name, address, etc. or n/a.
- (d) Artist - n/a.
- (e) Authority - as defined in the introductory clause of this Agreement.

(f) BPCA - as defined in the introductory clause of this Agreement. BPCA hereby designates BPCA Person and Title, Project Manager, as the representative of BPCA for the purpose of acting on behalf of BPCA whenever action is required to be taken hereunder by BPCA. Such designation may be revoked in writing at any time after notice given by BPCA to Contractor. In addition, such representative of BPCA shall have full power and authority to delegate in writing any or all of her responsibilities hereunder to any one or more persons after notice to Contractor.

- (g) Certificate of Substantial Completion - as defined in Section 8.6.
- (h) Change Order - as defined in Section 9.1(b).
- (i) Construction Manager - Name, address, etc. or n/a.
- (j) Contract Documents - as defined in Section 2.2.
- (k) Contract Price - as defined in Article 4.

(l) Contract Time - the duration of time during which Construction Manager schedules and coordinates the Work of Contractor pursuant to Section 7.2 hereof.

- (m) Contractor - as defined in the introductory clause of this Agreement.
- (n) Drawings - Project drawings comprising part of Exhibit B.
- (o) Engineer - Name, address, etc. or n/a.

(p) Extra Work - Any work in addition to the Work to be performed by Contractor pursuant to the Contract Documents.

(q) Field Order - as defined in Section 9.3.

(r) Final Acceptance - as defined in Section 8.7.

(s) Final Requisition - as defined in Section 5.2.

(t) Guarantor - as defined in Section 27.3.

(u) Joint Venture - an entity created pursuant to a written agreement among two or more contractors pursuant to which each shares in the direction and performance of the Work and shares in a stated percentage of profits or losses.

(v) Key Person/Personnel - as defined in Section 27.25.

(w) Letter of Intent - as defined in the fifth whereas clause of this Agreement.

(x) Materialman - Supplier of Materials.

(y) Materials - All products, materials, fixtures, tools, equipment, apparatus, and furnishings intended to form a part of the Work.

(z) Minority Business Enterprise or Minority Owned Business Enterprise or MBE - as defined in Article 26.

(aa) Minority or Minority Group Member - as defined in Article 26.

(bb) Payment Bond - as defined in Section 13.3.

(cc) Performance Bond - as defined in Section 13.3.

(dd) Preceding Covered Date - as defined in Section 5.5.

(ee) Product Data - Illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by Contractor to illustrate a material, product or system for some portion of the Work.

(ff) Progress Schedule - as defined in Section 3.1(a).

(gg) Project - as defined in the third Recital of this Agreement.

(hh) Purchase Order - as defined in Section 10.1(e).

(ii) Requisitions - as defined in Section 5.2.

(jj) Samples - Physical examples which illustrate Materials or workmanship and establish standards by which the Work will be judged.

- (kk) Site - as defined in the third whereas clause of this Agreement.
- (ll) Specifications - the specifications comprising part of Exhibit C.
- (mm) Subcontract - An Agreement between the Contractor and a Subcontractor (as defined in subSection (nn), below) for work on the Site.
- (nn) Subcontractor - A person, firm, partnership or corporation under contract with Contractor.
- (oo) Term - as defined in Section 3.1(i).
- (pp) Trade Payment Breakdown - as defined in Section 5.3.
- (qq) Women's Business Enterprise or Women Owned Business Enterprise or WBE - as defined in Article 26.
- (rr) Work - as defined in Section 2.1.
- (ss) Work Completion Date - as defined in Section 3.1(a).

## **ARTICLE 2 - SCOPE OF WORK, MATERIALS AND LABOR**

### **2.1 Definition of Work**

Contractor shall perform and complete (and shall cause all Subcontractors to perform and complete) for BPCA the work more particularly described in Exhibit A - Scope of Work annexed hereto and made a part hereof, required by and in conformity with the Contract Documents in connection with the construction of the Project on the Site. All Materials to be furnished and labor and work to be performed and completed by Contractor and/or Subcontractors as required in the Contract Documents and in conformity with all requirements applicable with respect thereto are herein collectively referred to as the "Work."

### **2.2 Contract Documents**

The "Contract Documents" shall consist of the following:

(a) This instrument (the "Agreement"), which includes, in addition to the text comprising Articles 1 through 27, the following:

(1) Exhibit A:

(2) Exhibit B:

Etc.



- (b) The Payment and Performance Bonds (as defined in Section 13.3).
- (c) Change Orders adopted pursuant to Article 9.

The Contract Documents form the contract between BPCA and Contractor. References in the Contract Documents to “the Contract”, “this Contract” or “the Construction Contract” shall be deemed to include all of the Contract Documents. References to “this Agreement” or “the Agreement” shall refer to this instrument (including the Exhibits attached hereto), which is one of the Contract Documents.

### **2.3 Intent of Contract Documents**

(a) The intent of the Contract Documents is to include in the Work all labor and materials, insurance, tools, equipment, permits, licenses, taxes, approvals, transportation, surveys, testing, field Engineering and other professional services (other than the services of BPCA’s Architect, Construction Manager, Engineers and attorneys, and the inspection, survey and testing services of BPCA) and any other items required to execute and complete the Work satisfactorily and in accordance with the Contract Documents. Contractor shall perform and complete the Work in accordance with the true intent and meaning of the Contract Documents and shall perform all Work incident thereto or as is usually performed in connection therewith or as is reasonably inferable therefrom, it being the intention that all work usually performed by the trade covered by this Agreement and necessary to produce the intended result be performed by Contractor whether or not specifically covered by the Contract Documents.

(b) The Contract Documents are complementary and what is called for by one shall be as binding as if called for by all.

(c) If any conflicts or ambiguities are found in or between the Drawings and Specifications, or among any of the Contract Documents, they shall be brought to the attention of Construction Manager immediately for resolution. Engineer and Construction Manager will interpret the Contract Documents so as to secure in all cases the most substantial and complete performance of the Work as is most consistent with the needs and requirements of the Work. In the event that Engineer and Construction Manager shall disagree as to the interpretation of the Contract Documents, such dispute shall be presented to BPCA, which shall have sole authority to resolve the dispute.

(d) Addenda to parts of the Contract Documents are for the purpose of varying, modifying, rescinding or adding to the affected portion of the Contract Documents. All addenda should be read together with the portions of the Contract Documents to which they pertain. Where an addendum modifies a portion of a paragraph or a Section, the remainder of the paragraph or Section shall remain in force unless otherwise stated in the addendum.

(e) Captions, headings, cover pages, tables of contents and footnote instructions contained in the Contract Documents are inserted only to facilitate reference and for

convenience and in no way define, limit or describe the scope, intent or meaning of any provision of the Contract.

(f) Words and abbreviations which have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings.

(g) Drawings and Specifications are complementary. Anything shown in the Drawings and not mentioned in the Specifications, or mentioned in the Specifications and not shown in the Drawings, shall have the same effect as if shown or mentioned in both.

(h) A typical or representative detail indicated on the Drawings shall constitute the standard for workmanship and material throughout corresponding parts of the Work. Where necessary, and where reasonably inferable from the Drawings or Specifications, Contractor shall adapt such representative detail for application to such corresponding parts of the Work. The details of such adaptation shall be subject to prior approval by Engineer. Repetitive features shown in outline on the Drawings shall be in exact accordance with corresponding features completely shown.

(i) The layout of mechanical and electrical systems, equipment, fixtures, piping, ductwork, conduit, specialty items, and accessories indicated on the Drawings is diagrammatic, and all variations in alignment, elevation, and detail required to avoid interferences and satisfy Architectural and structural limitations are not necessarily shown. Actual layout of the Work shall be carried out without affecting the Architectural and structural integrity and limitations of the Work and shall be performed in such sequence and manner as to avoid conflicts, provide clear access to all control points, including valves, strainers, control devices, and specialty items of every nature related to such systems and equipment, obtain maximum headroom, and provide adequate clearances as required for operation and maintenance.

#### **2.4 Completion of Drawings and Specifications**

Contractor acknowledges that there are items of work which are not drawn or specified with complete detail in the Drawings and Specifications but which are required for the completion of the Work. Any such item, when identified as part of the reasonable development of the Work, shall be drawn or specified by Engineer in consultation with Contractor, in a manner consistent with contemplated kind and quality and customary standards. When such drawing or specification is approved by BPCA, the drawing or specification so approved shall thereupon be part of the Contract Documents and the item of work shall be performed by Contractor as part of the Work without further action or order of Construction Manager or BPCA and without any increase in the Contract Price (as hereinafter defined) as if such drawing and specification were originally included in the Contract Documents.

#### **2.5 Title to Materials**

Title to all Materials shall immediately vest in BPCA upon payment in respect of such Materials, whether or not then incorporated or installed into the Project. The Materials shall then become the sole property of BPCA subject to the right of BPCA, Construction

Manager or Engineer to reject same for failure to conform to the standards of any or all of the Contract Documents. Title to all Work and Materials shall be in BPCA, free and clear of all liens, claims, security interests or encumbrances. Contractor warrants that no Work or Materials shall be fabricated or delivered to the Site by Contractor or any Subcontractor or Materialman subject to any security interest, lien or similar encumbrance.

## **2.6 Contractor's Obligations**

(a) Contractor shall in a good and workmanlike manner perform all the Work required by this Agreement in accordance with the best practice of Contractor's trade within the time specified herein. Contractor shall supervise and direct the Work using its best skill and attention. Contractor shall be solely responsible for all construction means, methods, techniques, sequences and procedures within the scope of Contractor's Work.

(b) Contractor shall furnish, erect, maintain, and remove such construction plant and such temporary Work as may be required for the performance of the Work. Contractor shall be responsible for the safety, efficiency and adequacy of Contractor's plant, appliances and methods, and for damage which may result from failure or improper construction, maintenance or operation of such plant, appliances and methods. Contractor shall comply with all terms of the Contract Documents, and shall do, carry on and complete the entire Work under the direction of and to the satisfaction of BPCA.

(c) Contractor shall provide all equipment, tools and materials and whatever else may be required for proper performance of the Work unless stated otherwise in the Contract Documents.

(d) Contractor shall deliver all Materials at such times and in such quantities as will insure the speedy and uninterrupted progress of the Work. All Materials shall be delivered to the Site in proper order and quantity and shall be stored at the Site, if storage space is available in Construction Manager's opinion, in such places as Construction Manager shall direct; provided, that no delivery of Materials shall be made to the Site without prior approval by Construction Manager. No Materials shall be removed from the Site without the consent of Construction Manager. Contractor shall handle and take care of all Materials used in performance of the Work whether furnished by Contractor or BPCA, as the same are delivered to the Site or to any applicable offsite storage location and shall be solely responsible for the security and condition of the same. After final completion and acceptance of the Work, or sooner if requested by Construction Manager, Contractor shall remove all surplus Materials and scaffolding furnished by it which have not been incorporated in the Work.

(e) Contractor shall follow and perform the Work in accordance with the Contract Documents as interpreted by Engineer, Construction Manager, and BPCA.

(f) Unless otherwise provided in the Contract Documents, Contractor shall secure and pay for all permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the Work. Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the

performance of the Work. If Contractor observes that any of the Contract Documents are at variance with any applicable laws in any respect, Contractor shall promptly notify Engineer and Construction Manager in writing, and any necessary changes shall be accomplished by appropriate modification. If Contractor performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to Engineer and Construction Manager, Contractor shall assume full responsibility therefor and shall bear all costs attributable thereto.

(g) Contractor shall be responsible for collecting all paper, cartons and other debris caused by its Work or personnel, placing the same in a location designated by Construction Manager and keeping the portion of the Site upon which Contractor is performing the Work free from all debris.

(h) Contractor shall attend meetings as directed by BPCA or Construction Manager.

## **2.7 "Or Equal" Clause**

(a) The Materials of manufacturers referred to in the Specifications and on the Drawings are intended to establish the standard of quality and design required by Engineer; however, Materials of manufacturers, other than those specified, may be used if equivalent and approved by Engineer, Construction Manager and BPCA.

(b) It is deemed that the term "or approved equal" is included after all Materials referred to in the Specifications or on the Drawings.

(c) Engineer will initially judge the equivalency of proposed substitute Materials. Engineer will make written recommendation of acceptance or rejection to Construction Manager and/or BPCA. Construction Manager and/or BPCA will then authorize Engineer to issue to Contractor written approval or rejection of the substitution.

(d) If Contractor desires to use a substitute item, Contractor shall make application to Engineer in writing in sufficient time (with regard to the progress of the Work, the period of delivery of the goods concerned and adequate time for Engineer's review) stating and fully identifying the proposed substitute, cost changes (if any), and submitting substantiating data, samples, brochures of the item proposed. It is Contractor's responsibility to provide at its sole expense sufficient evidence by tests or other means to support any request for approval of substitutions.

(e) Prior to proposing any substitute item, Contractor shall satisfy itself that the item Contractor proposes is, in fact, equal to that specified and had been used satisfactorily in similar applications to the application proposed for the Work, for at least three years, that it will fit into the space allocated and within the load allocated for the same, that it affords comparable ease of operations, maintenance and service, that its appearance, longevity and suitability for the climate and use are comparable to that specified, and that the substitution requires no change in dimension or design of any other Work of Contractor, of any other contractor or in the time required for the performance thereof.

(f) The burden of proof that a proposed substitution is equal to a specified item shall be upon Contractor, who shall support its request with sufficient test data and other means to permit Engineer to make a fair and equitable decision on the merits of the proposal. Any item by the manufacturer other than those cited in the Contract Documents, or of brand name or model number or of generic species other than those cited in the Contract Documents, will be considered a substitution.

(g) Acceptance of substitutions shall not relieve Contractor from responsibility for compliance with all the requirements of the Contract Documents. If, notwithstanding the provisions of subSection (e) above, changes in other parts of the Work or the work of other contractors are required by its substitutions, Contractor shall be responsible for the costs of any such changes including the cost of all design and redesign services related thereto incurred by the Engineer and his consultants.

(h) The Contract Time shall not be extended by any circumstances resulting from a proposed substitution, nor shall Contractor be entitled to any compensation for any delay caused thereby or related thereto.

## **2.8 Quality and Labeling**

All Materials furnished shall be new and the quality thereof shall be in accordance with the Contract Documents. When Materials are specified to conform to a given standard, the Materials delivered to the Site shall bear manufacturer's labels stating that the Materials meet such standard. The above requirements shall not restrict or affect BPCA's right to test Materials as provided in this Agreement.

# **ARTICLE 3 - COMMENCEMENT AND COMPLETION OF THE WORK**

## **3.1 Commencement, Completion and Progress Schedule**

(a) Contractor agrees to be bound by and comply with the Progress Schedule and the Work Completion Date and the progress schedule for completion and progress of the Work (with the original progress schedule, as the Progress Schedule shall be updated pursuant to subSection (b), below, being referred to herein as the "Progress Schedule") and waives any right to charge or claim damages or any increased cost, charges or expenses against BPCA, Construction Manager, or Engineer, for delays or disruptions from any cause whatsoever. Contractor's sole remedy as against BPCA, Construction Manager, or Engineer for any delays or disruptions shall be as provided in Section 3.4 hereof. Notwithstanding the foregoing, the Work shall be completed by no later than DATE (the "Work Completion Date") with time being of the essence in respect of said Work Completion Date, as more fully set forth in subSection (h) below; this Agreement shall terminate by DATE (the "Agreement Termination Date").

(b) Contractor has prepared a Progress Schedule detailing, without limitation, all

items of Work to be performed. Such Progress Schedule shall be updated weekly, or at any other time at the request of Construction Manager or BPCA, and submitted to Construction Manager and BPCA for review and approval. Failure to submit any requested update shall constitute a material breach of this Agreement. After submission of the Progress Schedule for the Work, Construction Manager shall coordinate the Progress Schedule for the Work in coordination with the Progress Schedule for the entire Project. The Progress Schedule for the Work may be revised by Construction Manager from time to time.

(c) Contractor (shall commence the Work upon receipt of a written notice to proceed signed by BPCA/commenced the Work pursuant to the Letter of Intent, and shall prosecute the Work diligently and in accordance with the time and place requirements of the Project as determined and directed by Construction Manager, by using such means and methods of construction as will assure that the Work will be performed hereunder in accordance with the Contract Documents and Progress Schedule, and to the satisfaction of BPCA, Engineer, and Construction Manager.

(d) If, in the opinion of Construction Manager, Contractor falls behind the Progress Schedule then in effect, Contractor shall take whatever steps may be necessary to improve its progress and shall, if requested by Construction Manager, submit operational plans to demonstrate the manner in which the lost time may be regained. It is the responsibility of Contractor to maintain its schedule so as not to delay the progress of the Project or the schedules of other contractors. If Contractor delays the progress of its Work or the work of other contractors, it shall be the responsibility of Contractor to increase the number of workers, the number of shifts, the days of Work and/or, to the extent permitted by law, to institute or increase overtime operations, all without additional cost to BPCA, in order to regain any time lost and maintain the Progress Schedule then in effect as established by Construction Manager.

(e) If Contractor shall fail to complete the Work by the Work Completion Date, or within the time to which such completion may have been extended, BPCA may, at its option, withhold from any sums otherwise due and owing to Contractor hereunder, so much of the balance thereof as BPCA shall deem necessary to secure it against any costs, expenses, or damages which may be incurred by BPCA as a result of said failure, but any such withholding shall not be deemed to be a waiver of any rights hereunder, and Contractor shall be liable to and shall indemnify and hold BPCA harmless from any and all cost, expense or damage incurred by BPCA by reason of such failure.

(f) If Contractor shall neglect, fail or refuse to complete the Work by DATE, or upon the expiration of any proper extension granted by Owner, Contractor agrees to pay to Owner \$1,000.00 (One Thousand Dollars), not as a penalty, **but as liquidated** damages, for each and every calendar day that the Contractor is in default. Default shall include abandonment of the Work by Contractor.

(g) Said amount of liquidated damages is agreed upon by and between Contractor and Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages which Owner would sustain in the event of delay in completion, and said amount is agreed to be the amount of damages sustained by Owner and said amount may be

retained from time to time by Owner.

(h) It is further agreed that time is of the essence for each and every portion of the Work. In any instance in which additional time is allowed for the completion of any Work, the new time of completion established by said extension shall be of the essence. Contractor shall not be charged with liquidated damages or any excess cost if BPCA determines that Contractor is without fault and that the delay in completion of the Work is due:

(1) to any preference, priority or allocation order duly issued by the Government of the United States or the State of New York;

(2) to an unforeseeable cause beyond the control and without the fault of, or negligence of Contractor, and approved by BPCA, including, but not limited to, acts of God or of public enemy, acts of BPCA, fires, epidemics, quarantine, strikes, freight embargoes and unusually severe weather; and

(3) to any delays of Subcontractors or Materialmen occasioned by any of the causes specified in SubSections 1 and 2 of this paragraph.

(i) Notwithstanding the foregoing, and whether or not, at any given time, a Progress Schedule, or update thereto (as appropriate) has been submitted, the Work shall be completed by the Work Completion Date (with the period between commencement of the Work and the Work Completion Date being referred to herein as the "Term").

### **3.2 Coordination with Other Contractors**

Contractor shall coordinate the Work to be performed hereunder with the work of other contractors performing work for the Project in such manner as Construction Manager shall direct. Contractor shall indemnify and hold BPCA, Construction Manager and Engineer harmless from any and all claims or judgments for damages, costs and expenses to which BPCA, Construction Manager or Engineer may be subjected or which they may suffer or incur by reason of Contractor's failure to comply with Construction Manager's directions promptly. If Contractor notifies Construction Manager in writing that another contractor is failing to coordinate its work with the Work to be performed hereunder, Construction Manager shall promptly investigate the charge. If Construction Manager finds that charge to be true, it shall promptly issue such direction to the other contractor with respect thereto as the situation may require. BPCA, Construction Manager and Engineer shall not, however, be liable for any damages suffered by Contractor by reason of the other contractor's failure promptly to comply with the directions so issued by Construction Manager or by reason of another contractor's default in performance. Should Contractor sustain any damage through any act or omission of any other contractor, Contractor shall have no claim against BPCA, Construction Manager or Engineer for such damage but shall have a right to recover such damage from the other contractor, under a provision similar to a provision contained in the following sentence which is part of this Agreement and which has been or will be inserted in the contracts with the other contractors engaged in the Project.

Should any other contractor having or who shall hereafter have a contract with BPCA for the performance of work upon the Project sustain any damage through any act or omission of Contractor hereunder, Contractor agrees to reimburse such other contractor for all such damages and to indemnify and hold BPCA, Construction Manager and Engineer harmless from all such claims. Any claim against a performance bond surety made by any contractor shall be subordinated to any claim of BPCA then existing or that may arise in the future against such other contractor or its performance bond surety.

### **3.3     Notice of Delay**

Should Contractor be or anticipate being delayed or disrupted in performing the Work hereunder for any reason, including, without limitation, its financial condition or Contractor's general nonpayment of its debts as such debts become due, it shall promptly and in no event more than three (3) days after the commencement of any condition which is causing or is threatening to cause such delay or disruption notify Construction Manager in writing of the effect of such condition upon BPCA's Progress Schedule, stating why and in what respects the condition is causing or is threatening to cause delay, provided, however, that notwithstanding the above, if such delay or disruption, or anticipated delay or disruption, should be the result of any change or anticipated change in Contractor's financial condition, Contractor shall notify Construction Manager forthwith of such cause or anticipated cause. Failure strictly to comply with this notice requirement shall be sufficient cause to deny Contractor a change in schedule and to require it to conform to the Progress Schedule then in effect established by Construction Manager.

### **3.4     Extension of Time**

(a)     An extension of time under the Progress Schedule then in effect may be granted by BPCA subject to the provisions hereof upon written application therefor by Contractor. An application for an extension of time under the Progress Schedule then in effect must set forth in detail the nature of each cause of delay in the performance of the Work, the date or dates upon which each cause of delay began and ended and the number of days delay attributable to each such cause. After the application is submitted, Contractor shall supply any other data that Construction Manager may request.

(b)     Contractor shall be entitled to an extension of time under the Progress Schedule then in effect for delays in the performance of the Work, if caused:

- (1)     solely by acts or omission of BPCA, Construction Manager or Engineer;  
or
- (2)     by the acts or omissions of other contractors or unforeseeable causes beyond the control and without the fault or negligence of Contractor including, but not limited to, acts of God, acts of public enemy, acts of any Government body, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather, or delays of Subcontractors or Materialmen arising from unforeseeable causes



beyond the control and without the fault or negligence of both Contractor and such Subcontractors or Materialmen; provided, that Contractor shall have used its best efforts and diligently sought to have minimized any such period of delay, by taking whatever measures are necessary, including without limitation, if applicable, seeking alternate sources of Materials, other Subcontractors or other facilities in which to perform the required construction operations; and provided, further, that an application is made pursuant to the requirements of the immediately preceding paragraph.

#### **ARTICLE 4 - CONTRACT PRICE**

For the performance and completion of the Work, BPCA shall pay Contractor a lump sum amount of \$XXXXXXXXXXXXXXXX, (such sum is herein sometimes referred to as the "Contract Price"), which amount shall include any monies paid heretofore in accordance with the Letter of Intent, provided, that if the Contract Price shall be expressly revised by a Change Order in accordance with Article 9 hereof, the Contract Price shall thereafter mean the Contract Price as so revised. Contractor will submit appropriate Time Sheets in the form of Exhibit F.

#### **ARTICLE 5 - METHOD, SCHEDULE AND TERMS OF PAYMENTS**

##### **5.1 Partial Payment**

(a) In accordance with Requisitions (as defined in Section 5.2) submitted and approved as provided below for Work performed in accordance with this Agreement, Contractor shall be entitled to partial payment on account of the Contract Price in an amount equal to the value, as determined in accordance with the Trade Payment Breakdown (as defined in Section 5.3), of the portions of the Work completed and acceptable to BPCA and Construction Manager for purposes of such payment, less a retainage equal to ten percent (10%) of the total amount of all prior partial payments. Partial payments shall constitute advances against the Contract Price until final payment is made and accepted. No partial payment made, nor approval of a portion of the Work given for purposes of making a partial payment, shall constitute an acceptance of any Work not in accordance with the Contract Documents.

(b) Upon completion of fifty percent of the Work, Contractor may make written application to BPCA requesting reduction of the retainage set forth in Section 5.1(a) hereof. Approval of such reduction of retainage and the percentage to which the retainage shall be reduced is in the sole discretion of BPCA. If BPCA approves a reduction of retainage as herein described, BPCA shall so notify Contractor in writing. Any reduction of retainage pursuant to this paragraph (b) shall not be deemed to be a waiver of retainage requirements for future partial payments.

##### **5.2 Requisitions**

Applications for partial payments (“Requisitions”) and application for final payment (“Final Requisition”) shall be in the form previously supplied by BPCA and shall be submitted by Contractor to Construction Manager or its designee in five original copies in the manner hereinafter provided for the approval of BPCA and Construction Manager. Each Requisition shall be supported by such data substantiating Contractor’s right to payment as BPCA and Construction Manager may require.

### **5.3     Trade Payment Breakdown**

Prior to the submission of the first Requisition, Contractor shall present to Construction Manager for approval a trade payment breakdown (the “Trade Payment Breakdown”) of the various portions of the Work, aggregating the Contract Price, prepared in such form as specified by BPCA and supported by such data to substantiate its correctness as Construction Manager may require. After approval by BPCA and Construction Manager, the Trade Payment Breakdown shall not be changed or revised in any way without the written consent of Construction Manager. The Trade Payment Breakdown, when approved by Construction Manager, shall be used only as a basis for Requisitions and shall not be considered as a basis for reducing or increasing the Contract Price.

### **5.4     Payment for Stored Materials**

If approved in advance of delivery by BPCA and Construction Manager, payments will be made on account of 80% of the value of Materials not incorporated in the Work but delivered and suitably stored at the Site or at some other offsite location agreed upon in writing by BPCA and Construction Manager. Such payments shall be conditioned upon submission by Contractor of bills of sale or other supporting documentation satisfactory to BPCA and Construction Manager to establish BPCA’s title to such materials including applicable insurance and transportation to the Site for those materials stored offsite. In the event that Contractor, with approval of BPCA, stores any materials offsite, the conditions for payment of material stored off-site shall include but not be limited to the following: (a) the material shall be properly stored in a secured location approved by the BPCA and/or Construction Manager; (b) the Material will be covered under the BPCA’s builder’s risk policy subject to policy limits and restrictions; and (c) the Material may be inspected by the BPCA and/or Construction Manager to assure compliance with Contract Documents.

### **5.5     Receipts and Releases of Liens**

With each Requisition, Contractor shall furnish its affidavit of payment and waiver of lien for Work done and Materials furnished through the date covered by the last preceding partial payment (the “Preceding Covered Date”) and shall furnish its affidavit certifying that all Subcontractors and Materialmen have been paid for Work performed and Materials furnished through the Preceding Covered Date except for any permitted retainage. BPCA may also require Contractor to attach to each Requisition (i) affidavits of payment and waivers of lien from all Subcontractors and Materialmen dealing directly or indirectly with Contractor for Work performed and Materials furnished through the Preceding Covered Date

and/or (ii) the consent of the surety issuing the Payment Bond to such payment. BPCA may require Contractor to execute a waiver of lien at the time payment is made for a Requisition for all Work performed through the date of the Requisition in respect of which payment is being made.

In addition to the documents required to be furnished by the preceding paragraph, with the Final Requisition, Contractor shall furnish (y) its affidavit that there are no liens, claims or demands by, and that there is no indebtedness to, Subcontractors, Materialmen, laborers, other employees or third persons for which BPCA, Construction Manager, or Engineer might in any way be responsible and (z) releases from all Subcontractors and Materialmen dealing directly or indirectly with Contractor. Should any such Subcontractor or Materialman fail or refuse to furnish such release, Contractor may be required to furnish a bond satisfactory to BPCA to indemnify it against any such lien, claim or demand. If any such lien, claim or demand remains unsatisfied after all payments are made to Contractor, Contractor shall refund to BPCA all monies that BPCA may be compelled to pay in discharging such lien, claim or demand including all costs, expenses and attorneys' fees which BPCA may incur in connection therewith.

#### **5.6     Time of Payment**

Requisitions shall be submitted by Contractor to BPCA and Construction Manager by the seventh day of each calendar month for Work completed up to the last calendar day of the previous month or other day approved by BPCA, and payment shall be made on or about twenty days after BPCA receives the Requisition together with the documents required pursuant to Sections 5.2 and 5.5 hereof. Contractor shall be entitled to payment only in the amount approved by BPCA, and Construction Manager with respect to such Requisitions, each of which must be signed by BPCA, and Construction Manager before payment is made. The value of any Work included in a Requisition for partial payment which is found unacceptable by BPCA, or Construction Manager may be deducted from that or any subsequent Requisition.

#### **5.7     Reduction of Retainage**

Upon the issuance of a Certificate of Substantial Completion, as defined in Section 8.6, Contractor shall submit a Requisition in an amount equal to the Contract Price less an amount equal to two times the value of the Work on the punch list as determined by Construction Manager and less the total amount of all prior payments. Upon approval of the same by BPCA, BPCA shall pay to Contractor the amount approved less any amount which BPCA is entitled to withhold hereunder.

#### **5.8     Final Payment**

(a)     The final balance due Contractor under this Agreement shall be payable to Contractor by BPCA, as final payment hereunder, within thirty days after all of the following have taken place:

(1)     Contractor's Final Requisition has been submitted by Contractor and

approved by BPCA, and Construction Manager;

- (2) the affidavit provided for in Section 5.5 hereof has been submitted by Contractor, and any other documents or actions expressly specified in the Contract Documents as preconditions to final payment have been submitted or completed; and
- (3) any inspections or approvals with respect to any of the Work that BPCA deems legally required or appropriate by governmental authorities or by the applicable Board of Fire Underwriters have been performed or obtained.

(b) The acceptance of final payment shall constitute a waiver of all claims by Contractor.

#### **5.9 Release and Consent of Surety**

Notwithstanding any other provision of this Agreement, before final payment pursuant to Section 5.8 shall become due pursuant hereto or before reduction of retainage, Contractor shall submit to BPCA a consent of surety to final payment or reduction of retainage in a form and substance acceptable to BPCA.

#### **5.10 BPCA's Right to Audit and Inspect Records**

Contractor shall maintain and shall keep for a period of at least six years after the date of Final Acceptance of the Work, pursuant to Section 8.7, all records and other data relating to the Work. BPCA or its designee shall have the right to inspect and audit all records and other data of Contractor relating to the Work at any time and from time to time until the end of such six year period. Contractor shall promptly respond to any inquiries of BPCA or any representative of BPCA arising out of any such inspection or audit.

#### **5.11 Withholding of Payments**

(a) BPCA may withhold payment or, because of subsequently discovered evidence, may nullify the whole or any part of any previously approved Requisition to such extent as may, in the judgment of BPCA, be necessary:

- (1) to assure payment of just claims or liens of any persons supplying labor or Materials for the Work;
- (2) to protect BPCA from loss due to defective Work or to reimburse BPCA, Construction Manager and Engineer for fines on account of non-compliance with applicable laws, rules and regulations, including rules promulgated by the Office of Safety & Health Administration;

- (3) to protect BPCA from loss due to death or injury to persons or damage to the Work or property of BPCA, other contractors or others caused by the act or neglect of the Contractor;
- (4) in the event that there is reasonable evidence that the Work will not be completed for the unpaid balance of the Contract Price;
- (5) in the event that there is reasonable evidence that the Work will not be completed within the time provided; or
- (6) in the event that Contractor persistently fails to perform the Work in accordance with the Contract Documents.

In any of such events, BPCA shall have the right to apply any such amounts so withheld in such manner as BPCA may deem proper to satisfy such claims, to secure such protection, to complete the Work or to compensate BPCA for any loss suffered by reason of Contractor's delay. Such application shall be deemed payment for the account of Contractor. In the event that BPCA gives Contractor notice that it intends to make such application, Contractor shall be estopped from disputing liability or the amount of liability unless, within three days after receipt of such notice, it indicates to BPCA in writing that it is not liable or that the amount of its liability is different from that set forth in the notice.

(b) The provisions of this Section 5.11 are solely for the benefit of BPCA, and any action or non-action by BPCA shall not give rise to any liability on the part of BPCA. Failure to so act shall not be deemed a waiver of any present or future claims of BPCA.

## **ARTICLE 6 – CONTRACTOR**

### **6.1 Superintendence by Contractor**

Contractor shall provide a competent construction superintendent to be in charge of the Work. The construction superintendent shall devote full time to the Work, shall be present at the Site during the time the Work is required to be performed and shall have full authority to accept instructions, make decisions and act for Contractor at all times. If at any time the construction superintendent is not satisfactory to BPCA or Construction Manager, Contractor shall, if requested by BPCA, replace such superintendent with another satisfactory to BPCA. Contractor shall enforce strict discipline and good order at all times among Contractor's employees and all Subcontractors. Contractor shall not engage any employee not skilled in the task assigned.

### **6.2 Representations and Warranties**

Contractor represents and warrants that:

- (a) Contractor is financially solvent and is experienced in, and competent to

perform, the Work and has the staff, manpower, equipment, Subcontractor, and suppliers available to complete the Work within the time specified in the Agreement for the Contract Price;

(b) Contractor is familiar with all Federal, State or other laws, ordinances, orders, rules and regulations, which may in any way affect the Work;

(c) any temporary and permanent Work required by this Agreement can be satisfactorily constructed, and such construction will not injure any person or damage any property; and

(d) Contractor has carefully examined the Contract Documents and the Site and, from Contractor's own investigations, is satisfied as to the nature and location of the Work, the character, quality and quantity of surface and subsurface materials likely to be encountered, the character of equipment and other facilities needed for the performance of the Work, the general and local conditions, and all other conditions or items which may affect the Work. Prior to submitting its bid for performance of the Work, Contractor notified BPCA or Construction Manager in writing of any discrepancies or errors in the Contract Documents.

### **6.3 Verifying Dimensions and Site Conditions**

Before proceeding with the Work, Contractor will check all previous and surrounding work and determine the correctness of the same; failure on its part to detect or report discrepancies will relieve BPCA of liability from any and all claims to recover cost, expense, loss or damage resulting therefrom. Contractor shall take, determine, investigate and verify all field measurements, dimensions, field construction criteria and Site conditions for the performance of the Work and shall check and coordinate the information contained in the Contract Documents and the boring logs which shall be available for inspection with the requirements of the Work. Contractor shall be responsible for determining the exact location of and to verify the spatial relationships of all Work. If any conflicts or discrepancies are found in the Contract Documents or if Contractor has any questions concerning the foregoing, it shall immediately notify Construction Manager and shall thereafter perform the Work in accordance with the directions of Construction Manager.

### **6.4 Copies of Contract Documents for Contractor**

BPCA shall furnish to Contractor, without charge, two sets of the Contract Documents. Any sets in excess of the number mentioned above may be furnished to Contractor at the cost of reproduction and mailing.

### **6.5 Meetings**

Contractor shall attend all meetings as directed by BPCA or Construction Manager, including meetings set forth in Section 26.3, and shall be represented at such meetings by a person having knowledge of the Work and authorized to act for Contractor at all times. If at any time such person is not satisfactory to BPCA or Construction Manager,

Contractor shall, if requested by BPCA, be represented by another person satisfactory to BPCA, having knowledge of the Work and authorized to act for Contractor at all times.

**6.6     Related Work**

Contractor shall examine the Contract Documents for related work to ascertain the relationship of such work to the Work under the Contract Documents.

**6.7     Surveys and Layout**

Unless otherwise expressly provided in this Agreement, Owner shall furnish Contractor survey points necessary for the Work, but Contractor shall lay out the Work.

**6.8     Reports and Access**

Contractor shall furnish BPCA and Construction Manager with daily and monthly manpower reports on forms provided by Construction Manager and such other reports as may be required by BPCA or Construction Manager. BPCA, Construction Manager and Engineer shall have full and free access to the shops, plants and factories of Contractor, any Materialmen and Subcontractors to inform themselves as to the progress of the Work.

**6.9     Financial Information**

Until completion of the Work, Contractor agrees to notify BPCA forthwith in writing of any event which has caused or is reasonably anticipated to cause a material adverse change in Contractor's business or financial condition from that shown in the then most recent financial statements furnished by Contractor to BPCA. Contractor has furnished to BPCA financial statements regarding the period from January 1, 2010 through December 31, 2010. Contractor agrees to furnish to BPCA, at BPCA's request from time to time hereafter, quarterly, or annual financial statements (which shall be audited, if such is the practice of Contractor for financial statements covering the applicable period) and such additional information as BPCA shall deem necessary or desirable to satisfy itself of Contractor's continuing ability to complete the Work.

**ARTICLE 7 - CONTRACT ADMINISTRATION**

**7.1     Engineer's Responsibilities and Functions**

Contractor acknowledges that the role of Engineer with respect to the Work shall be as specified in this Agreement. Contractor will comply with the instructions of Engineer pursuant hereto.

Engineer's duties and services shall in no way supersede or dilute Contractor's

obligation to perform and complete the Work in conformity with the Contract Documents.

## **7.2     Construction Manager's Responsibilities and Functions**

(a)     Construction Manager shall coordinate and schedule construction to insure that the completion of the Project is on schedule and that the Project is well constructed in accordance with the Contract Documents. Contractor acknowledges that the role of Construction Manager with respect to the Work shall be as specified in this Agreement. Contractor hereby agrees to comply with the directions and instructions of Construction Manager.

(b)     Construction Manager shall call for meetings of Contractor, other contractors, Subcontractors and Materialmen as necessary for the proper coordination of the Work. Such meetings shall be held at the Site on regular working days, during regular working hours, unless otherwise directed by BPCA. Attendance shall be mandatory for all parties notified to attend.

## **7.3     Scope of Responsibility of Engineer and Construction Manager**

In no event shall any act or omission on the part of the Construction Manager or Engineer relieve Contractor of its obligation to perform the Work in full compliance with the Contract Documents. Neither Engineer nor Construction Manager will be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and neither will be responsible for Contractor's failure to carry out the Work in accordance with the Contract Documents or the failure to fulfill any of the requirements of this Agreement.

# **ARTICLE 8 - INSPECTION AND ACCEPTANCE**

## **8.1     Access to the Work**

BPCA, Construction Manager, Engineer or their authorized representatives shall at all times have access to and the right to observe the Work and all facilities where the Work or any part thereof is being fabricated or stored, and Contractor shall provide proper facilities for such access and observation.

## **8.2     Notice of Required Inspections and Tests**

If the Contract Documents, or any laws, rules, ordinances or regulations, require that any Work be inspected or tested, Contractor shall give BPCA, Construction Manager and Engineer timely notice of readiness of the Work for inspection or testing and the date fixed for such inspection or testing.

## **8.3     Additional Inspections and Tests**

(a)     Whenever, in the opinion of BPCA, Construction Manager or Engineer, it is



desirable to require inspection or testing of the Work or its individual components in addition to any such testing which may be originally included in the Work, they shall have authority to do so whether or not such Work be then fabricated, installed, covered or completed. If such inspection or testing reveals a failure of the Work to comply (1) with the requirements of the Contract Documents, or (2) with respect to the performance of the Work, with laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, Contractor shall bear all costs thereof, including Engineer's and Construction Manager's additional services made necessary by such failure; otherwise BPCA shall bear such costs, and an appropriate Change Order shall be issued.

(b) In the event that any item of the Work fails inspection or testing, BPCA, Engineer or Construction Manager may require inspection or testing of any or all of the other items of the Work at Contractor's cost and expense.

#### **8.4     Uncovering of Work**

(a) If any Work shall be covered or concealed contrary to the request of BPCA, Engineer or Construction Manager, such Work shall, if required by BPCA, Engineer or Construction Manager, be uncovered by examination, inspection or testing. Any examination, testing or inspection shall not relieve Contractor of the responsibility to maintain quality control over the Work. If any test results are below specified minimums, BPCA may order additional testing. The cost of such additional examination, inspection or testing, any additional professional services required, and any other expenses incurred by BPCA as a result of such examination, inspection or testing shall be borne by Contractor.

(b) In the event that a typical detail fails inspection or testing, BPCA, Engineer or Construction Manager may require inspection or testing of any or all of other such typical details at Contractor's cost and expense.

#### **8.5     Correction of Work**

Any Work not approved by BPCA, Engineer and Construction Manager shall immediately be reconstructed, made good, replaced or corrected by Contractor including all Work of other contractors destroyed or damaged by such removal or replacement. Rejected material shall be removed immediately from the Site. Acceptance of material and workmanship by BPCA shall not relieve Contractor from Contractor's obligation to replace all Work which is not in full compliance with the Contract Documents.

#### **8.6     Certificate of Substantial Completion**

Upon their receipt of written notice from Contractor stating that in Contractor's estimation the Work has been substantially performed in conformity with the Contract Documents, Engineer and/or Construction Manager shall perform an inspection for the purposes of determining whether the Work has been so performed, commencing such inspection within ten (10) days of receipt of such notice and completing it with all due diligence. When Engineer and/or Construction Manager find upon inspection that, to the best

of their knowledge and belief, the Work is so performed, they shall prepare and deliver to BPCA for delivery to Contractor a certificate specifying the date of substantial completion of the Work for purposes of this Agreement ("Certificate of Substantial Completion") and a punch list of items of Work remaining to be completed prior to the completion of the Work.

The delivery of a Certificate of Substantial Completion shall not terminate or alter Contractor's obligation under this Agreement to complete the Work in conformity with the Contract Documents and to fulfill all terms and conditions of this Agreement.

#### **8.7     Completion of Work and Acceptance**

Upon their receipt of written notice from Contractor stating its belief that the Work has been fully performed in conformity with the Contract Documents, and confirming that Contractor has completed any items of Work previously noted to it by Engineer and Construction Manager as not having been acceptably completed in any punch list or otherwise, Engineer and Construction Manager shall perform an inspection for purposes of determining whether the Work has been so performed. Engineer and Construction Manager shall commence such inspection within ten (10) days of receipt of such notice and shall pursue and complete it with all due diligence. When BPCA and Construction Manager find upon inspection that, to the best of their knowledge and belief, the Work has been so performed, they shall prepare a certificate of final completion, and, upon delivery by BPCA to Contractor of said certificate, the Work shall be deemed to be finally accepted by BPCA (such delivery of the certificate of final completion to Contractor is hereinafter referred to as "Final Acceptance").

### **ARTICLE 9 - CHANGES IN THE WORK**

#### **9.1     Change Orders**

(a) BPCA may, at any time, in any quantity or amount, without notice to the sureties and without invalidating or abandoning the contract, order Extra Work. Notwithstanding the terms of subSection 3.1(a) hereof, BPCA may, but shall be under no obligation to, change the manner, sequence or method of performance of the Work or direct acceleration of the Work and Contractor shall, therefor, be entitled to a Change Order (as defined in Section 9.1(b)) provided that such change or acceleration was not ordered to maintain the Progress Schedule or to coordinate the Work with the work of other contractors. Contractor shall not perform any Extra Work or change in the Work unless it has received a Change Order or Field Order (as defined in Section 9.3) duly signed as hereinafter provided. Contractor shall be obligated to perform changed Work promptly in conformity with any Change Order or Field Order issued in accordance herewith.

(b) "Change Order" shall mean a written order issued by the Authority to Contractor after execution of this Agreement, authorizing or requiring:

- (i) Extra Work,
- (ii) items which were erroneously deleted or omitted from the Work,

- (iii) items which were included in the Work but were subsequently deleted,
- (iv) an extension of time to complete Work,
- (v) an increase or reduction in the payment to Contractor;, or
- (vi) any other change in the Contract Documents or in the sequence of performing or phasing of the Work.

(c) All Change Orders shall be prepared, signed and issued by Construction Manager at the instruction of BPCA, and to be valid, must be countersigned by BPCA and Contractor.

## **9.2 Change in Contract Price and Time**

(a) The Contract Price will not be revised due to any change of the Work except as and to the extent expressly provided in the Change Orders. The amount by which the Contract Price is to be increased or decreased by any Change Order shall be determined by BPCA and Construction Manager by one or more of the following methods:

- (1) by accepting an amount agreed upon by BPCA and Contractor;
- (2) by applying the applicable unit prices and alternates where the Work involved is covered by unit prices in this Agreement;
- (3) by receiving from Contractor a detailed breakdown satisfactory to BPCA and Construction Manager, including actual time slips and invoices, itemizing the direct cost of labor and material to perform the changed Work and adding thereto fifteen percent (15%) to cover profit and all indirect and overhead costs, except that where the changed Work is performed by a Subcontractor or Materialman, the direct cost of labor and material to perform the changed Work plus fifteen percent (15%) for profit and all indirect and overhead costs to Subcontractor or Materialman and an additional sum for profit and all indirect and overhead costs of Contractor equal to ten percent (10%) of the first \$100,000, five percent (5%) of the second \$100,000 and three percent (3%) of any cost in excess of \$200,000 to Contractor. No allowance shall be paid on the premium portion of overtime pay. Where the changed Work involves both an increase and a reduction in any contract Work, the above percentage override shall be applied only on the amount, if any, by which the cost of the increase exceeds the cost of the reduction.
- (4) by receiving from Contractor a true copy of its bid work sheets to determine the contract price for the elimination of any contract Work.

The amount of reduction shall not include the overhead or profit of Contractor for the eliminated Work. Should Contractor fail to furnish BPCA with such bid work sheets, then Construction Manager shall determine the amount of the reduction. The determination of Construction Manager shall be final and binding unless erroneously or fraudulently arrived at, or arbitrary and capricious;

- (5) by adding to the Contract Price only the amount of the premium portion of overtime pay resulting from an acceleration of the Work; or
- (6) by adding to the Contract Price, the actual incremental labor and equipment costs incurred by the Contractor resulting from a change in the manner, sequence or method of performing the Work.

(b) The compensation specified in a Change Order shall constitute a release and full payment for the Extra Work covered thereby and for any delay and disruption cost or expense occasioned by reason of said change in the Work.

(c) No time extension shall be granted Contractor by reason of the issuance of any Change Order unless it is expressly stated therein.

### **9.3 Field Orders**

Construction Manager shall have the authority to order minor changes in the Work by the issuance of written field orders ("Field Orders"), which may be issued without prior approval by BPCA. Field Orders must be countersigned by Contractor. Minor changes in the Work for purposes of this Section shall mean only changes which do not necessitate or warrant any revision in the Contract Price in excess of \$5,000 or affect the time of performance of Contractor's Work, any change in the basic character or design of the Project, or deviation from design standards established for the Project. Except as otherwise provided in the preceding sentence relating to an increase in the Contract Price, no claim for an increase in the Contract Price may be based upon any Field Order. If Contractor, on a receipt of a Field Order, claims that the change of Work involved necessitates a Change Order, it shall proceed in accordance with the Field Order under protest and notify BPCA immediately of its claim for additional compensation for Extra Work pursuant to Article 14.

### **9.4 Changed Conditions**

(a) Contractor shall promptly, and before such conditions are disturbed, notify Construction Manager of: (1) subsurface or latent physical conditions differing materially from those indicated in the Contract Documents, or (2) unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Agreement. Construction Manager shall promptly investigate the conditions, and if it finds that such conditions do materially so differ and cause an increase or decrease in Contractor's cost of, or the time required for, performance of any part of the Work under this Agreement, Contractor shall be paid in the manner provided

for payment with respect to any Change Order and receive, if warranted, a time extension.

(b) No claim of contractor under this clause shall be allowed unless Contractor has given the notice required in subSection (a) above.

## **ARTICLE 10 - SUBCONTRACTS AND PURCHASE ORDERS**

### **10.1 Selection of Subcontractors and Materialmen and Approval of Subcontracts and Purchase Orders**

(a) Contractor shall submit to Construction Manager, within 21 calendar days of notice to proceed, the names of all persons with whom it has contracted or intends to contract or hereafter contracts with respect to the Work.

(b) Except as specifically provided herein, Contractor shall not enter into any Subcontracts or issue any Purchase Orders (as hereinafter defined) to any Materialmen in connection with the performance of Contractor's obligations hereunder without the prior written consent of BPCA to the use of each such Subcontractor or Materialman, and to the agreement to be entered into between Contractor and any such Subcontractor or Materialman. Contractor shall inform BPCA in writing of any interest it may have in a proposed Subcontractor or Materialman. No such consent by BPCA, or employment, contract, or use by Contractor, shall relieve Contractor of any of its obligations hereunder.

(c) Contractor shall be responsible for the performance of the Work of any Subcontractors or Materialmen engaged, including the maintenance of schedules, coordination of their Work and resolutions of all differences between or among Contractor and any Subcontractors. It is expressly understood and agreed that any and all Subcontractors or Materialmen engaged by Contractor hereunder shall at all times be deemed engaged by Contractor and not by BPCA.

(d) Upon the request of BPCA, Contractor shall cause any Subcontractor or Materialman employed by the Contractor in connection with this Agreement to execute a copy of the Agreement wherein such Subcontractor or Materialman shall acknowledge that it has read and is fully familiar with the terms and provisions hereof and agrees to be bound thereby as such terms and provisions are or may be applicable to such Subcontractors or Materialmen.

(e) Contractor shall submit to BPCA promptly following execution, three copies of every revision, amendment, modification or cancellation executed or issued by Contractor with respect to any Subcontractor or Materialman. BPCA is not obligated to make payment on account of Work performed or Materials furnished by a Subcontractor or a Materialman under a Subcontract or contract for construction supplies or Materials (hereinafter "Purchase Order(s)") unless there shall have been filed with BPCA prior to the submission of a Requisition for each payment, three copies of such Subcontract or Purchase Order containing the provisions required by this Agreement to be contained therein, except as may otherwise be specified by BPCA with respect to Purchase Orders for minor purchases.

## **10.2    Access by BPCA and Others**

Contractor shall include a provision in all Subcontracts and Purchase Orders stating that, to permit verification of Contractor's costs, BPCA shall have the right to have its representatives inspect and audit the books of account and records of the Subcontractor and Materialmen, including the right to make excerpts from such books and records. All payments by Contractor to a Subcontractor or Materialman shall be by check specifically indicating that payment is attributable to this Agreement. Contractor shall include a provision in all Subcontracts and Purchase Orders that will enable representatives of the State of New York, Construction Manager and BPCA, as the case may be, to obtain access during working hours to the appropriate books of account and records of the Subcontractors or Materialmen relating to the Work to determine if there is compliance with the requirements of law or this Agreement.

## **10.3    Retainage**

Contractor may provide for a retainage under any of its Subcontracts or Purchase Orders provided that where a Subcontract or Purchase Order provides for a retainage, the retainage shall be no greater in percentage than that provided for under Sections 5.1 or 5.7 hereof with respect to Contractor itself, unless otherwise approved in writing by BPCA. Contractor shall submit with each Requisition a statement setting forth the amounts of all retainage, if any, under its Subcontracts and Purchase Orders.

## **10.4    Miscellaneous**

(a) Contractor shall be fully responsible for the work, acts and omissions of Subcontractors and Materialmen, and of persons either directly or indirectly employed by Subcontractors and Materialmen.

(b) Contractor's use of Subcontractors and Materialmen shall not diminish Contractor's obligation to complete the Work in accordance with the Contract Documents. Contractor shall control and coordinate the work of Subcontractors and Materialmen.

(c) Nothing contained in this Agreement shall create any contractual relationship between Subcontractors or Materialmen and BPCA, Construction Manager or Engineer. Nothing in this Section shall obligate BPCA to pay or to see to the payment of any sums to any Subcontractor or Materialmen.

(d) Contractor shall include a provision in all Subcontracts and Purchase Orders exceeding \$50,000, requiring the Subcontractor or Materialman, if requested by BPCA, until the Subcontractor or Materialman finishes its portion of the Work, to deliver to Contractor unaudited and, if available, audited financial statements of the Subcontractor or Materialman similar to the obligation of Contractor under Section 6.8 and promptly upon receipt thereof Contractor shall deliver copies thereof to BPCA.

## **ARTICLE 11 - ASSIGNMENT**

### **11.1    No Assignment of Duties**

Contractor shall not assign this Agreement or the performance of any obligations of Contractor under this Agreement, nor enter into any Subcontract in respect of the Work or any part thereof except in compliance with Article 10 hereof and with the prior written consent of BPCA, and each and every such assignment, Purchase Order and Subcontract without such compliance and consent shall be void and shall revoke and annul this Agreement.

### **11.2    No Assignment of Monies**

Contractor shall not assign any monies payable hereunder nor execute and deliver any order for payment unless Contractor and the assignee shall have complied with the following terms and conditions:

(a)     the assignee shall be a commercial bank or finance company regularly engaged in the business of provided financing to construction contractors and shall be providing such financing to Contractor;

(b)     the assignee shall, simultaneously with the assignment, execute and deliver to BPCA an undertaking, in favor of BPCA, in form and substance satisfactory to BPCA, providing that:

(1)     assignee will cause Contractor to apply for trust purposes, as defined in Article 3-A of the Lien Law of the State of New York (the "Lien Law"), all funds advanced by assignee to Contractor;

(2)     assignee will file a copy of the assignment, containing the covenant required by the Lien Law, with the County Clerk of New York County;

(c)     the assignee shall agree with BPCA in writing that BPCA and Contractor may modify any of the terms of this Agreement, including any of the terms of payment, without the consent of assignee;

(d)     the assignee shall agree with BPCA in writing that after the effective date of the assignment, BPCA may make payment directly to any Subcontractor or Materialman without any liability to the assignee;

(e)     the assignee shall agree with BPCA in writing that the assignee shall require and cause Contractor to keep his books and records in the form and manner described in Section 75 of the Lien Law; and

(f)     the assignee shall agree with BPCA in writing that the assignee will indemnify and hold BPCA harmless from and against any loss, claim or expense incurred as a result of any failure of performance in accordance with the terms of such undertaking.

### **11.3 Assignment by BPCA**

This Agreement or any rights of BPCA under this Agreement, including any guaranties or warranties of workmanship or material, may at any time be assigned by BPCA to the State of New York or any political subdivision, public corporation or agency of the State.

## **ARTICLE 12 - MECHANICS' LIENS AND CLAIMS**

If any mechanic's lien or other claim shall be filed for or on account of the Work, Contractor shall promptly discharge such lien or claim.

## **ARTICLE 13 – INSURANCE AND CONTRACT SECURITY**

### **13.1 Insurance**

(a) Contractor shall procure and maintain all of the insurance required under this Article 13 until Final Acceptance of the Work, except with respect to Completed Operations Coverage, as described in 13.1(f)(3) below.

(b) Contractor shall not commence physical performance of the Work at the Site until Contractor has obtained, and required each Subcontractor to obtain, all the insurance required under this Article and until it has furnished to BPCA the certificate or certificates of insurance required by Section 13.1(c) hereof.

(c) Contractor shall furnish to BPCA, before or upon execution of this Agreement, attention: **XXXXXXXXXXXXXXXXXXXX**, a certificate or certificates of the insurance required under this Article and, upon BPCA's request, certified copies of the original policies of insurance, within the time period required by BPCA and before commencing physical performance of the Work at the Site. Such certificate or certificates shall be in form satisfactory to BPCA, shall list the various coverages and shall contain, in addition to any other provisions required hereby, a provision that the policy shall not be changed, canceled or reduced and that it shall be automatically renewed upon expiration and continued in force until two years after Final Acceptance unless BPCA is given 90 days' written notice to the contrary. Such policies and certificates should name as additional insureds BPCA, Battery Park City Parks Conservancy Corporation (the "Conservancy"), the State of New York, Construction Manager, and Engineer.

(d) All insurance required to be procured and maintained must be procured from insurance companies which have a financial rating by A.M. Best Company as published in the most current key rating guide of "A-X" or better and which are authorized to do business in the State of New York.

(e) If at any time any of the required insurance policies should be canceled,



terminated or modified so that insurance is not in effect as required, then, if BPCA shall so direct, Contractor shall suspend performance of the Work. If the Work is not suspended then BPCA may, at BPCA's option, obtain insurance affording coverage equal to that required, the cost of such insurance to be payable by Contractor to BPCA.

- (f) Contractor and each Subcontractor shall secure in form satisfactory to BPCA:
- (1) Worker's Compensation and Employer's Liability Insurance, including USL & H (United States Longshoreman & Harbor Workers) and Jones Act Coverages, during the Term for the benefit of such employees as are required to be insured by the applicable provisions of law and voluntary compensation for employees excluded from statutory benefits. Employer's Liability Insurance and benefits resulting from disease shall not be less than an annual aggregate amount of \$1,000,000 for each consecutive 12-month period.
  - (2) Disability Benefit Insurance during the life of this Agreement for the benefit of such employees as are required to be insured by the applicable provisions of law.
  - (3) Commercial General Liability Insurance as follows:

Standard commercial general liability insurance policy with contractual, products and completed operations and explosion, blasting, collapse and underground damage liability coverages, under the occurrence policy format, issued to and covering the liability of Contractor for all the Work and operations relating thereto and all obligations assumed by Contractor under this Agreement in an amount which shall not be less than the following limits:

Combined Single Limits, Bodily Injury  
and Property Damage Liability

\$XXXXXXXXXX per each occurrence and \$XXXXXXXXXX in the aggregate.

The completed operations coverage shall continue in force until three years after Final Acceptance of the Work and shall contain, in addition to any other provisions required hereby, a provision that the policy shall not be changed, canceled or reduced. As a condition precedent to the making of Final Payment, Contractor shall furnish BPCA with a certified copy of the completed operations policy.

- (4) Automobile Liability Insurance as follows:

A policy covering the use in connection with the Work of all owned,

non-owned and hired vehicles bearing, or under the circumstances under which such vehicles are being used being required by the Motor Vehicle Laws of the State of New York to bear license plates. The coverage under such policy shall not be less than the following limits:

Combined Single Limits,  
Bodily Injury and Property Damage Liability

\$XXXXXXXXXXXX per each occurrence.

- (5) Marine Protection and Indemnity ("P&I") insurance of not less than XXXXXXXXXXXXXXX per occurrence, if Contractor or any of its Subcontractors utilizes floating equipment, barges or floats, or performs marine-related construction, covering any and all claims for personal injury, death and property damage arising out of or in connection with this Agreement.
- (6) Pollution Liability Insurance, on an occurrence basis, providing coverage for bodily injury liability, property damage or environmental damage caused by pollution conditions with a limit of liability of not less than XXXXXXXXXXXXXXX per occurrence and in the aggregate. The policy shall include coverage for environmental clean-up on land, in air and on water. The policy shall include coverage for completed operations for two (2) years after the completion of the performance of the Work, gradual and sudden and accidental pollution coverage, with a time element of no less than seven (7) days' notice and thirty (30) days' reporting. The policy shall not contain a sunset provision, or any other provision, which would prohibit the reporting of a claim and the subsequent defense and indemnity that would normally be provided by the policy. The policy shall provide transportation coverage for the hauling of hazardous materials from the Project Site to the final disposition location.
- (7) Vessel Pollution Liability Insurance, on an occurrence basis, providing coverage for bodily injury liability, property damage or environmental damage caused by pollution conditions, emanating from any floating equipment, barges or floats, utilized by Contractor or SubContractors in the performance of Marine related construction, with a limit of liability of not less than XXXXXXXXXXXXXXX per occurrence and in the aggregate. The policy shall include coverage for environmental clean-up on land, in air and on water.
- (8) Umbrella Liability Insurance, excess of general liability, automobile liability, Protection and Indemnity ("Marine Liability"), vessel pollution and Employer's Liability, in an amount of not less than XXXXXXXXXXXX.

(g) The insurance required under subSections 13.1 (f) 3, 4 and 5 shall be of a type which shall protect Contractor and Subcontractors, respectively, against damage claims which may arise from operations under this Agreement, whether such operations be by the insured or by anyone directly or indirectly employed by the insured. Each of the aforesaid policies shall provide that the insurance company or an attorney approved and retained by the insurance company shall defend any suit or proceeding against BPCA or any officers, agents or employees of BPCA whether or not such suit is groundless, false or fraudulent. Notwithstanding the foregoing, BPCA shall have the right to engage its own attorneys for the purpose of defending any suit or proceeding against it or its respective officers, agents or employees, and, in such event, Contractor shall, indemnify BPCA for all attorneys' fees and disbursements and other costs incurred by it arising out of, or incurred in connection with, any such defense. The said insurance shall name BPCA, the Conservancy, the State of New York, Construction Manager and Engineer as additional insured as respects this location and shall, where applicable, be written on an occurrence basis and shall contain a provision that it is primary and that any similar insurance which BPCA, the Conservancy, the State of New York, Construction Manager, and Engineer Contractor or Subcontractor elect to carry for their own benefit is secondary or excess and not contributing insurance.

(h) BPCA, at BPCA's cost and expense, may, at its sole option, procure and maintain such insurance as shall in the opinion of BPCA, protect BPCA from contingent liability of BPCA to others for damages arising from bodily injury, including death and property damages which may arise from operations under this Agreement. The procurement and maintenance of such insurance by BPCA shall not in any way be construed or be deemed to relieve Contractor from, or to be a limitation on the nature or extent of, such obligations and risk.

(i) BPCA shall, at all times during the period of construction and until completion and Final Acceptance of the Work procure and maintain at the cost and expense of BPCA "Builders Risk" insurance, or its functional equivalent, against direct physical loss or damage to the Work and on all Materials to be made a part of the Work in the names of BPCA, Construction Manager, Contractor and Subcontractors, said amount of insurance to be procured and maintained on a one hundred percentage (100%) completed value basis on the insurable portion of the Work, which insurance shall contain a deductible provision for all losses except flood and earthquake in the amount of \$10,000 and a deductible provision for flood and earthquake in the amount of \$10,000. Owner recognizes that the deductible applicable to flood and earthquake may be greater than \$10,000 due to insurance market conditions and shall notify Contractor if such deductible is greater than \$10,000. Losses up to and including the amounts of such deductible provisions shall be borne by Contractor. The insurance specified above may, in certain instances, include other parties as named insureds, as the interests of such parties may appear. Loss, if any, is to be made adjustable with and payable to BPCA on behalf and for the named insureds as the interests of such insureds may appear. BPCA shall, in BPCA's sole discretion, have power to adjust and to settle with the insureds any loss or claim under such insurance. The above is not intended to be a complete, full or accurate description of the coverage provided by the policies of insurance, copies of which are on file with BPCA. This subSection (i) is not intended to create or give any rights to Contractor or Subcontractors other

than those which may be made available to such Contractors or Subcontractors under the terms of such policies. BPCA assumes no obligation to obtain insurance other than that evidenced by said policies. Contractor and Subcontractors shall not violate or permit to be violated any term or condition of such policies and shall at all times satisfy the safety requirements of BPCA and of the insurance companies issuing the aforementioned policies. The Contractor shall, upon notification by BPCA, obtain such insurance at BPCA's expense on a date determined by BPCA, which date shall not be less than (thirty) (30) days after notice to Contractor of such determination by the BPCA.

### **13.2    Effect of Procurement of Insurance**

Neither the procurement nor the maintenance of any type of insurance by BPCA or Contractor shall in any way be construed or be deemed to limit, discharge, waive or release Contractor from any of the obligations and risks impressed upon Contractor by this Agreement or to be a limitation on the nature or extent of such obligations and risks.

### **13.3    Contract Security**

Contractor shall, if it already has not done so, furnish to BPCA, with the execution of this Agreement, to BPCA, a bond in an amount at least equal to one hundred percent (100%) of the Contract Price for performance of the Work (the "Performance Bond") and also a labor and material payment bond in an amount at least equal to one hundred percent (100%) of the Contract Price for the payment of all persons performing labor or providing Materials in connection with the Work (the "Payment Bond").

### **13.4    Additional or Substitute Bond**

If at any time BPCA shall be or shall become dissatisfied with any surety or sureties then obligated upon the Performance Bond or the Payment Bond, or if for any other reason such bonds shall cease to be adequate security to BPCA, Contractor shall within five (5) days after notice from BPCA to do so, substitute an acceptable bond or bonds in such form and sum and signed by such other surety or sureties as may be satisfactory to BPCA, except that the penal sum of said bond shall not exceed the Contract Price as adjusted by Change Orders. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished such an acceptable bond or bonds to BPCA.

## **ARTICLE 14 - CLAIMS FOR EXTRA WORK**

(a) If Contractor is of the opinion that (i) any work which it has been ordered to perform is Extra Work and not Work as set forth in the Contract Documents, (ii) any action or omission of BPCA, Construction Manager or Engineer is contrary to the terms and provisions of the Contract Documents and will require the performance of Extra Work or will cause additional expense to Contractor or (iii) any determination, order or directive of BPCA, Construction Manager or Engineer is contrary to the terms of the Contract Documents and will require the performance of Extra Work or will cause additional expense to Contractor,

Contractor shall:

- (1) not suspend Work but promptly comply with each determination, order or directive and proceed diligently with the performance of the Work in accordance with BPCA's instructions,
- (2) notify BPCA, Construction Manager and Engineer in writing within 72 hours of such determination, order or directive of its reasons for its opinion and request a final determination thereon by BPCA, and
- (3) present to the Construction Manager for signature daily time and material tickets to confirm quantities of Material and hours of labor in cases where Contractor is performing the Work which it considers to be Extra Work.

If BPCA determines that (x) work is Work required to be performed hereunder and not Extra Work, (y) action or omission is proper or (z) a determination, order or directive is proper, Contractor, in order to reserve its right to claim compensation for or damages resulting from the performance of such work or the compliance with such determination, order or directive, must notify BPCA in writing within three (3) working days after receiving notice of BPCA's determination that it is performing such work or complying with such determination, order or directive under protest.

In addition to the foregoing, Contractor must submit to BPCA, Construction Manager and Engineer within thirty (30) days after it has performed such work or complied with such determination, order or directive, a detailed statement of the extra expense claimed to have been incurred and of any claimed damages resulting from the performance of such work or the compliance with such determination, order or directive.

(b) No claim for Extra Work shall be allowed unless the same was done pursuant to written order approved in writing by BPCA. Contractor's failure to comply with any provision of this Article:

- (1) shall constitute a conclusive and binding determination on the part of Contractor that such action, omission, determination, order or directive does not involve Extra Work, has not caused extra expense to Contractor, and is not contrary to the terms and provisions of the Contract Documents; and
- (2) shall constitute an irrevocable waiver by Contractor of any claim for compensation for or damages resulting from the performance of such work or the compliance with such determination, order or directive.

(c) The value of claims for Extra Work, if allowed, shall be determined by the methods described in Section 9.2.

## **ARTICLE 15 - TERMINATION**

### **15.1 Termination for Cause**

(a) If any of the following events shall occur (an “Event of Default”) then BPCA or Construction Manager may serve written notice upon Contractor and upon Contractor’s surety, if any, terminating this Agreement at a specified date. The notice shall contain the reasons for termination but shall not be effective to terminate this Agreement if Contractor cures all Events of Default stated in the notice prior to the date specified in the notice of termination.

- (1) Contractor shall violate any substantial provision of this Agreement, including, without limitation, by failing to maintain the Progress Schedule then in effect in accordance with, or failing to discharge any of its responsibilities under, Section 3.1(d) hereof, or by failing to indemnify and hold harmless BPCA (as required by Sections 3.1(e), 3.2, 17.5, 21.1, 21.2., 22(c) or any other provision of this Agreement) from and against any and all claims, liabilities, losses, costs or damages arising out of Contractor’s performance of, or failure to perform, its obligations under this Agreement in accordance with its terms; or
- (2) any material adverse change shall take place in the financial condition of the Contractor;
- (3) any action shall be taken by Contractor which would result in it becoming the subject of any insolvency proceeding. The term “insolvency proceeding” as used herein shall include the filing of a petition for relief under Title 11 of the United States Code by Contractor or the consent, acquiescence or taking of any action by Contractor, or the filing by or against Contractor of petition or action, looking to or seeking any reorganization, arrangement, composition, readjustment, liquidation, dissolution, or similar relief under any other regulation; or the appointment, with or without the consent of Contractor, of any trustee, custodian, receiver or liquidator of Contractor of any property or assets of Contractor; or Contractor’s making of an assignment for the benefit of creditors or its inability to pay its debts as they become due.
- (4) Contractor shall have misrepresented or omitted information in its submission of the Statement of Qualifications of Contractor submitted by Contractor to BPCA in connection with this Agreement; or
- (5) Any partner, principal, director, officer or shareholder owning in excess of five percent (5%) of the stock of Contractor shall have been convicted of a felony.

(b) Upon the occurrence of an Event of Default, at Owner's option exercised by written notice to Contractor, title to any or all of Contractor's Materials, equipment, work in process and dies and tools, whether on the Site or off site, which are necessary or useful in completing the Work shall vest in Owner and Owner may take possession of and utilize the same for completion of the Work; provided that title to such items shall revert to Contractor upon effectuation of a cure of the Event of Default prior to the termination of this Agreement. If no cure has been effected, this Agreement has been terminated and Owner has taken possession of the same, then after Owner has taken possession and the Work shall have been completed by or on behalf of Owner, Owner shall pay to Contractor, in respect to the items for which title has vested in Owner, an amount equal to the sum of:

- (1) the direct costs of Contractor for such materials and Work in progress, and
- (2) the depreciated book value of such tools and dies less, if Owner elects to return the tools and dies to Contractor, the salvage value thereof. Owner shall have the right to set off against such payment due to Contractor any amounts then due and payable by Contractor to Owner which may accrue as damages owing by Contractor to Owner under the terms of this Agreement. Contractor shall execute any further documents (including Form UCC-1 Financing Statements to give public notice of the potential ownership interest of Owner as set forth herein) required by Owner to confirm the terms of this subSection 15.1(b).

(c) Upon termination of this Agreement, BPCA shall have the right, in addition to all other rights and remedies, to complete or have the Work completed by such means and in such manner, by contract or otherwise, with or without public letting as permitted by law, as BPCA deems advisable. BPCA may deduct any loss it incurs thereby from any payment then or thereafter due to Contractor without prejudice to any other remedy BPCA may have.

(d) Immediately upon termination in accordance with the provisions of this Section, each and every Subcontract and Purchase Order entered into by Contractor shall, at BPCA's option, be automatically assigned to BPCA, and Contractor shall insert a provision to this effect in all Subcontracts and Purchase Orders. In the event that it shall be determined that a termination under this paragraph was wrongful or not justified, such termination shall be conclusively deemed to be a termination for convenience of BPCA under Section 15.2 hereof and the sole right, remedy and recourse of Contractor against BPCA shall be governed and determined by Section 15.2 hereof.

(e) Contractor shall, upon the date when such termination shall take effect, promptly notify the union or unions, if any, having jurisdiction over the work by its employees that it releases the Project and consents that the Work be performed by others and Contractor expressly authorizes BPCA to notify the union or unions of such release in the name of Contractor. The failure, neglect or refusal of Contractor to issue such release or the disclaimer by it of the effectiveness of the release issued by BPCA shall subject Contractor to all damages sustained by BPCA.

(f) If this Agreement shall have been terminated by BPCA pursuant to this Section 15.1 and it shall be finally determined by a court of competent jurisdiction that adequate grounds for such termination did not exist, then such termination shall be deemed a termination for convenience as provided hereunder.

## **15.2 Termination for Convenience of BPCA**

(a) BPCA, at any time, may terminate this Agreement for its own convenience. Any such termination shall be effected by delivering to Contractor a notice of termination specifying the extent to which performance of Contractor's Work under the Contract is terminated and the date upon which such termination becomes effective. Upon receipt of the notice of termination, Contractor shall:

- (1) stop work under this Agreement on the date specified in the notice of termination;
- (2) place no further Purchase Orders or Subcontracts for Materials, services or facilities;
- (3) unless directed otherwise by BPCA, terminate all Purchase Orders and Subcontracts;
- (4) assign to BPCA, in the manner, at the times, and to the extent directed by Construction Manager, all of the right, title and interest of Contractor under the Purchase Orders and Subcontracts so terminated, in which case BPCA shall have the right, in its sole discretion, to settle or pay any or all claims arising out of the termination of such Purchase Orders and Subcontracts;
- (5) to the extent required by Construction Manager, settle all outstanding liabilities and all claims arising out of such termination of Purchase Orders and Subcontracts, with the approval or ratification of Construction Manager, which approval or ratification shall be final for all the purposes of this Section 15.2;
- (6) transfer title to BPCA and deliver in the manner, at the time, and to the extent, if any, directed by the Construction Manager (i) the fabricated or unfabricated parts, work in process, completed work, supplies, and other material produced as a part of, or acquired in connection with the performance of, the Work terminated by the notice of termination, and (ii) the completed or partially completed plans, drawings, information and other property, which if this Agreement had been completed, would have been required to be furnished to BPCA;
- (7) take such action as may be necessary, or as the Construction Manager



may direct, for the protection and preservation of the property related to this Agreement which is in the possession of Contractor and in which BPCA has or may acquire an interest.

(b) In the event of a termination of this Agreement pursuant to this Section 15.2, Contractor shall be paid by BPCA only the apportioned Contract Price for Work installed, the fair and reasonable value of Materials stored on the Site and under order for which Contractor is responsible for payment, less any sums properly deductible by BPCA, except that in no event shall Contractor be entitled to compensation in excess of the total Contract Price.

### **15.3 Suspension of Work**

(a) BPCA may at any time and for any reason direct Contractor to suspend, stop, or interrupt the Work or any part thereof for a period of time. Such direction shall be in writing and shall specify the period during which the Work is to be stopped. Upon receipt of a direction of suspension, Contractor shall, as soon as practicable, cease performance of the Work as ordered and take immediate affirmative measures to protect the Work from loss or damage. Contractor shall resume the Work upon the date specified in such direction or upon such other date as BPCA may thereafter specify in writing.

(b) The period during which the Work shall have been suspended, stopped or interrupted may, if warranted, be added to the time fixed for performance. A suspension, stoppage or interruption of the Work pursuant to this provision shall not give rise to any claim against BPCA for additional compensation.

## **ARTICLE 16 - COMPOSITE DRAWINGS AND COOPERATION**

Where Contractor shall perform Work in close proximity to work of other contractors or subcontractors, or where there is evidence that Contractor's Work may interfere with work of other contractors, or subcontractors, Contractor shall assist in arranging space conditions to make satisfactory adjustment for the performance of such work and the Work. Contractor shall prepare composite scale working drawings and Sections as directed by Construction Manager, clearly showing how Contractor's Work is to be performed in relation to work of other contractors or Subcontractors. Such direction may include the following: the scale of the drawings, where the drawings are to be drafted, the number of prints or reproducibles, and the requirement of attendance at meetings. The determination as to who shall provide the composite drawings and the contents of the same shall rest exclusively with Construction Manager. Upon request by Construction Manager, Contractor shall sign and be bound by such composite drawings. Such signature shall indicate Contractor's acknowledgment that such drawing is acceptable as related to its Work covered or included in such drawing. If Contractor performs work in a manner which causes interference with the work of other contractors, or subcontractors, Contractor shall make the changes necessary to correct the condition as directed by Construction Manager.

## **ARTICLE 17 - PROTECTION OF RIGHTS, PERSONS AND PROPERTY**

### **17.1 Accident Prevention**

Contractor shall at all times take every precaution against injuries to persons or damage to property and for the safety of persons engaged in the performance of the Work.

### **17.2 Safety Programs**

Contractor shall be responsible for the initiation, maintenance and supervision of safety precautions and programs as prescribed by Construction Manager in connection with the Work.

### **17.3 Protection of Work and Property**

(a) Contractor shall at all times guard BPCA's property from injury or loss in connection with the Work. Contractor shall at all times guard and protect the Site, the Work and adjacent property. Contractor shall replace or make good any such loss or injury unless such loss or injury is caused directly by BPCA.

(b) Contractor shall have full responsibility to install, protect and maintain all Materials in proper condition and forthwith repair, replace and make good any damage thereto until Final Acceptance of the Work.

(c) No provision is included for stresses or loads imposed by construction operations. If Contractor desires to place such loads in excess of the design load (as shown on the Drawings or Specifications), Contractor shall submit to Engineer drawings and calculations prepared by, and bearing the seal of a professional engineer, showing the proposed method for supporting such loads, for Engineer's review and approval. No loading of any kind in excess of design loads shall be placed on any part of the Project prior to Engineer's approval of such submitted drawings and calculations. The costs of the Engineer's review shall be reimbursed to BPCA by Contractor.

(d) Contractor shall be responsible for all cutting, fitting or patching that may be required to complete the Work, to make its several parts fit together properly and to make the Work fit together properly with previous and surrounding work. The requirement to cut, fit or patch shall be determined by Construction Manager; provided, that structural elements of the Project shall not be cut, patched, or otherwise altered or repaired without prior authorization by BPCA. Authorization to proceed with remedial operation on any damaged or defective element or portion of the Project shall not constitute a limitation or a waiver of BPCA's, Construction Manager's or Engineer's right to require the removal and replacement of any Work which fails to fulfill the requirements of the Contract Documents.

### **17.4 Adjoining Property**

Contractor shall protect all adjoining property and shall repair or replace any

such property damaged or destroyed during the progress of the Work.

**17.5 Risks Assumed by Contractor**

(a) Contractor solely assumes the following risk whether such risk arises from acts or omissions (whether negligent or not and whether supervisory or otherwise) of BPCA, Construction Manager, of Engineer or Contractor, of any Subcontractor, of any Materialman, of third persons or from any other cause, including unforeseen obstacles and difficulties which may be encountered in the prosecution of the Work, whether such risk is within or beyond the control of Contractor and whether such risk involves any legal duty, primary or otherwise, imposed upon BPCA:

the risk of loss or damage, direct or indirect, of whatever nature, to the Work or to any Materials furnished, used, installed or received by BPCA, Contractor or any Subcontractor, Materialmen or workmen performing services or furnishing Materials for the Work, whether such Work or Materials are stored at the Site or at an offsite location in accordance with Section 5.4 hereof. Contractor shall bear such risk of loss or damage until Final Acceptance of the Work by BPCA or until completion or removal of such Materials from the Site and the vicinity thereof, whichever event occurs last. A portion of the risk of such loss or damage may be insured against under the terms of a "builder's risk" insurance policy maintained in the name of Contractor, among others, as described in Section 13.1(i). Notwithstanding the status of any actual or potential recovery or claim under the said "builder's risk" insurance policy, in the event of any loss or damage, Contractor immediately shall repair, replace or make good any such loss or damage.

(b) Contractor shall not, without obtaining express advance permission of BPCA, raise any defense involving in any way jurisdiction of any court in which BPCA brings an action arising under this Agreement, governmental nature of BPCA or the provisions of any statutes respecting suits against BPCA.

(c) Contractor's obligations under this Article 17 shall not be deemed waived, limited or discharged by the enumeration or procurement of any insurance for liability for damages.

(d) Neither Final Acceptance of the Work nor any payment made hereunder shall release Contractor from Contractor's obligations under this Article 17. The enumeration elsewhere in this Agreement of particular risks assumed by Contractor or of particular claims for which Contractor is responsible shall not be deemed to limit the effect of the provisions of this Article 17 or to imply that Contractor assumes or is responsible for only risks or claims of the type enumerated; and neither the enumeration in this Article nor the enumeration elsewhere in this Agreement of particular risks assumed by Contractor of particular claims for which Contractor is responsible shall be deemed to limit the risks which Contractor would assume or the claims for which Contractor would be responsible in the absence of such enumerations.

(e) The Contractor is advised that the Work under this Agreement may impose certain obligations and requirements mandated by the U.S. Department of Labor Occupational Safety and Health Administration regulations, Title 29 CFR Part 1926.62 Lead Exposure in Construction, relative to the potential exposure to lead by its employees. The Contractor assumes entire responsibility and liability for complying fully in all respects with these regulations.

(f) Contractor agrees that any unsatisfied claims of the BPCA arising from Contractor's obligations under this Article 17 or Article 13 (Insurance) may be offset or deducted by BPCA from any payments due to Contractor hereunder.

#### **ARTICLE 18 - USE PRIOR TO ACCEPTANCE BY BPCA**

(a) If before Final Acceptance of Work, BPCA desires to use the Site or any part thereof which is completed or partly completed, or to place or install therein or thereon equipment, BPCA shall have the right to do so, and Contractor shall in no way interfere with or object to such use by BPCA.

(b) Such use (1) shall not constitute acceptance of space, systems, Materials or elements of the Work, nor shall such use affect the start of any guaranty period and (2) shall not affect the obligations of Contractor for work which is not in accordance with the requirements of this Agreement or other obligations of Contractor under the Contract Documents.

(c) Contractor shall continue the performance of the Work in a manner which shall not unreasonably interfere with such use by BPCA.

#### **ARTICLE 19 - EXEMPTION FROM SALES AND COMPENSATING USE TAXES**

##### **19.1 BPCA Exempt**

BPCA is exempt from payment of sales and compensating use taxes of the State of New York and of cities and counties thereof on all Materials which will become an integral component of the completed Project pursuant to this Agreement.

##### **19.2 Certificates**

Contractor, Subcontractors and Materialmen shall obtain any and all necessary certificates or other documentation from the appropriate governmental agency or agencies, and use such certificates or other documentation as required by law, rule or regulations to obtain said tax exemption.

#### **ARTICLE 20 - WARRANTIES AND GUARANTIES**

## **20.1    In General**

(a) Contractor guarantees that all Work performed and all Materials furnished will conform to the Contract Documents as to kind, quality, functions, design and characteristics of material and workmanship. Contractor shall remove, replace and repair, at its sole cost and expense, all defects in workmanship, Materials, ratings, capacities, or design characteristics occurring in or to the Work including, without limitation, any portion of the Work furnished or performed by any Subcontractor or Materialman, within one year from the date of Final Acceptance. Contractor guarantees that all Work performed and all Materials furnished will conform to the Contract Documents as to kind, quality, functions, design and characteristics of material and workmanship. Contractor hereby acknowledges that BPCA may be required to incur substantial expense if correction of the Work is required particularly if such correction involves the uncovering, removal or replacement of concrete, wiring and piping installed at the Site. If Contractor shall fail to reimburse BPCA for any such expense which may become payable as provided in this paragraph, BPCA shall be entitled to deduct such expense from any payments required to be made by BPCA to Contractor pursuant to this Agreement. Contractor, upon demand, shall pay for all damage to all other work resulting from such defects and all expenses necessary to remove, replace and repair such other work which may be damaged in removing, replacing or repairing such defects.

(b) The benefits of this Article 20 shall inure to the benefit of BPCA and its respective successors and assigns. In addition, any bond or guaranty which may be required of Contractor or any Subcontractor or Materialman under the Contract Documents shall inure to the benefit of BPCA and its respective successors and assigns.

(c) The rights and remedies afforded BPCA under this Section are in addition to and not in lieu of and do not in any way affect, change, alter, modify, vary or prejudice any right, remedy or recourse which BPCA may have under other provisions of this Agreement or pursuant to Law.

## **20.2    Additional Guaranties**

In addition to the general guaranty set forth in Section 20.1, any other guaranties set forth in the Contract Documents shall be applicable.

## **20.3    Repair by Another**

If BPCA has requested Contractor to correct any Work and Contractor shall not have completed any correction of the Work as shall be required pursuant to this Article 20 within ten (10) working days after receipt of written notice from BPCA specifying the defect or damage required to be removed, replaced or repaired, or if such defect or damage is of such a nature that it cannot be completely removed, repaired and replaced within such ten (10) day period and Contractor shall not have diligently commenced removing, repairing and replacing such defect and damage within such ten (10) day period or shall not thereafter with reasonable diligence and in good faith proceed to do such work, BPCA may employ such other person, firm or corporation as it may choose, to perform such removal, replacement and repair, and

Contractor shall, upon demand, pay to BPCA all amounts which BPCA expends for such removal, replacement and repair.

## **ARTICLE 21 - INDEMNITY**

### **21.1 Delay or Failure**

Contractor and its sureties shall be responsible for and pay to BPCA, all loss, damage and additional cost incurred by reasons or on account of (i) the unexcused delays of Contractor (determined as set forth in Section 3.1 hereof) or (ii) Contractor's failure to fully and completely carry out the terms of this Agreement.

### **21.2 Inventions**

In addition to the indemnity set forth in Section 17.5(a), Contractor shall indemnify and hold BPCA harmless from all claims, demands or liabilities of any kind or nature, including costs and expenses, for or on account of any patented or unpatented plan, design, invention, article, arrangement, appliance, Material, or preparation, manufactured, used or followed in the performance of or incident to the Work hereunder, and shall defend any and all actions arising out of the same. In the event of any injunction or legal action by reason thereof, which shall operate to stop or retard the Work, BPCA shall have the right to substitute such other articles of like kind as will enable it to complete the Project, and all costs and expenses occasioned thereby shall be borne by Contractor.

### **21.3 Liability**

Contractor shall hold BPCA, the Conservancy, the State of New York, Construction Manager and Engineer and their servants, agents and employees harmless from and shall indemnify them against any and all liability, loss, cost, damage or expense, including attorneys' fees, by reason of claims of its employees or employees of its Subcontractors or Materialmen for injuries or death or by reason of claims of any other person or persons, including BPCA, the Conservancy, the State of New York, Construction Manager, and Engineer and their servants, agents or employees, for injuries to person or property or for death occasioned in whole or in part by any act or omission of Contractor, its Subcontractors and Materialmen and their servants, agents and employees whether or not it is contended that BPCA contributed thereto or was responsible therefor by reason of nondelegable duty. If, however, this indemnification is limited by applicable law, then the said indemnification hereby shall be similarly limited to conform with such law, it being the intention that this indemnification shall be as permitted by applicable law. BPCA may retain any monies due or to become due hereunder sufficient to indemnify BPCA, the Conservancy, the State of New York, Construction Manager, and Engineer and their servants, agents and employees against such injuries, claims, suits, actions, costs or damages should any such claim arise. Contractor shall, at the sole option of BPCA and upon written demand of BPCA, assume the defense in behalf of BPCA, the Conservancy, the State of New York, Construction Manager, and Engineer or their servants, agents or employees of any action or proceeding commenced against them whether or not Contractor is named as a party therein as part of Contractor's aforementioned obligation to

indemnify and hold them harmless.

## **ARTICLE 22 - PATENTS AND ROYALTIES**

(a) In the prosecution of the Work, Contractor will not use or furnish any patented appliance, article, device or method of construction unless it has authorization for such use. Contractor shall pay all royalty and license fees.

(b) Any approval of Materials by Engineer shall be construed merely as an approval of their adequacy for the Work.

(c) Contractor will be responsible for all claims against BPCA for the infringement of any patents. Contractor shall defend all suits and claims for infringement of any patent rights and shall indemnify and hold BPCA harmless from loss on account thereof. Any expenses incurred by Contractor in connection with suits and claims will not offset the Contract Price.

(d) Contractor hereby and presently grants to BPCA an irrevocable and non-exclusive license to utilize all of the Contractor's rights in and to:

- (1) all United States patents and patents registered in any other foreign country;
- (2) all proprietary knowledge, data and trade secrets; and
- (3) all Engineering data and information necessary in connection with and solely in connection with, all work performed by BPCA or other contractors hired by BPCA to complete the work after termination of this Agreement pursuant to Section 15.1.

Each Purchase Order and Subcontract shall contain a similar clause with respect to the rights of Subcontractor and Materialman in and to the foregoing, in form and substance acceptable to BPCA, granting BPCA the aforesaid license. BPCA shall not be obligated to pay any royalties, license fees or any other consideration to Contractor or any Subcontractor or Materialman for this license. Contractor and each Subcontractor and Materialman shall execute a separate license agreement, in form and substance satisfactory to BPCA, concurrently with the execution of this Agreement, or any Subcontract or Purchase Order, or within ten (10) days thereafter, embodying the terms of this Section. On request, Contractor and each Subcontractor and Materialman shall furnish BPCA with copies of all related Engineering and technical data required to complete the work.

## **ARTICLE 23 - AS-BUILT DRAWINGS**

(a) Contractor shall be furnished by BPCA, at BPCA's expense, with one physical

set and two electronic copies (on disk) of 48" x 36" Drawings, on which Contractor, where applicable, shall record the installation of underground utilities, concealed piping, concealed valves and control equipment and record changes in the Work. Such recording shall be kept current and include final and actual sizes as well as the location and elevation of the above figures and offset distances in feet and inches to permanent surface improvements such as buildings, retaining walls or curbs. During the progress of the Work, at the request of Construction Manager and prior to the approval of any Requisition of Contractor, Contractor shall provide a 48" x 36" PDF to BPCA of the up to-date Drawings showing the Work as installed. At completion of the Work, Contractor shall complete, sign and date the 48" x 36" physical set of Drawings and deliver it to Engineer.

(b) After review by Engineer and return to Contractor for any required changes, Contractor shall furnish to BPCA, at Contractor's expense, at least one physical set and two electronic copies (on disk) of 48" x 36" final Drawings.

## **ARTICLE 24 - SHOP DRAWINGS AND SAMPLES**

### **24.1 Contractor Submittal**

Contractor shall submit to Construction Manager the shop drawings, Product Data and Samples required by the Contract Documents and shall adhere to all submittal and scheduling requirements with respect thereto. After review of such shop drawings, Product Data and Samples by Construction Manager and their approval by Engineer, each of such items shall be returned in accordance with the procedures established therefor.

### **24.2 Contractor's Responsibility**

Engineer's approval of shop drawings, Product Data and Samples shall not relieve Contractor of responsibility for and deviation from the requirements of the Contract Documents. Contractor shall be responsible for the accuracy of the shop drawings, Product Data and Samples and for the conformity of Documents unless Contractor has notified Engineer of the deviation in writing at the time of submission and has received from Engineer written approval by separate letter of the specified deviations. Engineer's approval shall not relieve Contractor of responsibility for errors or omissions in the shop drawings, Product Data or Samples.

## **ARTICLE 25 – NOTICES**

Whenever it is provided herein that notice, demand, request, consent, approval or other communication shall or may be given to, or served upon, either of the parties by the other, or whenever either of the parties desires to give or serve upon the other any notice, demand, request, consent, approval or other communication with respect hereto, each such notice, demand, request, consent, approval or other communication shall be in writing and shall be effective for any purpose only if given or served by hand with proof of delivery, by delivery



by an overnight courier service which obtains receipts, or by mailing the same by express or certified mail, postage prepaid, return receipt requested, addressed to:

(a) If to BPCA:

Name & Title of BPCA Person, Battery Park City Authority, One World Financial Center, 24th floor, New York, NY 10281

with a copy to: General Counsel, at the same address

or to such other address as BPCA may from time to time designate in the manner set forth above.

(b) If to Contractor:

Name, address & Company

or to such other addresses as Contractor may from time to time designate in the manner set forth above.

(c) if to Construction Manager

Name, Company and Address (if there is a CM).

or to such other addresses as the Construction Manager may from time to time designate in the manner set forth above.

(d) if to Engineer/Architect/etc.

Name, Company, Address.

or to such other addresses as Engineer may from time to time designate in the manner set forth above.

(e) Every notice, demand, request, consent, approval or other communication hereunder shall be deemed to have been given or served (i) in the case of express or certified mail, on the date the receipt is dated by the Post Office or express mail carrier, as the case may be, and (ii) in the case of notice by hand or by overnight courier service, upon delivery, as evidenced by a signed receipt.

## **ARTICLE 26 - EMPLOYMENT AND DIVERSITY**

### **26.1 Definitions**

The following terms shall have the meanings set forth below for the purposes of this Article 26:

(a) “Certified Business.” A business verified as a minority or women-owned business enterprise by the Division or such other New York State agency authorized to make such certification.

(b) “Diversity Program.” The program by which Owner shall monitor Contractor’s compliance with the requirements set forth in (i) the MBE/WBE Required Participation Plan and (ii) the Utilization Plan.

(c) “Division.” The Division of Minority and Women’s Business Development of the New York State Department of Economic Development.

(d) “Director.” The Director or the Executive Director of the Division.

(e) “Directory.” The directory of certified businesses prepared by the Director for use by Owner and contractor in complying with the provisions of the Executive Law of the State of New York, Article 15-A.

(f) “MBE/WBE Required Participation Plan.” The plan previously submitted by a Consultant to Owner listing the certified MBEs and/or WBEs which the Contractor intends to use in the performance of this agreement in order to ensure that MBEs and WBEs are awarded a fair share of the total dollar value that is to be paid for the Work.

(g) “Minority” or “Minority Group Member.” A United States citizen or permanent resident alien who is and can demonstrate membership in one of the following groups:

(1) Black persons having origins in any of the Black African racial groups;

(2) Hispanic persons of Mexican, Puerto Rican, Dominican, Cuban, Central or South American descent of either Indian or Hispanic origin, regardless of race;

(3) Native American or Alaskan native persons having origins in any of the original peoples of North America; or

(4) Asian and Pacific Islander persons having origins in any of the Far East countries, South East Asia, the Indian subcontinent or the Pacific Islands.

(h) “Minority-owned Business Enterprise” (“MBE”). A business enterprise, including a sole proprietorship, partnership or corporation that is:

- (1) at least 51 percent owned by one or more Minority Group Members;
- (2) an enterprise in which such Minority ownership is real, substantial and continuing;
- (3) an enterprise in which such Minority ownership has and exercises the authority to control and operate, independently, the day-to-day business decisions of the enterprise; and
- (4) an enterprise authorized to do business in the State of New of New York and is independently owned and operated.

(i) “Subcontract.” An agreement providing for a total expenditure in excess of \$25,000 for the construction, demolition, replacement, major repair, renovation, planning or design of real property and improvements thereon between a contractor or consultant and any individual or business enterprise, including a sole proprietorship, partnership, corporation, or not-for-profit corporation, in which a portion of a contractor’s obligation is undertaken or assumed, but shall not include any construction, demolition, replacement, major repair, renovation, planning or design or real property or improvements thereon for the beneficial use of the contractor.

(j) “Utilization Plan.” A plan previously submitted by Contractor to Owner which sets forth the proposed percentages of employees who are either Minority Group Members or women and who will be used by Contractor to perform the Work.

(k) “Women-owned Business Enterprise” (“WBE”). A business enterprise, including a sole proprietorship, partnership or corporation that is:

- (1) at least 51 percent owned by one or more United States citizens or permanent resident aliens who are women;
- (2) an enterprise in which the ownership interest of such women is real, substantial and continuing;
- (3) an enterprise in which such women ownership has and exercises the authority to control and operate, independently, the day-to-day business decisions of the enterprise; and
- (4) an enterprise authorized to do business in the State of New York and which is independently owned and operated.

## **26.2 Equal Employment Opportunities for Minority Group Members and Women**

(a) During the performance of the Work, Contractor agrees as follows:

- (1) Contractor shall not discriminate against any employee or applicant for

employment because of race, creed, color, national origin, sex, age, disability or marital status; shall undertake or continue existing programs to ensure that Minority Group Members and women are afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status; and shall make and document its good faith effort to achieve prompt and full utilization of Minority Group Members and women at all levels and in all segments of its work force where deficiencies exist.

- (2) At the request of Owner, Contractor shall request each employment agency, labor union, or authorized representative of workers with which it has a collective bargaining or other agreement or understanding, to furnish a written statement that such employment agency, labor union, or representative will not discriminate on the basis of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will affirmatively cooperate in the implementation of Contractor's obligations herein.
- (3) Contractor shall state in all solicitations or advertisements for employees that in the performance of the Work, all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status.
- (4) Contractor and any Subcontractor shall be required to submit compliance reports in accordance with this Section 26 relating to their operations and the implementation of the Diversity Program in effect as of the date of execution of this Agreement.
- (5) Contractor shall submit an EEO policy statement to Owner within seventy-two hours of notice from Owner of the awarding of this contract to Contractor. If Contractor does not have an existing EEO policy statement, Owner may provide to Contractor a model statement.

(b) Contractor shall include the provisions of Section 26.2(a) in every Subcontract in such a manner that the provisions will be binding upon each Subcontractor as to the Work in connection with this contract's execution.

(c) Contractor shall comply with the provisions of the Human Rights Law, all other State and Federal statutory and constitutional non-discrimination provisions. Contractor and subcontractors shall not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, military status, age, disability, predisposing genetic characteristic, marital status or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest

(d) Miscellaneous

- (1) The provisions of this Section shall not be binding upon Contractor or its Subcontractors in the performance of Work or the providing of services, or any other activities that are unrelated, separate or distinct from this Agreement as expressed by its terms.
- (2) The requirements of this Section shall not apply to any employment outside New York State, or application for employment outside such state, or solicitations, or advertisements therefore, or any existing programs of diversity regarding employment outside New York State and the effect of contract provisions required by this section shall be so limited.

(e) Enforcement

The parties agree to be bound by provisions of Article 15-A of the Executive Law of the State of New York and by the regulations adopted thereunder.

**26.3** Workforce Participation

(a) Contractor is required to make and document good faith efforts to achieve the participation of \_\_\_\_\_ or n/a % Minority Group Members and \_\_\_\_\_ or n/a % women in the workforce for each trade or services utilized by Contractor in the Work as set forth in the Utilization Plan.

(b) To ensure compliance with this Section, Contractor shall submit a staffing plan to document the composition of the proposed workforce to be utilized in the performance of this contract by the specified categories listed, including ethnic background, gender, and Federal occupational categories. Contractors shall complete the Staffing plan form and submit it as part of their bid or proposal or within a reasonable time, but no later than the time of award of the contract.

(c) The participation for Minority Group Members and women employees must be substantially uniform throughout the work.

(d) Contractor shall not participate in the transfer of Minority Group Member employees or women employees from employer to employer or from project to project for the sole purpose of satisfying the participation goals above set forth.

(e) In achieving such participation, Contractor is required to make good faith efforts to find and employ qualified Minority Group Members and women supervisory personnel and journeymen.

(f) Contractor shall meet with Owner, and such other persons as Owner may invite, on a periodic basis as required by Owner to discuss issues relating to Minority Group Members

and women workforce participation. At such meetings, Contractor shall report on the names of its Subcontractors then engaged in construction on the project to which the Work relates or which within 60 days are scheduled to be engaged in construction of such project, on the nature of the work and anticipated construction schedule of Contractor and Subcontractors, on the anticipated hiring needs of Contractors and Subcontractors, on the names of the responsible foremen directly employed by Contractor, and such information requested by Owner that will then promote the employment of Minority Group Members and women. Contractor shall use its best efforts to obtain the above information and shall, upon Owner's request, cause its Subcontractors to attend said meetings and provide the above information.

(g) Compliance reports with respect to the Utilization Plan ("Utilization Compliance Reports") which shall be submitted to Owner's Diversity officer on a monthly basis and shall be in accordance with the following:

- (1) Owner may require that Contractor submit Utilization Compliance Reports for the duration of this contract to Owner regarding Contractor's operation and implementation of the Utilization Plan portion of the Diversity Program in effect as of the date of execution of this Agreement.
- (2) The Utilization Compliance Reports shall include information on any Subcontractor involved in the performance of the contract with regard to the Subcontractor's compliance with the Diversity Program.
- (3) The Utilization Compliance Reports shall include, but are not limited to the following:
  - (i) a breakdown of the Subcontractors by ethnic background, gender or such other categories as may be required by Owner;
  - (ii) the actions the Contractor and Subcontractors have taken to meet the components of the Diversity Program;
  - (iii) how Contractor and Subcontractors intend to utilize participation of Minority Group Members and women in their workforce in connection with the performance of the Work and timetables therefor during the remainder of their performance of the Work.

(h) Any failure by Consultant to submit a required Utilization Compliance Report, including information on any of its Subcontractor's compliance, may be deemed a breach of contract with respect to this agreement.

(i) Contractor shall include the provisions in Section 26.3 in every Subcontract, and such provisions shall be binding upon each Subcontractor.

**26.4 Minority Business Enterprise (MBE) Participation and Women's Business Enterprise Participation**

(a) Contractor shall make good faith efforts to attain the participation of \_\_\_\_\_ % MBE and \_\_\_\_\_ % WBE in the total dollar value of the Work.

(b) The total dollar value of the Work for purposes of determining compliance with the MBE/WBE Required Participation Plan shall be calculated as follows:

- (1) if an MBE and WBE is not the Contractor -- the dollar value of the Work subcontracted to MBEs and WBEs; provided, however, that where materials are purchased from an MBE and WBE which acts merely as a conduit for goods manufactured or produced by a non-MBE and non-WBE, only that portion of the price paid for such materials which will accrue as profit to the MBE or WBE and/or the Fee received by the MBE and WBE shall be included;
- (2) if Contractor is a joint venture including one or more MBEs and WBEs as joint venturers -- the Fee multiplied by the percentage of the joint venture's profits (or losses) which are to accrue to the MBE and WBE joint venturer(s) under the joint venture agreement; and
- (3) if an MBE and WBE is Contractor or where Contractor is a joint venture consisting entirely of MBEs and WBEs -- the Fee.

(c) Compliance reports with respect to the MBE/WBE Required Participation Plan ("MBE/WBE Compliance Reports") shall be required as follows:

- (1) MBE/WBE Compliance Reports shall be submitted to Owner on a monthly basis and shall include information with respect to:
  - (i) dividing the Work to be subcontracted into smaller portions, where economically and technically feasible;
  - (ii) actively and affirmatively making a good faith effort to solicit bids for subcontracts from qualified MBEs and WBEs identified in the directory of certified businesses available at the office of the Owner's Diversity Officer, including the circulation of solicitations to Minority contractor associations. Contractor shall maintain records detailing the efforts made to provide for meaningful MBE and WBE participation in the Work, including the names and addresses of all MBEs and WBEs contacted and, if any such MBE or WBE is not selected as a joint venture or subcontractor, the reasons for such decision;
  - (iii) making plans and specifications for prospective work

available to MBEs and WBEs in sufficient time for review;

(iv) utilizing the services and cooperating with those organizations providing technical assistance to Owner in connection with the participation of MBEs and WBEs in the project to which the Work relates;

(v) encouraging the formation of joint ventures, partnerships or other similar arrangements among subcontractors where appropriate;

(vi) ensuring that provision is made to provide progress payments to MBEs and WBEs on a timely basis; and

(vii) not requiring bonds from and/or providing bonds and insurance for MBEs and WBEs where appropriate, and/or assisting in obtaining bonds and insurance for MBEs and WBEs where feasible.

(2) MBE/WBE Compliance Reports which shall be submitted to the Diversity Department on a monthly basis.

(3) MBE/WBE Compliance Reports shall also include, but not be limited to, the following information:

(i) the name, address and telephone number of each certified MBE and WBE which Contractor is using or intends to use to comply with the MBE/WBE Required Participation Plan.

(ii) a brief description of the contract scope of work to be performed for the Contractor by each certified MBE and WBE and the scheduled dates for performance;

(iii) a statement of whether the Contractor has a written agreement with each certified MBE and WBE which Contractor is using or intends to use, and if requested, copies of such agreements;

(iv) the actual total cost of the contract scope of work to be performed by each certified MBE and WBE for this Agreement; and

(v) The actual amounts of any payments made by Contractor to each certified MBE and WBE as of the date the MBE/WBE Compliance Report was submitted.

(d) Contractor shall provide Owner with Monthly M/WBE and Workforce Utilization Reports, by the last calendar day of each month, **in the form of “Exhibit ????”** hereto. Failure to provide such reports shall be an event of default of contractor’s obligations pursuant to Article 15.1 (a) (1) hereof. **(IF NO GOALS, JUST WRITE, “M/WBE and**



## **Workforce Utilization Reports – n/a”).**

(e) Contractor shall provide proof of payment to all subcontractors and materialmen in the form of a waiver of lien or cancelled check, with each request for payment. Failure to provide such proof of payment shall be an event of default of contractor’s obligations pursuant to Article 15.1 (a) (1) hereof. **(IF NO GOALS, JUST WRITE, “Contractor Proof of Payment – n/a”).**

### **26.5 Failure to Comply**

(a) In accordance with 5 NYCRR §142.13, Contractor acknowledges that if it is found to have willfully and intentionally failed to comply with the M/WBE participation goals set forth herein or any other requirements set forth in this Article 26, such finding constitutes a breach of contract and Owner may withhold payment from the Contractor as liquidated damages.

(b) Such liquidated damages shall be calculated based on the actual cost incurred by Owner related to Owner’s expenses for personnel, supplies and overhead related to establishing, monitoring, and reviewing certified M/WBE programmatic goals and Diversity and Equal Opportunity compliance.

## **ARTICLE 27 - STANDARD PROVISIONS**

### **27.1 Provision Required by Law Deemed Inserted**

Each and every provision of law and governmental regulation required by law to be inserted in the Contract Documents shall be deemed to be inserted therein and this Agreement shall read and shall be enforced as though so included therein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party, this Agreement shall be deemed to be amended to make such insertion or correction. If this Agreement contains any unlawful provision, the same shall be deemed of no effect and shall, upon the application of either party, be deemed stricken from this Agreement without affecting the binding force of the remainder.

### **27.2 Compliance with Laws, Rules and Regulations**

Contractor and each Subcontractor and Materialman shall comply fully with all applicable laws, rules and regulations pertaining to the Project or the Work.

### **27.3 Applicable Law, Forum and Jurisdiction**

This Agreement shall be governed by the laws of the State of New York. All actions or proceedings relating, directly or indirectly, to this Agreement shall be litigated only in courts located within the County of New York. Contractor, any guarantor of the performance of its obligations hereunder (including sureties for Payment and Performance Bonds)

("Guarantor") and their successors and assigns hereby subject themselves to the jurisdiction of any state or federal court located within such county, waive the personal service of any process upon them in any action or proceeding therein and consent that such process be served by certified or registered mail, return receipt requested, directed to the Contractor and any successor at Contractor's address hereinabove set forth, to Guarantor and any successor at the address set forth in the instrument of guaranty and to any assignee at the address set forth in the instrument of assignment. Such service shall be deemed made as of the date of the return receipt.

#### **27.4    No Third Party Rights**

Nothing in this Agreement shall create or shall give to third parties any claim or right of action against BPCA, Construction Manager, or Engineer beyond such as may legally exist irrespective of this Agreement.

#### **27.5    Exculpation; Limitation of Liability**

In no event shall any claim be asserted under this Agreement by Contractor or any Subcontractor or Materialman against any member, officer, employee, lessee, consultant or agent of BPCA, Construction Manager, or Engineer. By execution of this Agreement, Contractor agrees to look solely to BPCA with respect to any claim which may arise. It is hereby understood by and between the parties hereto that BPCA shall only be liable to the extent of monies available to BPCA.

#### **27.6    Protection of Lives and Health**

(a) Contractor's, Subcontractor's and Materialman's attention is specifically called to the rules and regulations, codes and bulletins of the New York State Department of Labor. Attention is also directed to the standards imposed under the Federal Occupational Safety and Health Act of 1970, as amended.

(b) Contractor shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under this Agreement, and shall immediately notify BPCA in writing of any injury which results in hospitalization or death.

(c) Contractor alone shall be responsible for the safety, efficiency and adequacy of contractor's work, plant, appliances and methods, and for any damage which may result from the failure, or the improper construction, maintenance, or operation of such work, plant, appliances and methods.

#### **27.7    Waiver of Immunity Clause**

Contractor hereby agrees to the provisions of Section 2875 of the Public Authorities Law of the State of New York which require that upon the refusal of a person, when called before a grand jury, head of a State department, temporary State commission, or other

State agency, the Organized Crime Task Force in the State Department of Law, head of a department or other City agency, which is empowered to compel the attendance of witnesses and examine them under oath, to testify in an investigation concerning any transaction or contract had with the State, any political subdivision thereof, or with any public department, agency or official of the State, a public authority or with any public department, agency or official of the State or of any political subdivision thereof or of a public authority, to sign a waiver of immunity against subsequent criminal prosecution or to answer any relevant questions concerning such transaction or contract:

(a) such person, and any firm, partnership or corporation of which such person is a member, partner, director or officer shall be disqualified from thereafter selling to or submitting bids to or receiving awards from or entering into any contracts with any public authority or official thereof, for goods, work or services, for a period of five (5) years after such refusal; and

(b) any and all contracts made with any public authority or official thereof, by such person, and by any firm, partnership or corporation of which such person is a member, partner, director or officer may be canceled or terminated by the public authority without incurring any penalty or damages on account of such cancellation or termination, but any monies owing by the public authority for goods delivered or work done prior to the cancellation or termination shall be paid.

#### **27.8 Prohibited Interests**

No official of BPCA who is authorized in such capacity and on behalf of BPCA to negotiate, make, accept, or approve, or take part in negotiating, making, accepting, or approving any Architectural, Engineering, inspection, Purchase Order or any Subcontract in connection with the work, shall become directly or indirectly interested personally in the Agreement. Contractor is advised that no official or employee of BPCA is permitted to indirectly solicit, accept, or receive gifts whether in the form of money, service, loan, travel, entertainment, hospitality, thing or promise, or in any other form. No officer, employee, architect, attorney, engineer, inspector or consultant of or for BPCA who is authorized in such capacity and on behalf of BPCA to exercise any legislative, executive, supervisory or other similar functions in connection with the Work, shall become directly or indirectly interested personally in the Agreement, any Purchase Order, Subcontract, insurance contract, or any other contract pertaining to the Work.

#### **27.9 Labor Provisions**

(a) It is hereby agreed that all applicable provision of the Labor Law of the State of New York shall be carried out in the performance of the Work.

(b) Contractor specifically agrees, as required by Labor Law, Sections 220 and 220-d as amended, that:

- (1) no laborer, workman or mechanic, in the employ of Contractor, Subcontractor, Materialman or other person doing or contracting to do the whole or any part of the Work contemplated by the Contract

Documents shall be permitted or required to work more than eight (8) hours in any one calendar day or more than five (5) days in any one week, except in the emergencies set forth in the Labor Law.

- (2) the wages paid for a legal day's work shall be not less than the prevailing rate of wages as defined by law;
- (3) the minimum hourly rate of wage to be paid shall be not less than that stated in the Contract Documents and as shall be designated by the Industrial Commissioner of the State of New York; and
- (4) Contractor shall post at appropriate conspicuous points at the Site, a schedule showing all determined minimum wage rates for the various classes of laborers and mechanics to be engaged in the Work and all deductions, if any, required by law to be made from unpaid wages actually earned by the laborers and mechanics so engaged.

(c) The minimum wage rates, if any, herein specified for apprentices shall apply only to persons working with the tools of the trade which such persons are learning under the direct supervision of journeymen mechanics. Except as otherwise required by law, the number of apprentices in each trade or occupation employed by Contractor or any Subcontractor or Materialman shall not exceed the number permitted by the applicable standards of the New York State Department of Labor, or, in the absence of such standards, the number permitted under the usual practice prevailing between the unions and the employers' association of the respective trades or occupations.

(d) All employees of Contractor and each Subcontractor and Materialman shall be paid in accordance with the provisions of the Labor Law.

(e) Contractor agrees that, in case of underpayment of wages to any worker engaged in the Work by Contractor or any Subcontractor or Materialman, BPCA shall withhold from Contractor out of payments due an amount sufficient to pay such worker the difference between the wages actually paid such worker for the total number of hours worked, and that BPCA may disburse such amount so withheld by BPCA for and on account of Contractor to the employee to whom such amount is due. Contractor further agrees that the amount to be withheld pursuant to this paragraph may be in addition to the percentages to be retained by BPCA pursuant to other provisions of the Contract Documents.

(f) The Labor Law provides that this Agreement may be terminated for cause and no sum paid for any Work done thereunder upon a second conviction for willfully paying less than:

- (1) the stipulated wage scale as set forth in Labor Law, Section 220, subdivision 3, as amended, or
- (2) less than the stipulated minimum hourly wage scale as specified in Labor

Law, Section 220-d, as amended.

(g) Contractor specifically agrees, as required by the Labor Law, Section 220-e, as amended, that:

- (1) in the hiring of employees for the performance of Work under this Agreement or any Subcontract or Purchase Order hereunder, or for the manufacture, sale or distribution of Materials, equipment or supplies hereunder, but limited to operations performed within the territorial limits of the State of New York, no Contractor, Subcontractor, Materialman or any person acting on behalf of such Contractor or Subcontractor, or Materialman, shall by reason of race, creed, color, sex or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the work to which the employment relates;
- (2) no Contractor, Subcontractor, Materialman, or any person on behalf of such Contractor, Subcontractor or Materialman shall, in any manner, discriminate against or intimidate any employee hired for the performance of work under this Agreement on account of race, creed, color, sex or national origin;
- (3) there may be deducted from the amount payable to Contractor, by BPCA under this Agreement, a penalty of \$50.00 for each person for each calendar day during which such person was discriminated against or intimidated in violation of the terms of this Agreement; and
- (4) this Agreement may be canceled or terminated for cause by BPCA and all monies due or to become due hereunder may be forfeited for a second or any subsequent violation of the terms or conditions of this Section of this Agreement.

(h) Where applicable, Contractor agrees to settle labor disputes in accordance with the provisions of The New York Plan For The Settlement of Jurisdictional Disputes Between The Building And Construction Trades Council Of Greater New York And The Building Trades Employers' Association Of The City of New York.

#### **27.10 Disputes Resolution Procedure**

(a) The provisions of this Article shall constitute Contractor's sole means for challenging any determination, order or other action of BPCA or otherwise asserting against BPCA any claim of whatever nature arising under, or in any way relating to, this Agreement (any such challenge or assertion by Contractor being herein referred to as a "Dispute(s)"). Exhaustion of these dispute resolution procedures, including the judicial review set forth below, shall be the parties' sole remedy in connection with any Dispute.

(b) The parties to this Agreement hereby authorize and agree to the resolution of all Disputes arising out of, under or in connection with, this Agreement in accordance with the following and pursuant to the procedures set forth in paragraph (c) of this Section 27.10. With respect to any Dispute which relates in whole or primary part to technical issue(s) under this Agreement including, without limitation, determinations as to the acceptability or fitness of any Work, the meaning or interpretation of the Contract Documents, the question of whether any Work falls within the scope of the Specifications set forth in the Contract Documents, the acceptability of any proposed substitutions, modifications or other submission under this Agreement, the disapproval of proposed Subcontractors or Materialmen (to the extent such disapproval is related to technical issues), the extension of time to the extent related to a technical matter, the question of whether substantial completion or final completion has been achieved, the parties hereby authorize the General Counsel of BPCA, or his/her designee, (hereinafter referred to as the "Arbiter"), acting personally, to render a final and binding decision.

(c) All Disputes shall be initiated through a written submission by either party (such submission to be hereinafter referred to as the "Dispute Notice") to the Arbiter within ten (10) days of the determination which is the subject of the Dispute. Within ten (10) days after the submission of such Dispute Notice, the party initiating the Dispute shall provide the Arbiter with all evidence and other pertinent information in support of the party's position and/or claim. Within thirty (30) days from the date of the Dispute Notice, the party against whom the Dispute Notice was filed shall submit any and all materials which it deems pertinent to the Arbiter. Upon submission of a Dispute Notice to the Arbiter, the Arbiter shall render its decision in writing and deliver a copy of same to the parties within a reasonable time not to exceed sixty (60) days after the receipt of all materials. In rendering such decision, the Arbiter may seek such technical or other expertise as it shall deem necessary or appropriate (notifying both parties to the Dispute when he/she so seeks such other information or expertise) and seek any such additional oral and/or written argument or materials from either or both parties to the Dispute as he/she deems fit. The Arbiter shall have the discretion to extend the time for submittals required hereunder. The Arbiter's ability to render and the effect of a decision hereunder shall not be impaired or waived by any negotiations or settlement offers in connection with the matter presented, whether or not the Arbiter participated therein, or by any prior decision of others, or by any termination or cancellation of this Agreement. The decision of the Arbiter shall be final and binding on both parties to this Agreement.

(d) It is expressly understood and agreed that the pendency of a Dispute hereunder shall at no time and in no respect constitute a basis for any modification, limitation or suspension of Contractor's obligation to fully perform in accordance with this Agreement and that Contractor shall remain fully obligated to perform the Work notwithstanding the existence of any such Dispute.

#### **27.11 Additional Provisions Relating to the Prosecution of Claims for Money Damages**

(a) Except as otherwise provided in this Agreement, if Contractor claims or intends to claim compensation for any damage or loss sustained by reason of any act, neglect, fault or

default of BPCA, Contractor shall furnish a written notice to the Arbiter setting forth the nature of the claim and the extent of the damage sustained within seven (7) days of the occurrence of such loss or damages. This written notice shall constitute Contractor's submission to the Arbiter for the purposes of requesting the Arbiter's determination in accordance with Section 27.10 above. Any such claim shall state as fully as then possible all information relating thereto and shall be supported by any then available documentation, including daily records showing all costs incurred. Such information shall be supplemented with any and all further information, including information relating to the quantum of losses or damages sustained, as soon as practicable after it becomes or reasonably should become known to the Contractor.

(b) Any claim for compensation or monetary damages, the successful prosecution of which necessarily depends upon a technical determination favorable to Contractor, may not proceed unless and until Contractor first obtains such a favorable determination with respect to the technical issue and must be made within five (5) business days of such determination; moreover, Contractor must submit to the Arbiter any documentation or proof in support of the monetary claim within fifteen (15) days of such determination in order to proceed with such a claim.

(c) Compliance with the provisions hereof shall constitute a condition to the Contractor's submission of a Dispute pursuant to Section 27.10 with respect to any claim for compensation and the Contractor shall be deemed to have waived any claim not submitted in accordance herewith.

(d) Any final determination of the Arbiter with respect to a Dispute initiated pursuant to this Article 27 shall be subject to review solely in the form of a challenge following the decision by the Arbiter in a Court of competent jurisdiction of the State of New York, County of New York, under Article 78 of the New York Civil Practice Law and Rules or a United States Court located in New York City under the procedures and laws applicable in that court, it being understood the review of such Court shall be limited to the question of whether or not the Arbiter's determination is arbitrary, capricious or lacks a rational basis. No evidence or information shall be introduced or relied upon in such proceeding which has not been duly presented to the Arbiter in accordance with this Article 27.

#### **27.12 Limitation on Actions**

(a) Subject to the provisions of Section 27.11, no action or proceeding shall lie or shall be maintained by Contractor against BPCA, Construction Manager, or Engineer unless (i) such action or proceeding shall be commenced within six (6) months of the date of the issuance of the Certificate of Substantial Completion to Contractor; or (ii) in the case of an action or proceeding for moneys due pursuant to Section 5.7 hereof, or arising exclusively from or pertaining exclusively to work performed after the date of issuance of the Certificate of Substantial Completion, unless such action or proceeding is commenced no later than six (6) months after the issuance of the certificate of final completion to Contractor; or (iii) if this Agreement is terminated by BPCA prior to the issuance of the Certificate of Substantial Completion, unless such action or proceeding is commenced within six (6) months after the date of such termination.

(b) Nothing in this Section 27.12 shall be construed to modify or lengthen a shorter limitations period provided by applicable law.

(c) No action or proceeding shall be commenced by Contractor against BPCA, Construction Manager, or Engineer except in the Supreme Court of the State of New York, County of New York.

(d) Nothing in this Section 27.12 shall be construed to suggest that Contractor, under any circumstances, may bring an action or proceeding against Construction Manager, or Engineer.

#### **27.13 Waiver of Remedies**

Contractor acknowledges that it can be compensated adequately by money damages for any breach of this Agreement which may be committed by BPCA, Construction Manager, or Engineer. Contractor agrees that no default, act or omission of BPCA, Construction Manager, or Engineer shall constitute a material breach of contract entitling Contractor to cancel or rescind this Agreement or to suspend or abandon performance thereof, other than the failure of BPCA to make a payment of the Contract Price in accordance with the terms hereof solely because sufficient funds to pay the Contract Price have not been appropriated or will otherwise not be made available to BPCA. Except as provided in this Section 27.13, Contractor hereby waives any and all rights and remedies to which Contractor might otherwise be or become entitled to because of any wrongful act or omission of BPCA, Construction Manager, or Engineer saving only Contractor's right to money damages.

#### **27.14 Modification of Agreement**

No change in or modification, termination or discharge of this Agreement in any form whatsoever shall be valid or enforceable unless it is in writing and signed by the party to be charged therewith or its duly authorized representative, provided, however, that any change in or modification, termination or discharge of this Agreement expressly provided for in this Agreement shall be effective as so provided.

#### **27.15 Signs and Parking**

Contractor agrees that it shall not display on or about the Site any sign, trademark or other advertisement without the approval of BPCA and Construction Manager. Contractor shall not and shall not permit any of its Subcontractors or Materialmen to park any vehicles on the Site.

#### **27.16 Entire Agreement**

The Contract Documents constitute the entire Agreement between the parties and incorporate all prior understandings in connection with the subject matter hereof.



#### **27.17 Rights and Remedies**

The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law. No action or failure to act by BPCA, Construction Manager, or Engineer or Contractor including, but not limited to, the making of any payment or permitting Contractor to continue with the performance of the Work shall constitute a waiver of any right or duty afforded any of them under this Agreement, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

#### **27.18 Participation in International Boycott Prohibited**

Contractor agrees, as a material condition of this Agreement, that neither Contractor nor any substantially owned or affiliated person, firm, partnership or corporation has participated or is participating or shall participate in an international boycott in violation of the provisions of the United States Export Administration Act of 1969, as amended, or the United States Export Administration Act of 1979, as amended, or the Regulations of the United States Department of Commerce promulgated thereunder. This Agreement shall be rendered forfeit and void by the Comptroller of the State of New York if, subsequent to execution, such person, firm, partnership or corporation has been convicted of a violation of the provisions of either of such federal acts or such Regulations or has been found upon the final determination of the United States Commerce Department or any other appropriate agency of the United States to have violated the provisions of either of such federal acts or such Regulations.

#### **27.19 Compliance with "Buy-American" Statutes**

Contractor and any substantially owned or affiliated person, firm, partnership or corporation agrees to comply with the New York State Public Authorities Law, Section 2603-A as amended (affects steel or steel products).

#### **27.20 Permitted Successors**

References to parties and entities herein shall be deemed to include their permitted successors.

#### **27.21 MacBride Fair Employment Principles**

If the amount payable to Contractor under this agreement is greater than \$15,000, Contractor hereby certifies that it and/or any individual or legal entity in which it holds a 10% or greater ownership interest, and any individual or legal entity that holds a 10% or greater ownership in it, either have no business operations in Northern Ireland; or shall take lawful steps in good faith to conduct any business operations they have in Northern Ireland in accordance with the MacBride Fair Employment Principles relating to nondiscrimination in

employment and freedom of workplace opportunity regarding such operations in Northern Ireland, as set forth in Section 165 (5.) of New York's State Finance Law, and shall permit independent monitoring of their compliance with such Principles.

#### **27.22 Termination for Failure to Disclose Under NYS Finance Law §139k**

BPCA reserves the right to terminate this contract in the event it is found that the certification filed by Contractor pursuant to New York State Finance Law §139-k was intentionally false or intentionally incomplete. Upon such finding, BPCA may exercise its termination right by providing written notification to the Contractor in accordance with the written notification terms of this contract. If a contract is terminated in accordance with State Finance Law §139k(5), BPCA, its subsidiaries and affiliates, will include a statement in BPCA's procurement record describing the basis for any action taken under the termination provision.

#### **27.23 Labor Peace**

The Contractor and its Subcontractors and Materialmen shall not employ on the Work any labor, materials or means whose employment, or utilization during the course of this Agreement, may tend to or in any way cause or result in strikes, Work stoppages, delays, suspension of Work or similar troubles by workers employed by the Contractor or its Subcontractors, Materialmen, or by any of the trades working in or about the buildings and premises where Work is being performed under this Agreement, or by other contractors or their subcontractors pursuant to other agreements, or on any other building or premises owned or operated by BPCA, its contractors or affiliates. Any violation by the Contractor of this requirement may be considered as proper and sufficient cause for declaring the Contractor to be in default, and for BPCA to take action against Contractor as set forth in Article 15 of this Agreement, or such other Section of this Agreement as BPCA may deem proper.

#### **27.24 Comptroller's Approval**

If this Agreement is considered an "eligible contract," as defined by Title 2 of NYCRR Part 206.2, it is subject to the New York State Comptroller's approval, and therefore shall not be valid and enforceable until that approval has been obtained. A contract is considered an "eligible contract," as defined by Title 2 of NYCRR Part 206.2, if it is not a specifically exempt contract, is executed by a state authority on or after March 1, 2010 where the aggregate consideration under the contract may reasonably be valued in excess of one million dollars, AND the contract is either (A) awarded on a single-source basis, sole-source basis or pursuant to any other method of procurement that is not a competitive procurement OR (B) shall be paid in whole or in part with monies appropriated by the State, either directly to a state authority or to a state agency which pays the money to a state authority.

#### **27.25 Key Person/Personnel**

The parties understand that in entering into this Agreement, BPCA has relied upon Contractor's representation that Name, Title, Company and Name, Title, Company

(hereinafter the “Key Personnel”) will be directly and consistently involved in supervising the Work and actively engaged in the day-to-day management of the Work, which shall include attending mandatory Project meetings. If the Key Personnel are not available as described herein, or if the Key Personnel depart from the firm or severs their relationship with the Contractor, or for whatever other reason are not available to work on the Project, then BPCA shall have the right to terminate this Agreement. The parties also agree that at any time during the course of the Work, BPCA may designate additional or substitute key personnel to perform the Work. Contractor agrees to make the additional or substituted key personnel available under the same conditions set forth herein.

**27.26 Form of Agreement Not an Offer**

Notwithstanding anything herein to the contrary, the submission of this form of Agreement by BPCA to Contractor shall not constitute an offer, and execution hereof by Contractor shall not be considered acceptance of an offer. A binding contract between the parties shall exist only if and at such time as both parties have executed this document.

**SIGNATURE PAGE FOLLOWS**

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, as of the date first above written.

BATTERY PARK CITY AUTHORITY, d/b/a  
HUGH L. CAREY BATTERY PARK CITY AUTHORITY

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

CONTRACTOR NAME

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

**EXHIBIT D**  
**COST PROPOSAL FORM**

(Proposer to submit executed Cost Proposal on its letterhead)

Date:

Battery Park City Authority  
One World Financial Center, 24th Floor  
New York, New York 10281

Attention: Ms. Venus Callender  
Contract Administrator

Dear Ms. Callender:

The undersigned (the "Proposer") hereby proposes to provide all specified work necessary to perform the work for the **Ball Field Electric Reconstruction – Superstorm Sandy**. The Proposer agrees to commence the Work immediately upon receipt of the Initial Letter of Intent in accordance with the terms stipulated in the following pages, for the sum written below.

**A. Base Proposal**

**Scenario A**

A total lump sum amount of \$\_\_\_\_\_ (\_\_\_\_\_ Dollars and \_\_\_\_\_ Cents) to perform all Work as described in the Authority's Request for Proposals for Scenario A in the Scope of Work (Exhibit A).

**Scenario B**

A total lump sum amount of \$\_\_\_\_\_ (\_\_\_\_\_ Dollars and \_\_\_\_\_ Cents) to perform all Work as described in the Authority's Request for Proposals for Section B in the Scope of Work (Exhibit A).

**B. Itemized Proposal and Labor Rates**

1. The Proposer has submitted with its proposal an itemized cost for the Work, according to the attached schedule of items, for the Scope of Work in Exhibit A.
2. The Proposer has submitted with its proposal, labor rates for all trades, including all costs except overhead and profit. Prices shown include base hourly rate, overtime rate, insurance and benefits.

Name of Proposer:

\_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Signed \_\_\_\_\_ Date \_\_\_\_\_

By: <Printed Name> \_\_\_\_\_

**EXHIBIT F**

**FORM OF SCHEDULE OF VALUES**

(attached)

UNIT PRICE SCHEDULE FOR BALLFIELD ELECTRIC SERVICE RECONSTRUCTION - SUPERSTORM SANDY				
DESCRIPTION OF WORK	QTY	UNIT	COST	TOTAL
<b>Ball Park - Electric Service Reconstruction - Scenario-'A'</b>				
<b><u>Demolition work</u></b>				
Disconnection and removal of the existing electrical service equipment.		LS	\$ -	\$ -
Disconnection and removal of the existing concrete pad mounted electrical equipment.		LS	\$ -	\$ -
Removal of existing concrete pad.		LS	\$ -	\$ -
Disconnection and removal of existing damaged conduits.		LF	\$ -	\$ -
Excavation for removal of the existing damaged underground conduits.		CY	\$ -	\$ -
Removal of pavement for excavation		SF	\$ -	\$ -
Cleaning of the existing conduits (in good condition) to remain		LS	\$ -	\$ -
Removal of the existing damaged hardware		LS	\$ -	\$ -
Removal of the existing damaged pull boxes and junction boxes		LS	\$ -	\$ -
Removal of the existing damaged wiring.		LF	\$ -	\$ -
Removal of the existing defective pole lighting fixtures and ballasts.				
Removal of the existing damaged lighting wiring to the pole mounted lighting fixtures.		LF	\$ -	\$ -
Disconnection and removal of the existing lighting, power panels and lighting control panel.		LS	\$ -	\$ -
Desinstallation and removal of the existing damaged cable mounting hardware in existing electrical handholes.		LS	\$ -	\$ -
Street side work - disconnection and removal - Con Edison Service work allowance.		LS	\$ -	\$ -
Disconnection and removal of the existing grounding hardware.		LS	\$ -	\$ -
Disconnection and removal of the existing transformer.		LS	\$ -	\$ -
Disconnection and removal of the existing sump pump control panel and associated wiring.		LS	\$ -	\$ -
Testing of the existing sump pump motors for internal insulation defects.		LS	\$ -	\$ -
Disconnection and removal of the existing corroded manhole hardware.		LS	\$ -	\$ -
			\$ -	\$ -
<b><u>Subtotal</u></b>				



-				
<b><u>New Construction Work</u></b>				
Excavation, framework and new concrete base.		LS	\$ -	\$ -
New replacement platform.		LS	\$ -	\$ -
New service equipment (End Box and CT cabinet).		LS	\$ -	\$ -
New service switchboard (fused disconnect switches).		LS	\$ -	\$ -
New outdoor transformer (dry type, 225KVA, 115 deg.C, 480V-208Y/120V).		EA	\$ -	\$ -
New distribution switchboard.		LS	\$ -	\$ -
New lighting and power panelboards.		LS	\$ -	\$ -
New lighting control panel.		EA	\$ -	\$ -
Replacement of the existing damaged conduits with new conduits.		LF	\$ -	\$ -
Replacement of the existing damaged underground conduits with new conduits.		LF	\$ -	\$ -
Backfill excavated areas		CY	\$ -	\$ -
Restoration of pavement		LF	\$ -	\$ -
New replacement stainless steel mounting hardware		LS	\$ -	\$ -
New replacement stainless steel pull boxes and junction boxes		EA	\$ -	\$ -
New feeder wiring.		LF	\$ -	\$ -
New replacement manhole stainless steel mounting hardware.		LS	\$ -	\$ -
New replacement pole lighting fixtures and ballasts.		LS	\$ -	\$ -
New replacement XHHW-2, 600V branch circuit wiring.		LF	\$ -	\$ -
Installation of new grounding hardware.		LS	\$ -	\$ -
New lighting and wiring below new platform.		LS	\$ -	\$ -
Grounding of the existing electrical equipment yard fence.		LS	\$ -	\$ -
New sump pump control panel and wiring.		LS	\$ -	\$ -
New replacement sump pump motors.		LS	\$ -	\$ -
Testing of the new electrical wiring.		LS	\$ -	\$ -
Testing of the new replacement electrical panels.		LS	\$ -	\$ -
Testing of the new grounding system.		LS	\$ -	\$ -
Temporay lighting.		LS	\$ -	\$ -
		LS	\$ -	\$ -
		LS	\$ -	\$ -
<b><u>Subtotal</u></b>				

<b>Ball Park - Electric Service Reconstruction - Scenario-'B'</b>				
<b><u>Demolition work</u></b>				
Disconnection and removal of the existing electrical service equipment.		LS	\$ -	\$ -
Disconnection and removal of the existing concrete pad mounted electrical equipment.		LS	\$ -	\$ -
Removal of existing concrete pad.		LS	\$ -	\$ -
Disconnection and removal of existing damaged conduits.		LF	\$ -	\$ -
Excavation for removal of the existing damaged underground conduits.		CY	\$ -	\$ -
Removal of pavement for excavation		SF	\$ -	\$ -
Cleaning of the existing conduits (in good condition) to remain		LS	\$ -	\$ -
Removal of the existing damaged hardware		LS	\$ -	\$ -
Removal of the existing damaged pull boxes and junction boxes		LS	\$ -	\$ -
Removal of the existing damaged wiring.		LF	\$ -	\$ -
Removal of the existing defective pole lighting fixtures and ballasts.				
Removal of the existing damaged lighting wiring to the pole mounted lighting fixtures.		LF	\$ -	\$ -
Disconnection and removal of the existing lighting, power panels and lighting control panel.		LS	\$ -	\$ -
Desinstallation and removal of the existing damaged cable mounting hardware in existing electrical handholes.		LS	\$ -	\$ -
Street side work - disconnection and removal - Con Edison Service work allowance.		LS	\$ -	\$ -
Disconnection and removal of the existing grounding hardware.		LS	\$ -	\$ -
Disconnection and removal of the existing transformer.		LS	\$ -	\$ -
Disconnection and removal of the existing sump pump control panel and associated wiring.		LS	\$ -	\$ -
Testing of the existing sump pump motors for internal defects.		LS	\$ -	\$ -
Disconnection and removal of the existing corroded manhole hardware.		LS	\$ -	\$ -
<b><u>Subtotal</u></b>				

<b><u>New Construction Work</u></b>				
Excavation, framework and new concrete base.		LS	\$ -	\$ -
New replacement platform ( <u>reduced size</u> ).		LS	\$ -	\$ -
New service equipment (End Box and CT cabinet).		LS	\$ -	\$ -
New service fused disconnect switch.		EA	\$ -	\$ -
New outdoor transformer (dry type 225KVA, 115 deg.C, 480V-208Y/120V).		EA	\$ -	\$ -
New distribution switchboard.		LS	\$ -	\$ -
New lighting and power panelboards.		LS	\$ -	\$ -
New lighting control panel.		EA	\$ -	\$ -
Replacement of the existing damaged conduits with new conduits.		LF	\$ -	\$ -
Replacement of the existing damaged underground conduits with new conduits.		LF	\$ -	\$ -
Backfill excavated areas		CY	\$ -	\$ -
Restoration of pavement		LF	\$ -	\$ -
New replacement stainless steel mounting hardware		LS	\$ -	\$ -
New replacement stainless steel pull boxes and junction boxes		EA	\$ -	\$ -
New feeder wiring.		LF	\$ -	\$ -
New replacement manhole stainless steel mounting hardware.		LS	\$ -	\$ -
New replacement pole lighting fixtures and ballasts.		LS	\$ -	\$ -
New replacement XHHW-2, 600V branch circuit wiring.		LF	\$ -	\$ -
Installation of new grounding hardware.		LS	\$ -	\$ -
New lighting and wiring below new platform.		LS	\$ -	\$ -
Grounding of the existing electrical equipment yard fence.		LS	\$ -	\$ -
New sump pump control panel and wiring.		LS	\$ -	\$ -
New replacement sump pump motors.		LS	\$ -	\$ -
Testing of the new electrical wiring.		LS	\$ -	\$ -
Testing of the new replacement electrical panels.		LS	\$ -	\$ -
Testing of the new grounding system.		LS	\$ -	\$ -
Temporay lighting.		LS	\$ -	\$ -
<b><u>Subtotal</u></b>				

<b><u>Contingencies</u></b>				
Unforeseen items During Construction	1	LS	\$ 15,000.00	\$ 15,000.00
			\$ -	\$ -
			\$ -	\$ -
<b><u>Subtotal</u></b>				
<b><u>Total</u></b>				

**EXHIBIT G**

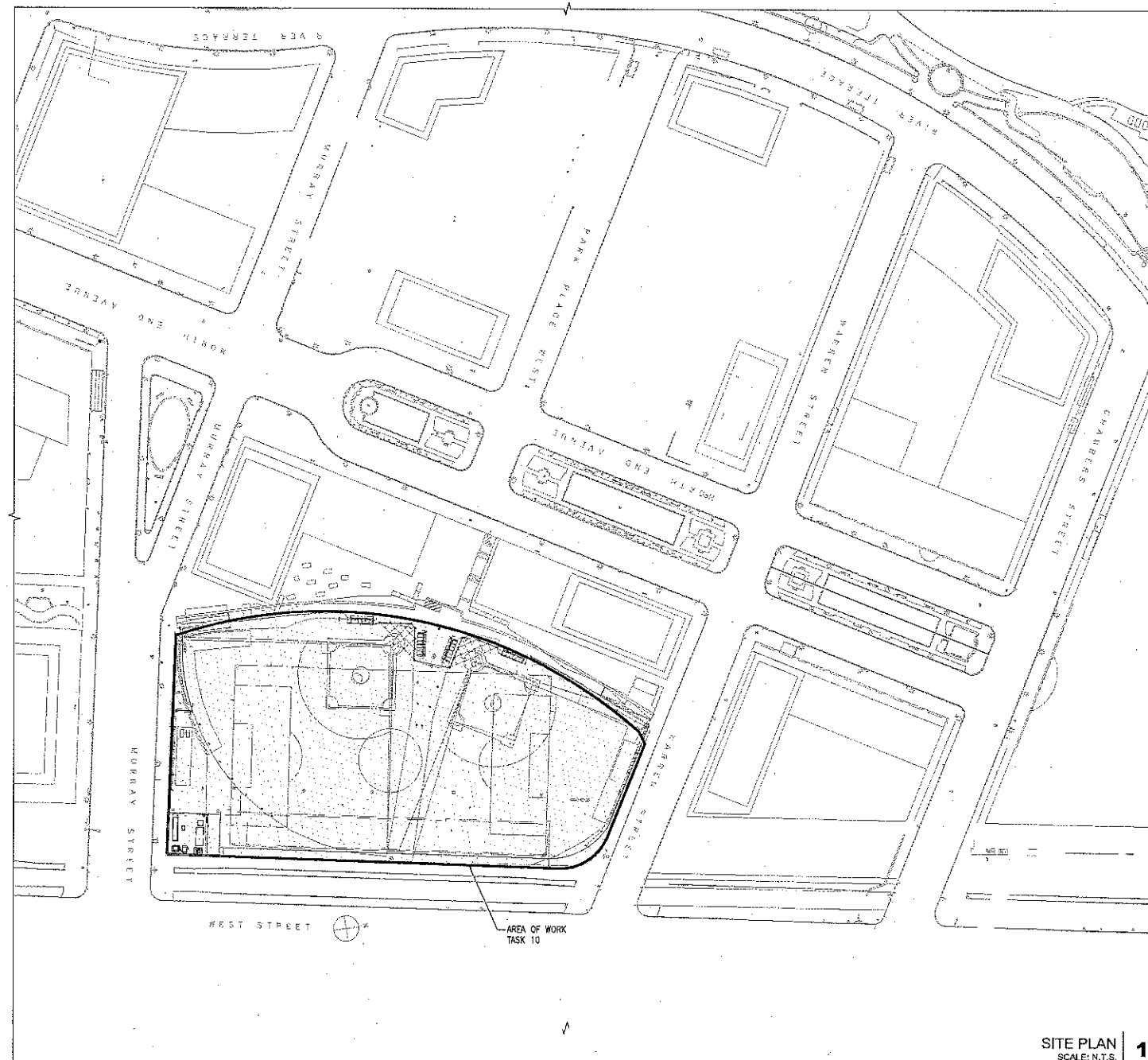
**DRAWINGS & TECHNICAL SPECIFICATIONS**

(attached)

# BATTERY PARK CITY AUTHORITY

## BALL FIELDS SERVICE RECONSTRUCTION - SUPERSTORM SANDY

ANDREW M. CUOMO  
GOVERNOR, STATE OF NEW YORK



SITE PLAN  
SCALE: N.T.S. 1



Consultants:



ENIGN ENGINEERING, P.C.  
1111 Calhoun Ave.  
Bronx, N.Y. 10463

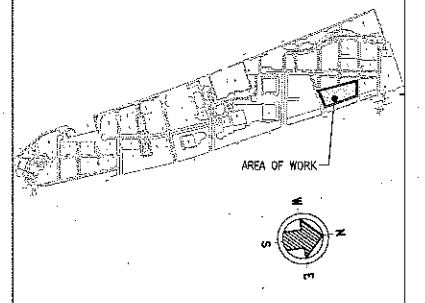
TEL: 718-863-5590 FAX: 718-863-6178  
WWW.ENIGNENGINEERING.COM

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Refer to graphic scale.

No. Date Revision

No. Date Submittal

Key Plan: SHADED AREA = AREA OF WORK



Project Engineer: CARL J. CANIZZARO, P.E.

Designer: EUGENE KIELMANOWICZ, P.E.

Drawn by: ALVIN WONG

Checked by: CARL J. CANIZZARO, P.E.

Design No. or LW No.:	Facility Code:	Date:
-	N/A	04/19/13

Project: BALL FIELDS SERVICE  
RECONSTRUCTION - SUPERSTORM SANDY  
BATTERY PARK CITY AUTHORITY  
Address: MANHATTAN  
NEW YORK, NY

Drawing Title:  
TITLE SHEET  
SITE PLAN

Drawing No.:

T001.00

Sheets In Contract:  
01 of 12

ELECTRICAL NOTES

1. ELECTRICAL CONTRACTOR SHALL REMOVE EXISTING CONDUIT TO ALLOW EXISTING CONCRETE SLAB/PAD TO BE REMOVED AND SOIL EXCAVATED FOR NEW FOOTINGS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE STRUCTURAL / GENERAL CONTRACTOR AS TO HOW MUCH TO REMOVE.
2. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH CON EDISON TO RE-FEED RAISED EQUIPMENT WITH NEW OR EXTENDED CONDUCTORS AS DIRECTED BY THE UTILITY.
3. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH CON EDISON TO RECLOSE THE PRINGLE SWITCH LOCATED IN THE BUILDING ACROSS THE STREET WHEN WORK IS COMPLETED.
4. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR TESTING AND COMMISSIONING OF ALL LOADS RECONNECTED TO THE REPLACED SERVICE AND PANELBOARDS IN THE FINAL LINE-UP.
5. THE ELECTRICAL CONTRACTOR SHALL COORDINATE AND DETERMINE FINAL DIMENSIONS WITH THE MANUFACTURER, CONSOLIDATED EDISON COMPANY, THE NEW YORK CITY ELECTRICAL ADVISORY BOARD AND ALL OTHER STAKEHOLDERS, SUBMIT DETAILED DIMENSIONED DRAWINGS FOR APPROVAL PRIOR TO START OF ANY WORK.

ABBREVIATIONS

AC	ALTERNATING CURRENT
AWG	AMERICAN WIRE GAGE
BPCA	BATTERY PARK CITY AUTHORITY
RGS	RIGID GALVANIZED STEEL
SP	SPARE
DWG	DRAWING
CKT	CIRCUIT
TYP.	TYPICAL
PVC	POLYVINYL CHLORIDE PLASTIC
NYCEC	NEW YORK CITY ELECTRICAL CODE
N.T.S.	NOT TO SCALE
NEC	NATIONAL ELECTRICAL CODE
DOT	DEPARTMENT OF TRANSPORTATION
NYCDOT	NEW YORK CITY DEPARTMENT OF TRANSPORTATION
AMP	AMPERE
V	VOLTS
VA	VOLT AMPERE
WP	WEATHERPROOF
KAC	THOUSAND AMPS INSTANTANEOUS CURRENT
SWBD	SWITCHBOARD
KCML	THOUSAND OF CIRCULAR MILS
UL	UNDERWRITERS LABORATORY
IBC	INTERNATIONAL BUILDING CODE
DEG	DEGREE
AF	AMPS FRAME
AT	AMP TRIP
W	WIRE
DISC	DISCONNECT

ELECTRICAL SCOPE OF NEW WORK. SCENARIO A

1. BALL & BRUSH EXISTING CONDUIT BETWEEN SERVICE EQUIPMENT AND LIGHT POLES IN BALLFIELD.
2. CLEAN CONDUIT OF CORROSIVE SALT T.B.D. MEANS AND METHOD TO BE SUBMITTED FOR REVIEW, MSDS INCLUDED IN SUBMITTAL DOCUMENTS.
3. SHOP DRAWING SUBMITTAL FOR REVIEW.
4. PROVIDE AND INSTALL/ERECT A NEW PLATFORM FOR THE ELECTRICAL SYSTEM.  
A. SAME CAPACITY AND SIZE AS ORIGINAL OR  
B. REDUCED CAPACITY WITHOUT ICE RINK EQUIPMENT.
- SCENARIO A INCLUDES CONTINUATION OF WORK TO REPLACE ICE RINK EQUIPMENT.  
SCENARIO B ELIMINATES ICE RINK EQUIPMENT AND ELIMINATES PLATFORM RAISING ICE RINK EQUIPMENT.
5. LAYOUT NEW EQUIPMENT AND PROVIDE STRUCTURAL AND PHYSICAL SUPPORTS FOR NEW EQUIPMENT LINEUP - REFER TO STRUCTURAL DRAWINGS AND SPECIFICATIONS.
6. EXTEND CONDUIT (CON EDISON FEEDER) DUCT BANK VERTICALLY TO BOTTOM OF EQUIPMENT SUPPORT PLATFORM - MAINTAIN CON EDISON'S 6x4" CONDUIT PATTERN. ENCASE CON. ED. CONDUIT/FEEDERS IN CONCRETE DUCT BANK AS REQUIRED BY CODE AND LOCAL REGULATIONS. INSTALL PLATFORM AND CONCRETE SLAB. EXTEND NEW CONDUIT STUB UP INTO CT CABINET 3" MIN ABOVE SURFACE OF CONCRETE SLAB.
7. PROVIDE CONCRETE SLAB AT TOP OF PLATFORM FOR SECURING EQUIPMENT AND LEVELING CHANNELS. PROVIDE PRECAST SLEEVES OR CORE DRILL AS REQUIRED. EXTEND CONDUIT 3" ABOVE SURFACE OF NEW CONCRETE BASE. COORDINATE ALL PRECAST ANCHORS AND SLEEVES WITH ALL TRADES.
8. INSTALL NEW EQUIPMENT (SCENARIO A) LINEUP ON NEW PLATFORM/SLAB.
9. CONNECT AND TORQUE ALL CONNECTIONS ON BUS BARS AS PER EQUIPMENT MANUFACTURER, NEMA STANDARDS AND CODES, NEC/NYC 2011.
10. INSTALL REMOTE CON EDISON METER AT LOWER LEVEL OF PLATFORM FOR EASE OF READING AND REPORTING WITHOUT CLIMBING PLATFORM STAIRS.
11. MEGGER EXISTING CON EDISON FEEDERS. PULL OUT AND REPLACE EXISTING CON EDISON FEEDER CONDUCTOR IF INDICATED BY MEGGER TEST TO BE REPLACED. RE-PULL ALL ORIGINAL LOAD SIDE CONDUCTORS, SPLICE AND TERMINATE AT ALL POINTS REQUIRED.
12. TERMINATE NEW CON EDISON FEEDERS AT SERVICE CT CABINET EOL BOX.
13. GROUND AND BOND CONDUIT TO GROUND LOOP/GRIND IN EARTH ADDING REQUIRED GROUND RODS, WATER PIPE CLAMPS REQUIRED BY CODE. MEASURE GROUNDING SYSTEM RESISTANCE AND ADD RODS IF OVER 50.
14. TERMINATE AND TEST ALL NEW BRANCH CIRCUIT CONDUCTORS.
15. REMOVE ALL EXISTING LOAD SIDE CONDUCTORS, CLEAN AND DESALT CONDUITS.
16. EXTEND EXISTING UNDERGROUND STUB-UP CONDUIT TO NEW ELEVATED ICE RINK EQUIPMENT ON RAISED PLATFORM. SEE STRUCTURAL DRAWINGS AND SPECIFICATIONS. COORDINATE WITH ALL TRADES.
17. REINSTALL ICE RINK EQUIPMENT ON NEW PLATFORM SUPPORTED CONCRETE SLAB.
18. TERMINATE AND RECONNECT ALL TERMINATIONS.
19. GROUND AND BOND ALL CONDUIT, ENCLOSURES, ETC.
20. LABEL ALL CIRCUITS. NEW PANEL DIRECTORIES.
21. LABEL CONDUCTORS.
22. PROVIDE A SET OF AS BUILT DRAWINGS.
23. REMOVE ALL LOAD BRANCH CIRCUITS UP TO NEAREST JUNCTION BOX ABOVE ELEVATION CONSIDERED COMPROMISED BY SEA WATER APPROXIMATELY 8'-8" ABOVE SEA LEVEL, 3'-0" ABOVE GRADE.
24. REFER TO NYC ELECTRICAL CODE 2011 VERSION, ALL APPLICABLE SECTIONS

ELECTRICAL SCOPE OF NEW WORK. SCENARIO B

1. BALL & BRUSH EXISTING CONDUIT BETWEEN SERVICE EQUIPMENT AND LIGHT POLES IN BALLFIELD.
2. CLEAN CONDUIT OF CORROSIVE SALT T.B.D. MEANS AND METHOD TO BE SUBMITTED FOR REVIEW, MSDS INCLUDED IN SUBMITTAL DOCUMENTS.
3. SHOP DRAWING SUBMITTAL FOR REVIEW.
4. PROVIDE AND INSTALL/ERECT A NEW PLATFORM FOR THE ELECTRICAL SYSTEM.  
A. SAME CAPACITY AND SIZE AS ORIGINAL OR  
B. REDUCED CAPACITY WITHOUT ICE RINK EQUIPMENT.
- SCENARIO A INCLUDES CONTINUATION OF WORK TO REPLACE ICE RINK EQUIPMENT.  
SCENARIO B ELIMINATES ICE RINK EQUIPMENT AND ELIMINATES PLATFORM RAISING ICE RINK EQUIPMENT.
5. LAYOUT NEW EQUIPMENT AND PROVIDE STRUCTURAL AND PHYSICAL SUPPORTS FOR NEW EQUIPMENT LINEUP - REFER TO STRUCTURAL DRAWINGS AND SPECIFICATIONS.
6. EXTEND CONDUIT (CON EDISON FEEDER) DUCT BANK VERTICALLY TO BOTTOM OF EQUIPMENT SUPPORT PLATFORM - MAINTAIN CON EDISON'S 6x4" CONDUIT PATTERN. ENCASE CON. ED. CONDUIT/FEEDERS IN CONCRETE DUCT BANK AS REQUIRED BY CODE AND LOCAL REGULATIONS. INSTALL PLATFORM AND CONCRETE SLAB. EXTEND NEW CONDUIT STUB UP INTO CT CABINET 3" MIN ABOVE SURFACE OF CONCRETE SLAB.
7. PROVIDE CONCRETE SLAB AT TOP OF PLATFORM FOR SECURING EQUIPMENT AND LEVELING CHANNELS. PROVIDE PRECAST SLEEVES OR CORE DRILL AS REQUIRED. EXTEND CONDUIT 3" ABOVE SURFACE OF NEW CONCRETE BASE. COORDINATE ALL PRECAST ANCHORS AND SLEEVES WITH ALL TRADES.
8. INSTALL NEW EQUIPMENT (SCENARIO B) LINEUP ON NEW PLATFORM/SLAB.
9. CONNECT AND TORQUE ALL CONNECTIONS ON BUS BARS AS PER EQUIPMENT MANUFACTURER, NEMA STANDARDS AND CODES, NEC/NYC 2011.
10. INSTALL REMOTE CON EDISON METER AT LOWER LEVEL OF PLATFORM FOR EASE OF READING AND REPORTING WITHOUT CLIMBING PLATFORM STAIRS.
11. MEGGER EXISTING CON EDISON FEEDERS. PULL OUT AND REPLACE EXISTING CON EDISON FEEDER CONDUCTOR IF INDICATED BY MEGGER TEST TO BE REPLACED. RE-PULL ALL ORIGINAL LOAD SIDE CONDUCTORS, SPLICE AND TERMINATE AT ALL POINTS REQUIRED.
12. TERMINATE NEW CON EDISON FEEDERS AT SERVICE CT CABINET EOL BOX.
13. GROUND AND BOND CONDUIT TO GROUND LOOP/GRIND IN EARTH ADDING REQUIRED GROUND RODS, WATER PIPE CLAMPS REQUIRED BY CODE. MEASURE GROUNDING SYSTEM RESISTANCE AND ADD RODS IF OVER 50.
14. TERMINATE AND TEST ALL NEW BRANCH CIRCUIT CONDUCTORS.
15. TERMINATE AND RECONNECT ALL TERMINATIONS.
16. GROUND AND BOND ALL CONDUIT, ENCLOSURES, ETC.
17. LABEL ALL CIRCUITS. NEW PANEL DIRECTORIES.
18. LABEL CONDUCTORS.
19. PROVIDE A SET OF AS BUILT DRAWINGS.
20. REMOVE ALL LOAD BRANCH CIRCUITS UP TO NEAREST JUNCTION BOX ABOVE ELEVATION CONSIDERED COMPROMISED BY SEA WATER APPROXIMATELY 8'-8" ABOVE SEA LEVEL, 3'-0" ABOVE GRADE.
21. REFER TO NYC ELECTRICAL CODE 2011 VERSION, ALL APPLICABLE SECTIONS

LIST OF DRAWINGS

DRAWING No.	DESCRIPTION
T001.00	TITLE SHEET SITE PLAN
E001.00	ELECTRICAL NOTES, SYMBOLS AND ABBREVIATIONS
E050.00	ELECTRICAL DEMO SITE PLAN, ELECTRICAL DEMOLITION SCOPE OF WORK
E101.00	SITE PLAN BALL FIELDS FLOOD LIGHTING POWER DISTRIBUTION REPLACEMENT
E102.00	ELECTRICAL POWER PART PLAN UTILITY AREA SCENARIO A
E103.00	ELECTRICAL SERVICE EQUIPMENT LINE-UP SCENARIO A
E202.00	ELECTRICAL POWER PART PLAN UTILITY AREA SCENARIO B
E203.00	ELECTRICAL SERVICE EQUIPMENT ALTERNATIVE LINE-UP SCENARIO B
E601.00	PANEL SCHEDULES AND POWER DISTRIBUTION ONE-LINE DIAGRAMS
E701.00	ELECTRICAL DETAILS
S001.00	STRUCTURAL GENERAL NOTES AND DETAILS
S002.00	FOUNDATION AND PART PLANS

ELECTRICAL SYMBOLS

	NEW WORK
	EXISTING WORK
	EXISTING UNDERGROUND CONDUIT
	EXISTING LIGHT POLE WITH FLOOD LIGHTS
	EXISTING EQUIPMENT TO BE REMOVED
	SWITCH RATING AS INDICATED
	FUSE
	UTILITY SERVICE INCOMING LINE
	POWER FLOW LOAD
	CURRENT TRANSFORMER
	CON. EDISON METER
	TOP NUMERAL INDICATES DETAIL NUMBER. BOTTOM INDICATES DRAWING NUMBER.
	TRANSFORMER
	CIRCUIT BREAKER
	RECEPTACLE DUPLEX WEATHERPROOF
	PHASE



Consultants:



ENSIGN ENGINEERING, P.C.  
1111 Calhoun Ave.  
Bronx, N.Y. 10465

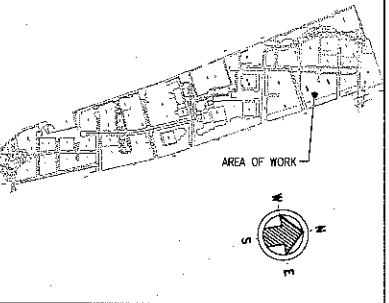
TEL. 718-863-5590 FAX. 718-863-6178  
WWW.ENSIGNENGINEERING.COM

NOTE: Drawing may be  
printed at reduced scale.  
Refer to graphic scale.

No. Date Revision

No. Date Submittal

Key Plan: SHADED AREA = AREA OF WORK



Project Engineer:	CARL J. CANNIZZARO, P.E.	
Designer:	EUGENE KIELMANOWICZ, P.E.	
Drawn by:	ALVIN WONG	
Checked by:	CARL J. CANNIZZARO, P.E.	
Design No. or LLW No.:	Facility Code:	Date:
—	N/A	04/19/13

Project: BALL FIELDS SERVICE  
RECONSTRUCTION - SUPERSTORM SANDY  
BATTERY PARK CITY AUTHORITY  
Address: MANHATTAN  
NEW YORK, NY

Drawing Title:  
ELECTRICAL NOTES, SYMBOLS  
AND ABBREVIATIONS

Drawing No.:

E001.00

Sheets In Contract:  
02 of 12



Consultants:



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1111 Calhoun Ave.  
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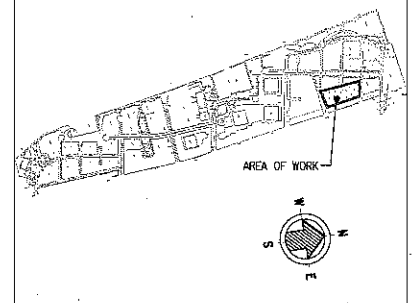
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Project Engineer: CARL J. CANNIZZARO, P.E.  
Designer: EUGENE KIELMANOWICZ, P.E.  
Drawn by: ALVIN WONG  
Checked by: CARL J. CANNIZZARO, P.E.  
Design No. or Facility Code: N/A Date: 04/19/13  
LLW No.:

Project: BALL FIELDS SERVICE  
RECONSTRUCTION - SUPERSTORM SANDY  
BATTERY PARK CITY AUTHORITY  
Address: MANHATTAN  
NEW YORK, NY

Drawing Title:  
ELECTRICAL DEMOLITION  
SITE PLAN, ELECTRICAL  
DEMOLITION SCOPE OF WORK

Drawing No.:

E050.00

Sheets in Contract:  
03 of 12

MURRAY STREET

WEST STREET

WARREN STREET

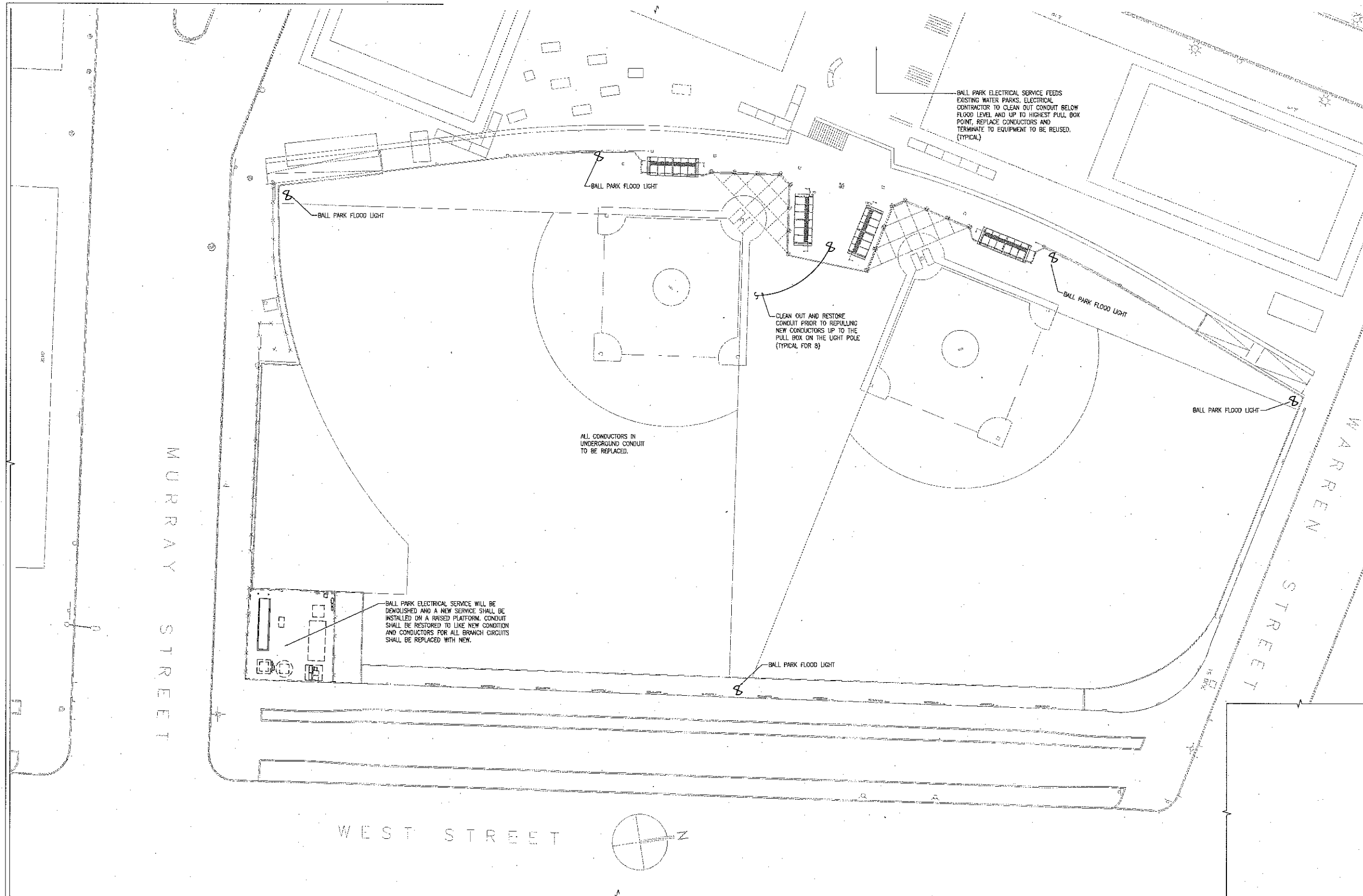
0 20 40  
SCALE IN FEET

ELECTRICAL DEMO SITE PLAN  
SCALE 1"=20'-0"

#### SCOPE OF ELECTRICAL DEMO WORK.

1. REMOVE SECTION OF FENCE AND GATE TO MAKE ELECTRICAL SERVICE YARD ACCESSIBLE. STORE AND PROTECT FROM DAMAGE - TO BE REINSTALLED UPON PROJECT COMPLETION.
2. PULL OUT CON EDISON CONDUCTORS - COORDINATE WITH UTILITY PRIOR TO IMPLEMENTING THIS WORK.
3. REMOVE EXISTING SERVICE SWITCHBOARD.
4. REMOVE LOAD SIDE CONDUCTORS BACK TO NEAREST VERTICAL JUNCTION POINTS. POLE MOUNTED CONTROL BOXES AND HAND HOLES FOR OTHER AREA POWER AND LIGHTING, FOR CONNECTED LOAD FEEDERS. SEE ONE LINE DIAGRAMS ON DETAIL SHEET IN THIS DRAWING SET.
5. BREAK DOWN EXISTING CONCRETE EQUIPMENT PAD.
6. REMOVE EXISTING EARTH TO EXPOSE CONDUIT AND GROUNDING LOOP, GROUND RODS ETC. (FEEDER).
7. REMOVE CONDUIT BACK TO FIRST CONDUIT COUPLING OUTSIDE OF THE AREA BEING RETROFITTED. CONDUIT ENCRUSTING UPON THE NEW TURF SHALL BE REMOVED WITH CARE TO RESTORE TURF TO ACCEPTABLE CONDITION. ACCEPTABLE CONDITION SHALL BE JUDGED BY THE BATTERY PARK CITY AUTHORITY.
8. REMOVE GROUNDING LOOP WHERE DAMAGED BY CORROSION OR EXPLOSION. SAFEGUARD REMAINING UNDAMAGED GROUND RODS AND CONDUCTOR DURING EXCAVATION OF EARTH AND OTHER WORK.
9. SCRAPE HANDHOLE CLEAN AND RESTORE HOLES, THREADS, POSTS, ETC.
10. REMOVE CONDUIT FROM SERVICE SWITCHBOARD TO ICE RINK EQUIPMENT PAD.
11. REMOVE ALL ICE RINK EQUIPMENT SWITCHES AND ENCLOSURES. STORE AND PROTECT DURING CONSTRUCTION TO REUSE.
12. BREAK UP AND DISCARD EXISTING CONCRETE EQUIPMENT PAD FOR ICE RINK.
13. REMOVE CONDUIT BETWEEN THE EXISTING ELECTRICAL SERVICE EQUIPMENT AND HAND HOLE IN FRONT OF SERVICE. RELOCATE HAND HOLE IF REQUIRED TO COORDINATE WITH STRUCTURAL PLATFORM INSTALLATION. STORE AND SAFEGUARD FROM DAMAGE TO REINSTALL OR REPLACE.
14. THIS CONTRACT DOES NOT INCLUDE IRRIGATION, SUMP PUMP AND ANY OTHER ELECTRICAL EQUIPMENT NOT INDICATED ON THESE DRAWINGS OR SPECIFICATIONS TO BE REMOVED. THE CONTRACTOR SHALL REQUEST INFORMATION REGARDING ANY QUESTIONABLE SCOPE PRIOR TO TAKING ACTION TO REMOVE EQUIPMENT, CONDUIT AND CONDUCTORS. IF CIRCUITS ARE IDENTIFIED AS ORIGINATING FROM THE EXISTING SERVICE SWITCHBOARD AND MUST BE REMOVED, THEY SHALL BE IDENTIFIED IN DRAWINGS AND SUBMITTED TO THE ENGINEER OF RECORD.





ELECTRICAL NOTES

1. FOR DEMOLITION SCOPE, SEE DRAWING E050.00
2. EXISTING ELECTRICAL HAND HOLES TO BE RESTORED WITH NEW GASKETS AND ACCESSORIES, GROUNDING AND BONDING BUSHINGS FOR ALL CONDUIT IN HAND HOLE, ETC.
3. INSTALL NEW CONDUITS, FEEDERS AND BRANCH WIRING TO RE-FEED EXISTING NORTH ISLAND PANEL AND NEW LIGHTING LOADS NEW CONDUIT AND WIRING TO NORTH ISLAND PANEL TO MATCH EXISTING. EXISTING CONDUIT DRAWINGS DO NOT INDICATE HAND HOLES OUTSIDE THE BALL FIELD AREA. THESE AREAS OUTSIDE THE BALL FIELD ARE ALSO BEING SUPPLIED WITH POWER FROM THE SERVICE FOR THE BALL FIELDS AND SHALL BE RESTORED AS A PART OF THIS CONTRACT. E.C. TO VERIFY CONDUIT AND CABLE INFORMATION IN THE FIELD. INTERCEPT EXISTING CABLES AND SPlice WITH NEW IN EXISTING MANHOLES ABOVE THE FLOOD LEVEL OUTSIDE THE BALL FIELD ZONE AS REQUIRED.

4. SEQUENCE OF ELECTRICAL WORK:  
(1) E.C. SHALL COORDINATE WITH ONGOING SITE WORK CONTRACTOR FOR TEMPORARY POWER PRIOR TO COMMENCEMENT OF WORK.  
(2) E.C. SHALL CUT AND CHOP EXISTING CONCRETE SLAB AND EXCAVATE AS REQUIRED.  
(3) E.C. TO COORDINATE LOCATION OF NEW CONDUITS WITH NEW FOOTINGS AND OTHER TRADES AND INSTALL NEW CONDUITS IN ACCORDANCE TO RIGID CONDUIT DUCT BANK AND TRENCH DETAIL.  
(4) E.C. TO VERIFY IN FIELD EXISTING CABLE SIZES AS SHOWN ON EXISTING CONDUIT LEGEND AND INSTALL NEW CABLES FROM MANHOLE TO HAND HOLE FOR EXISTING LOADS TO REMAIN. TYPE AND SIZE TO MATCH EXISTING.  
(5) E.C. TO SPlice NEW CABLES WITH EXISTING. LIGHT POLE CONDUCTORS SHALL BE REPLACED UP TO THE CONTROL BOX ON THE POLE. SPlice METHODS TO BE USED PER BATTERY PARK CITY AUTHORITY STANDARD.  
(6) E.C. SHALL PROTECT ALL NEW WORK AND EXISTING EQUIPMENT AS REQUIRED DURING DEMOLITION AND CONSTRUCTION.
5. ELECTRICAL CONDUITS FROM ELECTRICAL SERVICE TO LIGHT POLES IN BALL FIELD ASSUMED TO BE 1 1/2" DIAMETER. SHALL BE FLUSHED CLEAN, SNAGGED DRY AND AIR DRIED BEFORE NEW CONDUCTORS ARE PULLED IN TO REPLACE EXISTING WETTED ONES.

6. REUSE EXISTING EMBEDDED CONDUITS SERVING BALL FIELD POLE LIGHTING UNLESS OTHERWISE NOTED. E.C. SHALL PROVIDE NEW WIRING TO LIGHT POLES FROM EXISTING PANEL LP-FIELD AS NOTED IN PANEL SCHEDULE.
7. NEW LIGHTING CONTROL AND MONITORING PANEL FURNISHED BY "MUSCO" LIGHT POLE MANUFACTURER, INSTALLED BY ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO COORDINATE WITH LIGHT POLE MANUFACTURER PRIOR TO INSTALLATION.
8. EXISTING LIGHT POLES SHALL BE RECONNECTED, COMMISSIONED AND TESTED WITH LIGHT MANUFACTURER REP. TO BE ON SITE AT TIME TESTING AND/OR COMMISSIONING. LIGHT POLES ARE 60 FEET HIGH. LIGHT POLES ARE EQUIPPED WITH BALLASTS, HEADS, BULBS. E.C. TO COORDINATE REPLACEMENT OF DEFECTIVE COMPONENTS TO PROVIDE A COMPLETE WORKING SYSTEM FREE OF DEFECTS.
9. THE EXISTING REMOTE LOCATIONS, PARKS AND ISLANDS CONNECTED TO THE SERVICE SWITCHBOARDS SHALL REMAIN NOT IN THE SCOPE OF THIS CONTRACT. ONLY THE FEEDERS UP TO THE NEAREST HAND HOLE SERVING THESE REMOTE LOCATION IS INCLUDED. E.C. SHALL REPLACE CONDUCTORS AFTER FLUSHING, CLEANING, SWABBING AND AIR DRYING THE UNDERGROUND CONDUIT. ALL CORRODED HARDWARE AND DAMAGED GASKET SHALL BE REPLACED TO MAKE EQUIPMENT WEATHERPROOF.

NOTES:

1. ALL WORK SHALL BE PROVIDED IN ACCORDANCE WITH LOCAL CODES AND UTILITY COMPANY REQUIREMENTS.
2. ALL UNDERGROUND CONDUITS SHALL BE SCHEDULE 40 RGS TYPE, BURIED MINIMUM OF 30" BELOW GRADE. COORDINATE EXACT ROUTING WITH UNDERGROUND UTILITIES & OTHER TRADES.



Consultants:



ENSIGN ENGINEERING, P.C.  
1111 Calhoun Ave.  
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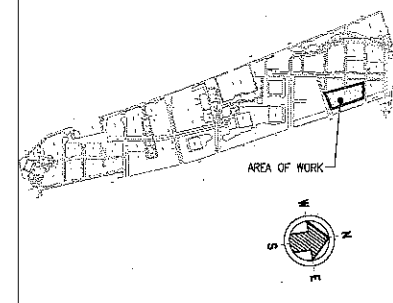
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Drawn by: ALVIN WONG  
Checked by: CARL J. CANNIZZARO, P.E.

Design No. or LLW No.: - Facility Code: N/A Date: 04/19/13

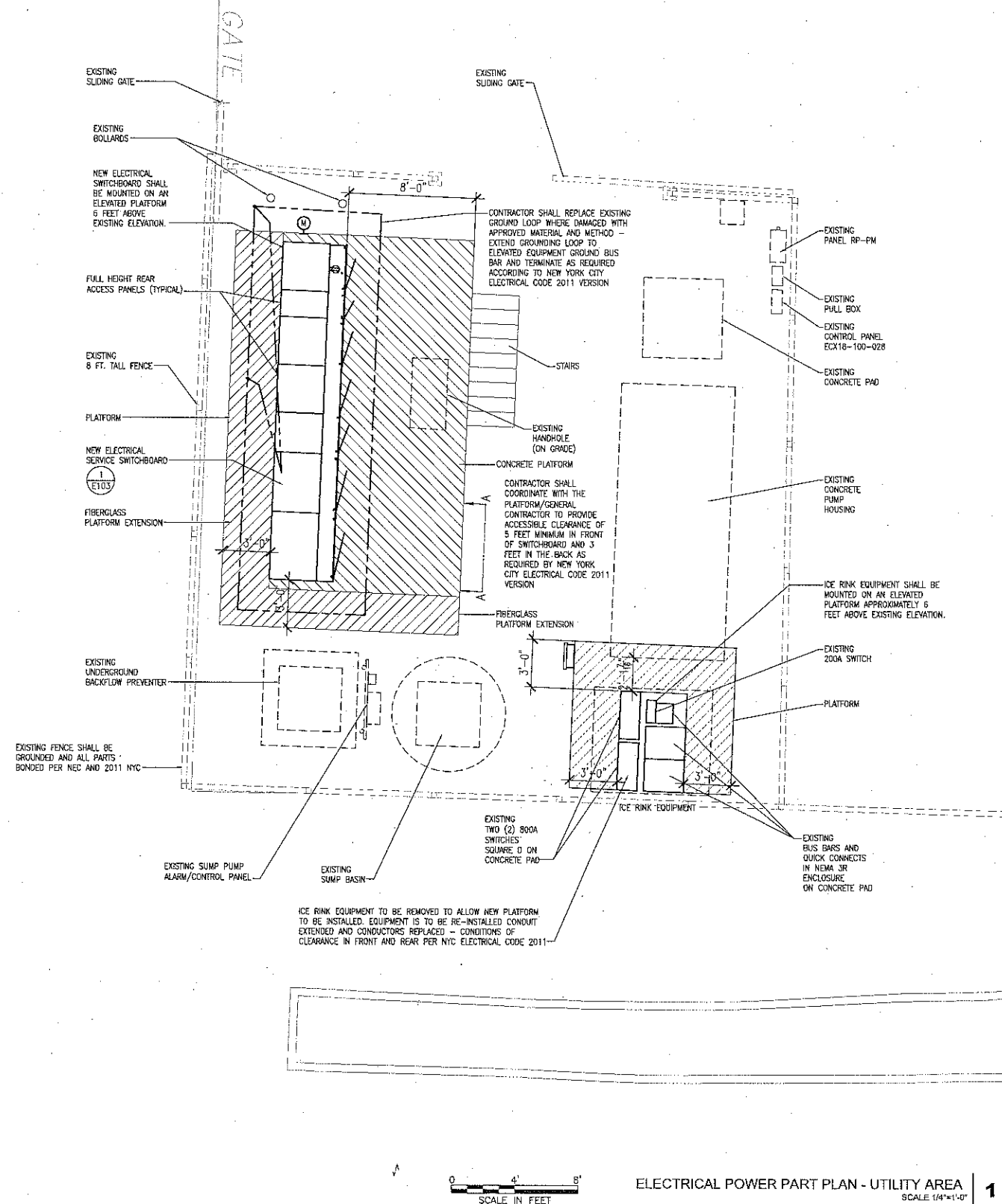
Project: BALL FIELDS SERVICE  
RECONSTRUCTION - SUPERSTORM SANDY  
BATTERY PARK CITY AUTHORITY  
Address: MANHATTAN  
NEW YORK, NY

Drawing Title:  
SITE PLAN  
BALL FIELDS FLOOD LIGHTING  
POWER DISTRIBUTION REPLACEMENT

Drawing No.:

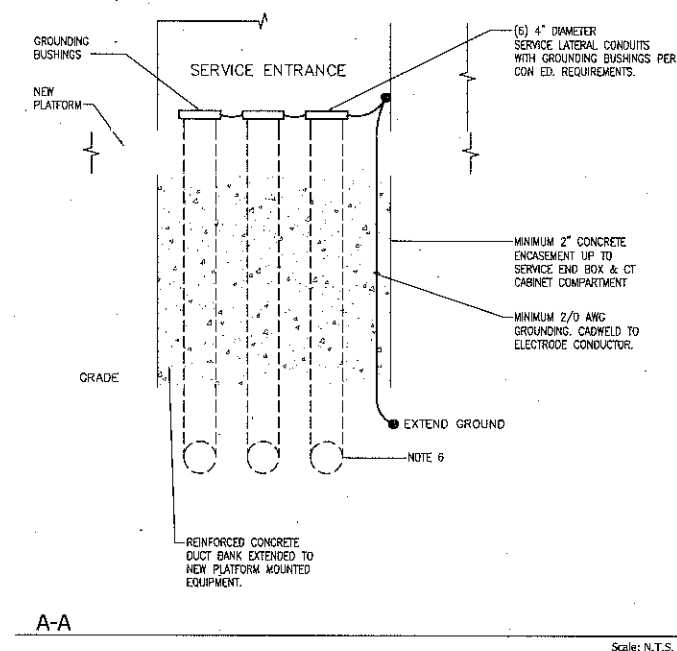
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Sheets In Contract:  
04 of 12



# NOTES:

1. ELECTRICAL CONTRACTOR SHALL COORDINATE INSTALLATION OF NEW ELECTRICAL SWITCHBOARD WITH PLATFORM ERECTION, INCLUDING GROUNDING AND BONDING OF ALL METALLIC COMPONENTS TO MODIFIED ELECTRICAL GROUND GRID.
2. PROVIDE ADDITIONAL GROUND RODS TO PROVIDE 5 OHM MAX. RESISTANCE.
3. PROVIDE GROUNDING AND BONDING OF METAL FENCE AROUND SERVICE EQUIPMENT YARD.
4. RESTORE HAND HOLE GASKET, HARDWARE AND GROUNDING.
5. COORDINATE WITH CONCRETE AND STEEL PLACEMENT TO INSURE HANDHOLE IS NOT OBSTRUCTED BY NEW INSTALLATION. RELOCATE HANDHOLE IF NECESSARY.
6. EXTEND CON EDISON DUCT BANK AND SERVICE LATERAL UP TO NEW PLATFORM MOUNTED END BOX.
7. COLDWELD ALL GROUND CONNECTIONS UNDERGROUND AND EXTEND UP TO NEW PLATFORM GROUND BUS BAR. ALL BONDING ELECTRODE CONDUCTOR TO BE COPPER.



Consultants:



ENSIGN ENGINEERING, P.C.  
1111 Calhoun Ave.  
Bronx, N.Y. 10465

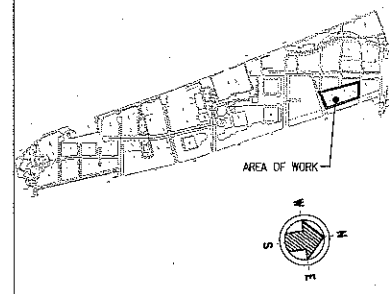
TEL. 718-863-5590 FAX. 718-863-6178  
WWW.ENSIGNENGINEERING.COM

NOTE: Drawing may be printed at reduced scale. Refer to graphic scale.

No. Date Revision

No. Date Submittal

Key Plan: SHADED AREA = AREA OF WORK



Project Engineer: CARL J. CANIZZARO, P.E.

Designer: EUGENE KIELMANOWICZ, P.E.

Drawn by: ALVIN WONG

Checked by: CARL J. CANIZZARO, P.E.

Design No. or LLW No.: Facility Code: Date:

N/A 04/19/13

Project: BALL FIELDS SERVICE  
RECONSTRUCTION - SUPERSTORM SANDY  
BATTERY PARK CITY AUTHORITY

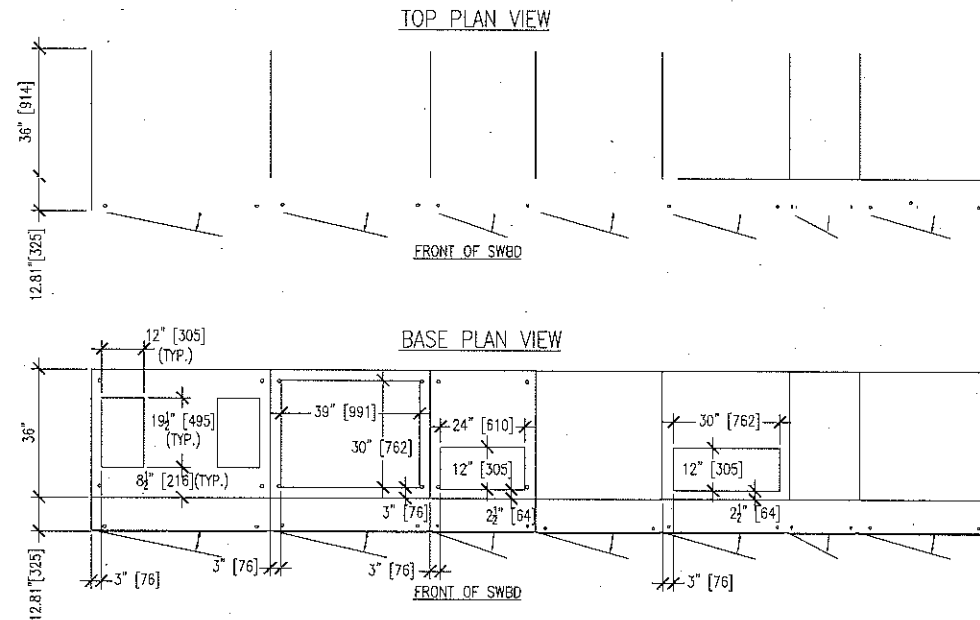
Address: MANHATTAN  
NEW YORK, NY

Drawing Title:  
ELECTRICAL POWER PART PLAN  
UTILITY AREA  
SCENARIO A

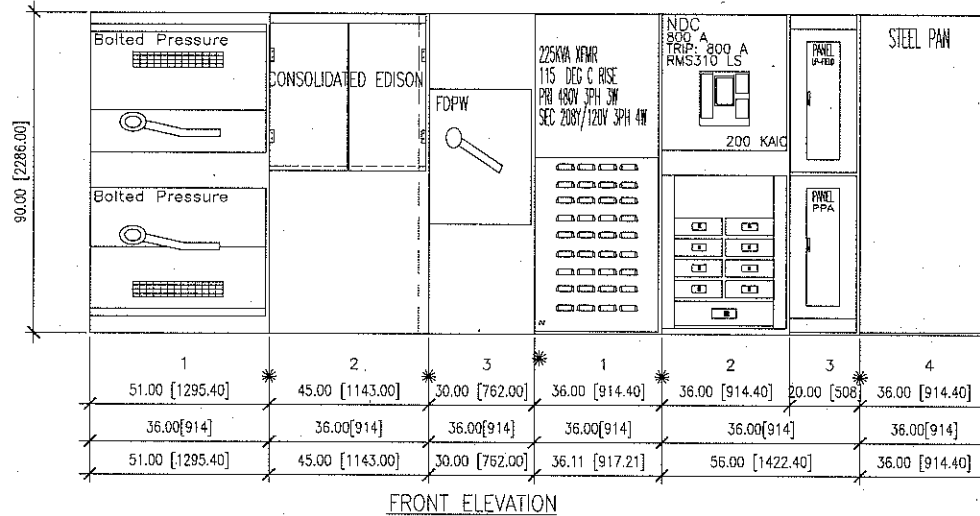
Drawing No.:

E102.00

Sheets In Contract  
05 of 12



FRONT ELEVATION SHOWN WITHOUT FRONT DOORS AND ROOF.



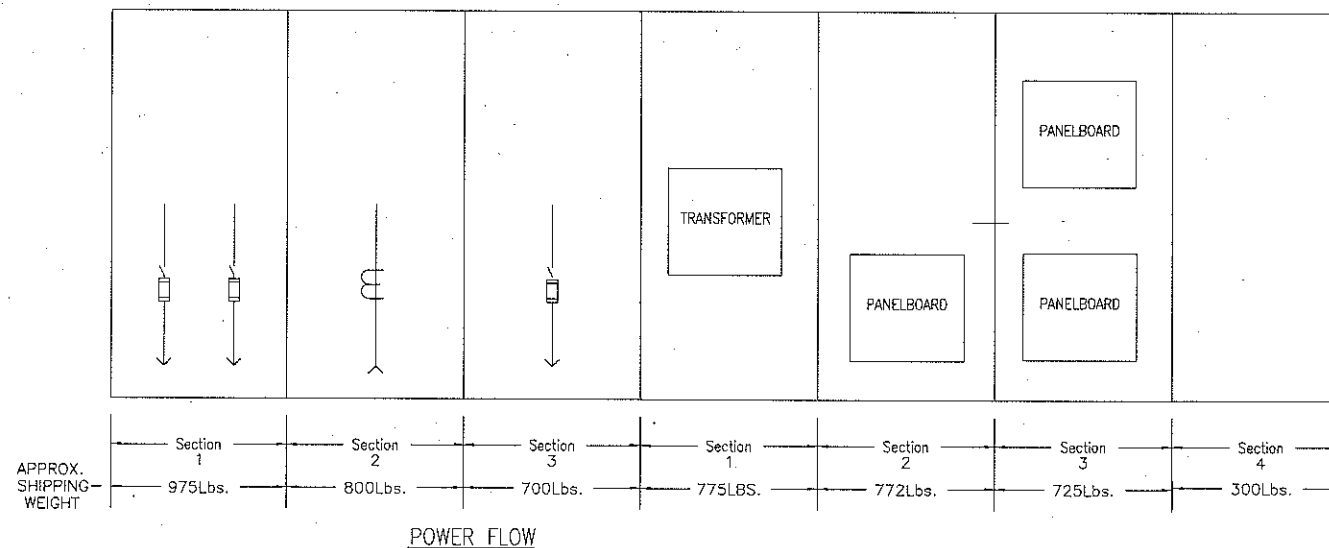
#### GENERAL INFORMATION

POW-R-LINE C, FRONT ACCESS/ FRONT AND REAR ALIGN  
 SYSTEM VOLTAGE: 480Y/277V 3-PHASE 4-WIRE  
 MAIN BUS: 2000A, NEUTRAL BUS: 2000A  
 SILVER PLATED COPPER BUS  
 SILVER PLATED COPPER GROUND BUS  
 DENSITY RATED BUS: 800A PER SQUARE INCH  
 BOTTOM INCOMING MAIN LUGS: (6) #4-500 KCMIL  
 (1) #8-350 KCMIL GROUND LUG SUPPLIED AS STANDARD  
 BUS BRACING: 2000A

SERVICE ENTRANCE: SUITABLE ONLY FOR  
 USE AS SERVICE EQUIPMENT  
 SWITCHBOARD CONSTRUCTION MEETS UL-891  
 ENCLOSURE TYPE 3R (NONHAZ-AR) FLAT ROOF  
 FINISH: ANSI-B1

\*\*SWITCHBOARD IS SEISMIC LABELED (IBC/CBC SEISMIC QUALIFIED)\*\*  
 -FEEDER IS 800A QA BOLTED PRESSURE SWITCH

DRAWINGS ARE FOR BIDDING PURPOSE ONLY.  
 CONTRACTOR SHALL PROVIDE ACTUAL SHOP  
 DRAWINGS FOR REVIEW AND ADVISORY BOARD  
 SUBMITTAL.



#### NOTES:

- CONTRACTOR SHALL OBTAIN THE APPROVALS OF THE ELECTRICAL ADVISORY BOARD AND CONSOLIDATED EDISON WITH RESPECT TO EQUIPMENT TO BE INSTALLED PRIOR TO SUBMITTAL TO THE ENGINEER OF RECORD AND INCLUDE WRITTEN LETTERS OF APPROVAL WITH SUBMITTED SHOP DRAWINGS AT TIME OF SUBMISSION.



Consultants:



ENSIGN ENGINEERING, P.C.  
 1111 Calhoun Ave.  
 Bronx, N.Y. 10465

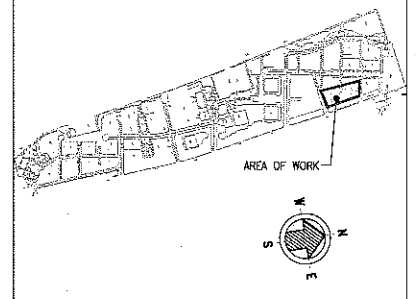
TEL 718-863-5590 FAX 718-863-6178  
 WWW.ENSIGNENGINEERING.COM

NOTE: Drawing may be  
 printed at reduced scale.  
 Refer to graphic scale.

No. Date Revision

No. Date Submittal

Key Plan: SHADED AREA = AREA OF WORK



Project Engineer: CARL J. CANNIZZARO, P.E.  
 Designer: EUGENE KIELMANOWICZ, P.E.  
 Drawn by: ALVIN WONG  
 Checked by: CARL J. CANNIZZARO, P.E.

Design No. or LLW No.:  
 Facility Code: N/A  
 Date: 04/19/13

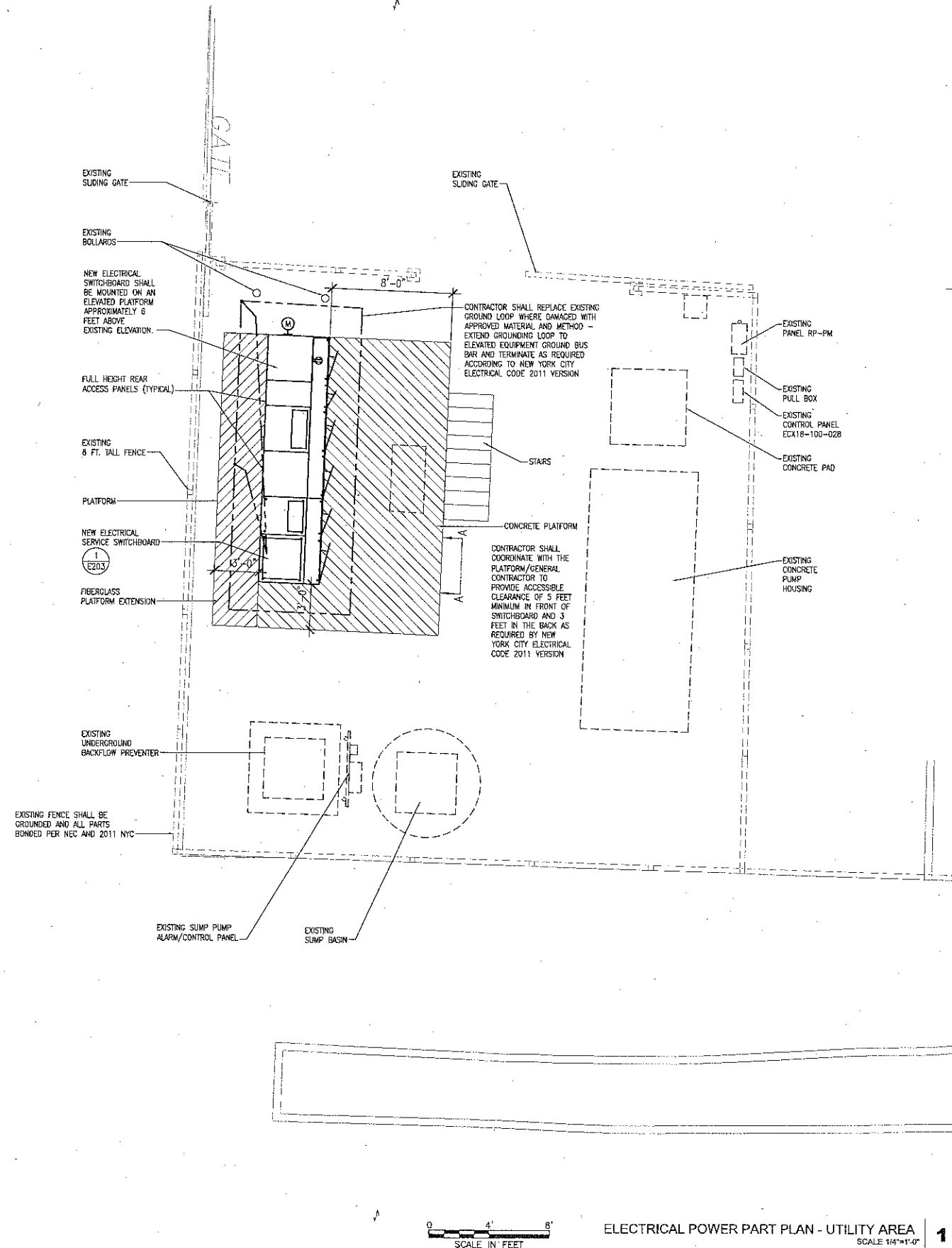
Project: BALL FIELDS SERVICE  
 RECONSTRUCTION - SUPERSTORM SANDY  
 BATTERY PARK CITY AUTHORITY  
 Address: MANHATTAN  
 NEW YORK, NY

Drawing Title:  
 ELECTRICAL SERVICE EQUIPMENT  
 LINE-UP  
 SCENARIO A

Drawing No.:

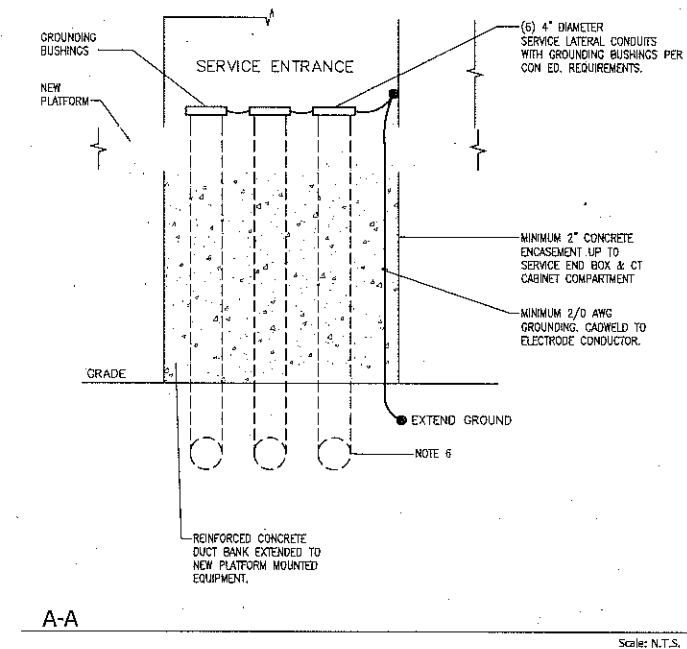
E103.00

Sheets In Contract:  
 06 of 12



#### NOTES:

1. ELECTRICAL CONTRACTOR SHALL COORDINATE INSTALLATION OF NEW ELECTRICAL SWITCHBOARD WITH PLATFORM ERECTION, INCLUDING GROUNDING AND BONDING OF ALL METALLIC COMPONENTS TO MODIFIED ELECTRICAL GROUND GRID.
2. PROVIDE ADDITIONAL GROUND RODS TO PROVIDE 5 OHM MAX. RESISTANCE.
3. PROVIDE GROUNDING AND BONDING OF METAL FENCE AROUND SERVICE EQUIPMENT YARD.
4. RESTORE HAND HOLE GASKET, HARDWARE AND GROUNDING.
5. COORDINATE WITH CONCRETE AND STEEL PLACEMENT TO INSURE HANDHOLE IS NOT OBSTRUCTED BY NEW INSTALLATION. RELOCATE HANDHOLE IF NECESSARY.
6. EXTEND CON EDISON DUCT BANK AND SERVICE LATERAL UP TO NEW PLATFORM MOUNTED END BOX.
7. CAIWELD ALL GROUND CONNECTIONS UNDERGROUND AND EXTEND UP TO NEW PLATFORM GROUND BUS BAR. ALL GROUNDING ELECTRODE CONDUCTOR TO BE COPPER.



Consultants:



ENSIGN ENGINEERING, P.C.  
1111 Calhoun Ave.  
Bronx, N.Y. 10465

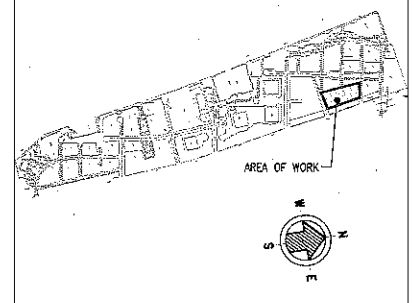
TEL: 718-863-3590 FAX: 718-863-6178  
WWW.ENSIGNENGINEERING.COM

NOTE: Drawing may be printed at reduced scale. Refer to graphic scale.

No. Date Revision

No. Date Submittal

Key Plan: SHADED AREA = AREA OF WORK



Project Engineer: CARL J. CANNIZZARO, P.E.

Designer: EUGENE KIELMANOWICZ, P.E.

Drawn by: ALVIN WONG

Checked by: CARL J. CANNIZZARO, P.E.

Design No. or LLW No.: -

Facility Code: N/A

Date: 04/19/13

Project: BALL FIELDS SERVICE

RECONSTRUCTION - SUPERSTORM SANDY

BATTERY PARK CITY AUTHORITY

Address: MANHATTAN

NEW YORK, NY

Drawing Title:

ELECTRICAL POWER PART PLAN

UTILITY AREA

SCENARIO B

Drawing No.:

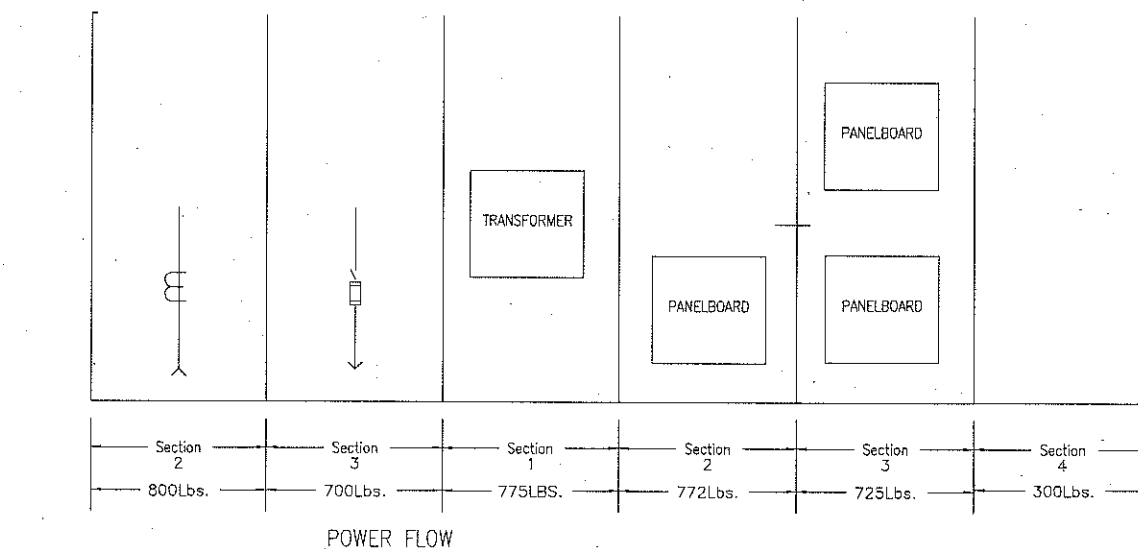
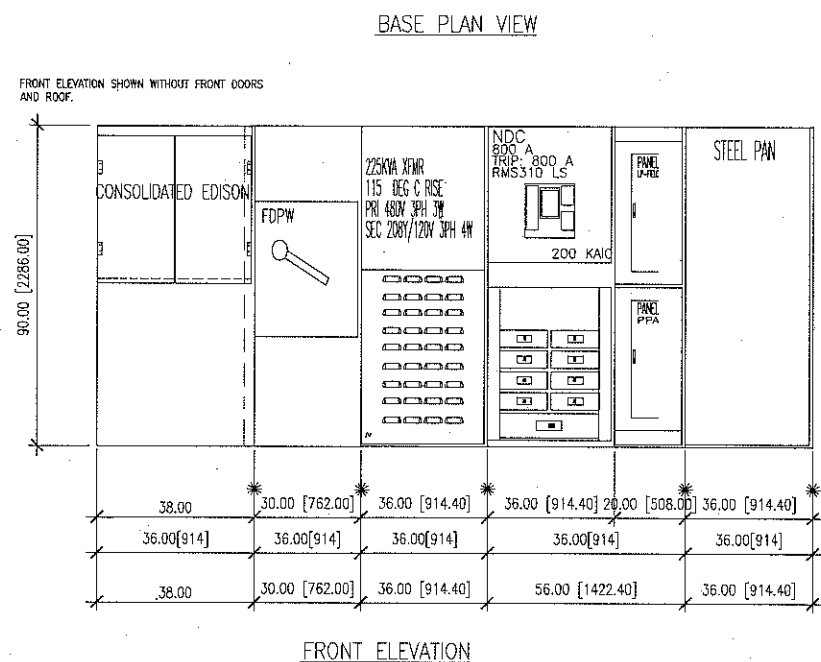
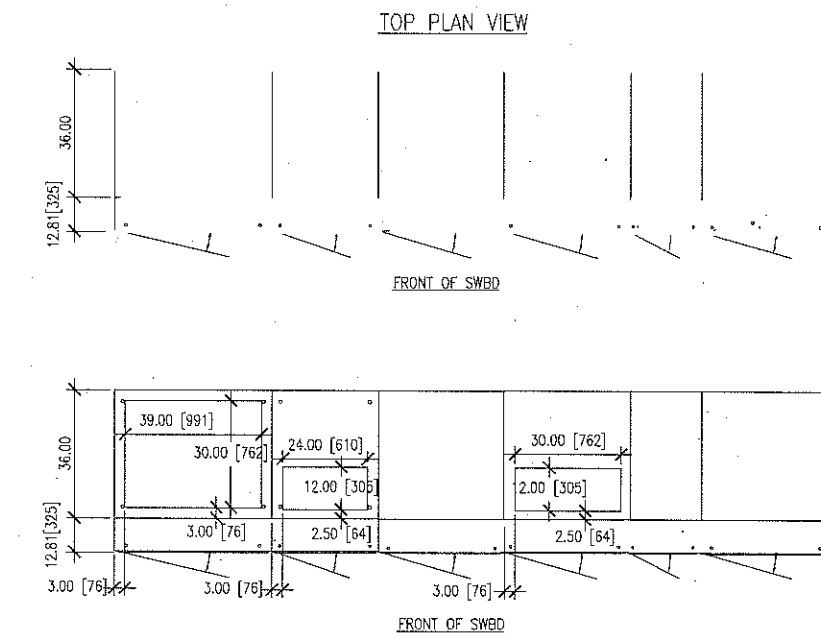
E202.00

Sheets in Contract:

07 of 12

ELECTRICAL POWER PART PLAN - UTILITY AREA

1



### GENERAL INFORMATION

POW-R-LINE C, FRONT ACCESS- FRONT AND REAR ALIGN  
 SYSTEM VOLTAGE: 480V/277V 3-PHASE 4-WIRE  
 BUS: 400A, NEUTRAL BUS: 400A  
 SILVER PLATED COPPER BUS  
 SILVER PLATED COPPER GROUNDING BUS  
 1/2" THICK RATED BUS: 1200A PER SQUARE INCH  
 BOTTOM INCOMING MAIN LUGS: (6) #4-50 KCMIL  
 (1) #6-350 KCMIL GROUND LUG SUPPLIED AS STANDARD  
 BUS BRACING: 2000KA

SERVICE ENTRANCE: SUITABLE ONLY FOR  
 USE AS SERVICE EQUIPMENT

SWITCHBOARD CONSTRUCTION MEETS UL-89  
 ENCLOSURE TYPE 3R (NONWALK-IN) PL-1R1

PER-ANSI-61

\*\*SWITCHBOARD IS SEISMIC LABELED (GBC/CBC SEISMIC QUAL  
 -FEEDER IS 800A OR BOLTED PRESSURE SWITCH

DRAWINGS ARE FOR BIDDING PURPOSE ONLY.  
CONTRACTOR SHALL PROVIDE ACTUAL SHOP DRAWINGS FOR REVIEW AND  
ADVISORY BOARD SUBMITTAL.

NOTES:

1. CONTRACTOR SHALL OBTAIN THE APPROVALS OF THE ELECTRICAL ADVISORY BOARD AND CONSOLIDATED EDISON WITH RESPECT TO EQUIPMENT TO BE INSTALLED PRIOR TO SUBMITTAL TO THE ENGINEER OF RECORD AND INCLUDE WRITTEN LETTERS OF APPROVAL WITH SUBMITTED SHOP DRAWINGS AT TIME OF SUBMISSION.



**Consultants:**



ENSIGN ENGINEERING, P.C.  
1111 Calhoun Ave.  
Bronx, N.Y. 10465

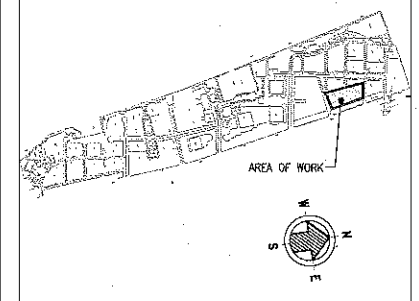
TEL. 718-863-5590 FAX. 718-863-6178  
WWW.ENSIGNENGINEERING.COM

**NOTE:** Drawing may be printed at reduced scale. Refer to graphic scale.

No.	Date	Revision
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No.	Date	Submitted
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**Key Plan:** SHADED AREA = AREA OF WORK



Project Engineer: CARL J. CANNIZZARO, P.E.

Designer: EUGENE KIELMANOWICZ, P.E.

Drawn by: ALVIN WONG

Checked by: CARL J. CANNIZZARO, P.E.

Design No. or LLW No.:  —	Facility Code:  N/A	Date:  04/19/13
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Project: BALL FIELDS SERVICE  
RECONSTRUCTION -- SUPERSTORM SANDY  
BATTERY PARK CITY AUTHORITY  
Address: MANHATTAN  
NEW YORK, NY

Drawing Title:  
ELECTRICAL SERVICE EQUIPMENT  
ALTERNATIVE LINE-UP  
SCENARIO B

Drawing No.:

E203.00

Sheets In Contract:  
08 of 12

PANEL DESIGNATION: DP1				
SERVICE: 208Y/120V VOLTS 3 PHASE 4 WIRE				
800A, COPPER				
NO.	BREAKER	POLES	KW	SERVICE TO:
1				BLANK COVER
2	100A	3	100	SOCCER-1
3				
4	200A	3	100	NORTH ISLAND
5	100A	3	100	EJECTOR PUMP
6	225A	3	100	PP-ICE
7	225A	3	100	LP-FIELD
8	225A	3	100	RP-FM
9	225A	3	100	PP-A
10	300A	3	100	SPARE

PANEL SCHEDULE													
PANEL DESIGNATION: LP-FIELD						RATING: 65KAC FULLY RATED						PANEL LOCATION: SWBD	
SERVICE: 208Y/120 VOLTS 3 PHASE 4 WIRE, MLO						MOUNTING TYPE: <u>INTERNAL</u>						GROUND BUS: YES	
MAINS: 225A						REMARKS:						ISOLATED GROUND BUS: NO	
NUMBER OF POLES: 42						FEEDERS:							
SERVICE TO:		VA LOAD		BRANCH CIRCUITS						VA LOAD		SERVICE TO:	
				O.C.	No.	A	B	C	No.	O.C.			
POLE A1				3	1				2	3	POLE A2-1		
				3	3				4				
				3	5				6	30			
POLE A3				3	7				8	3	POLE A2-2		
				3	9				10				
				3	11				12	30			
POLE B2-1				3	13				14	3	POLE B1		
				3	15				16				
				3	17				18	30			
POLE B2-2				3	19				20	3	POLE B3		
				3	21				22				
				3	23				24	30			
				3	25				26	30			
				3	27				28	2			
				3	29				30	20			
				3	31				32	20			
				3	33				34	20			
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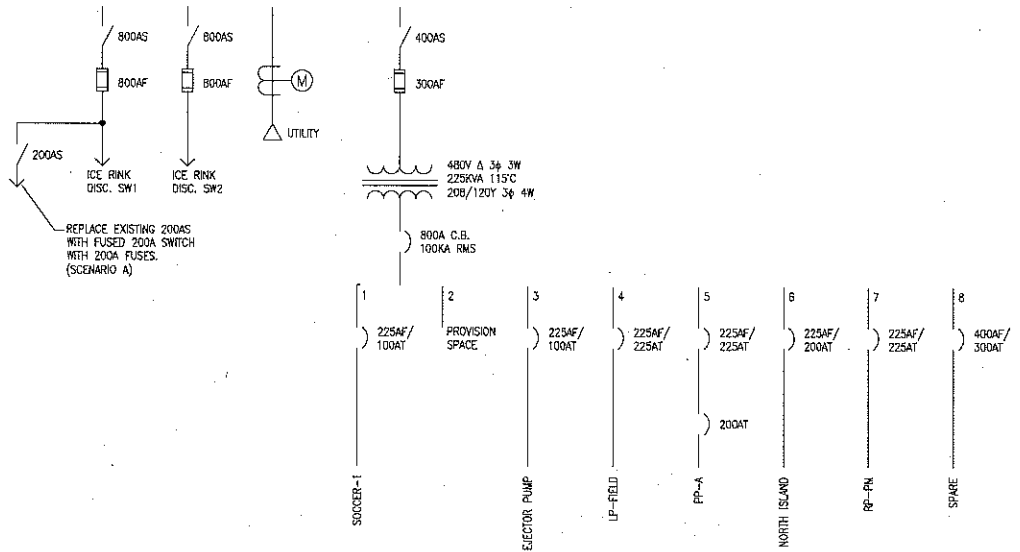
NOTES:

- ELECTRICAL CONTRACTOR WILL TRACE OUT AND IDENTIFY ALL CONNECTED CIRCUITS, LABEL AND PREPARE PANEL DIRECTORY PRIOR TO REMOVING PANEL AND BRANCH CIRCUIT CONDUCTORS.
- ELECTRICAL CONTRACTOR SHALL REWIRE NEW CONDUCTORS FOR ALL BRANCH CIRCUITS AND RECONNECT TO NEW PANEL CIRCUIT BREAKERS IN ORDER TO RESTORE ORIGINAL CIRCUIT CONFIGURATION.

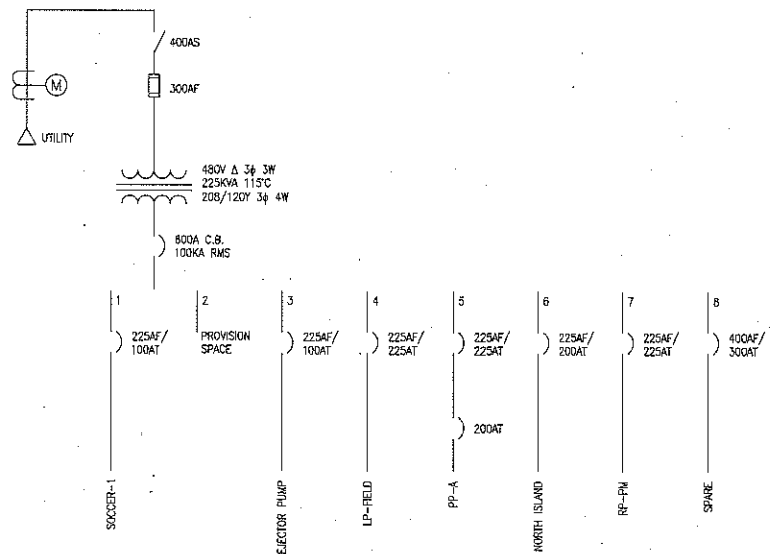
PANEL SCHEDULE														
PANEL DESIGNATION: PP-A						RATING: 65KVA FULLY RATED				PANEL LOCATION: SWBD				
SERVICE: 208Y/120 VOLTS 3 PHASE 4 WIRE						MOUNTING TYPE:				GROUND BUS: YES				
MAINS: 200 AMPS						REMARKS:				ISOLATED GROUND BUS: NO				
NUMBER OF POLES: 42						FEEDERS:								
SERVICE TO:		VA LOAD		O.C. No.		BRANCH CIRCUITS			O.C. No.		VA LOAD		SERVICE TO:	
						A B C								
				3		1				2	3			
				3		3				4				
				3		5				6	20			
				3		7				8	20			
				3		9				10	20			
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				3		37				38	20			
				3		39				40	20			
				3		41				42	15			

NOTES:

- ELECTRICAL CONTRACTOR WILL TRACE OUT AND IDENTIFY ALL CONNECTED CIRCUITS, LABEL AND PREPARE PANEL DIRECTORY PRIOR TO REMOVING PANEL AND BRANCH CIRCUIT CONDUCTORS.
- ELECTRICAL CONTRACTOR SHALL REWIRE NEW CONDUCTORS FOR ALL BRANCH CIRCUITS AND RECONNECT TO NEW PANEL CIRCUIT BREAKERS IN ORDER TO RESTORE ORIGINAL CIRCUIT CONFIGURATION.



POWER DISTRIBUTION ONE-LINE DIAGRAM SCENARIO A



POWER DISTRIBUTION ONE-LINE DIAGRAM SCENARIO B



Consultants:



ENSIGN ENGINEERING, P.C.  
1111 Calhoun Ave.  
Bronx, N.Y. 10465

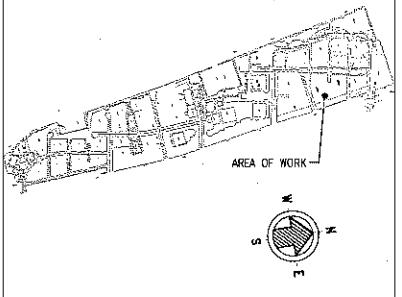
TEL 718-863-5590 FAX 718-863-6178  
WWW.ENSIGNENGINEERING.COM

NOTE: Drawing may be  
printed at reduced scale.  
Refer to graphic scale.

No. Date Revision

No. Date Submittal

Key Plan: SHADED AREA = AREA OF WORK



Project Engineer: CARL J. CANNIZZARO, P.E.

Designer: EUGENE KIELMANOWICZ, P.E.

Drawn by: ALVIN WONG

Checked by: CARL J. CANNIZZARO, P.E.

Design No. or  
LLW No.: N/A Date: 04/19/13

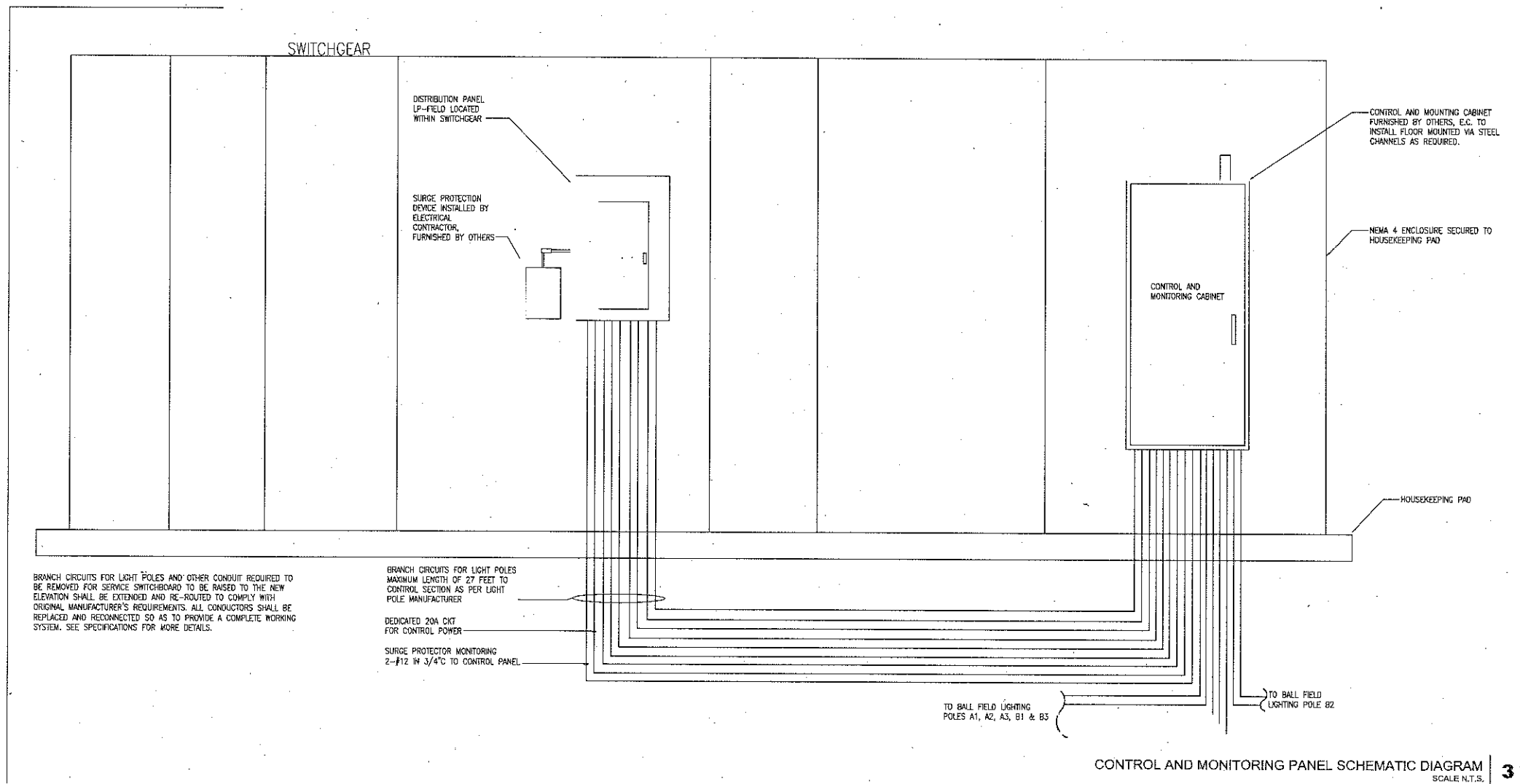
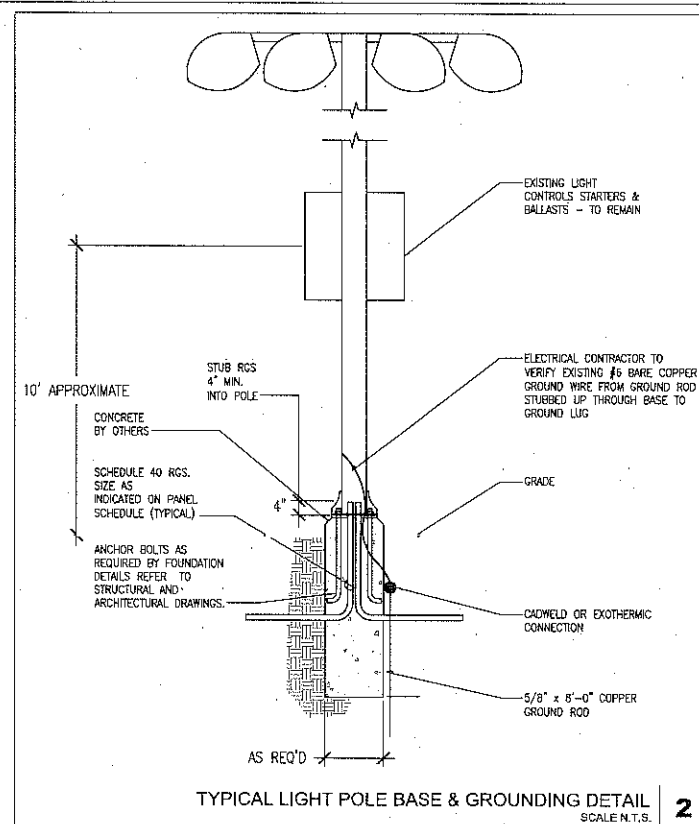
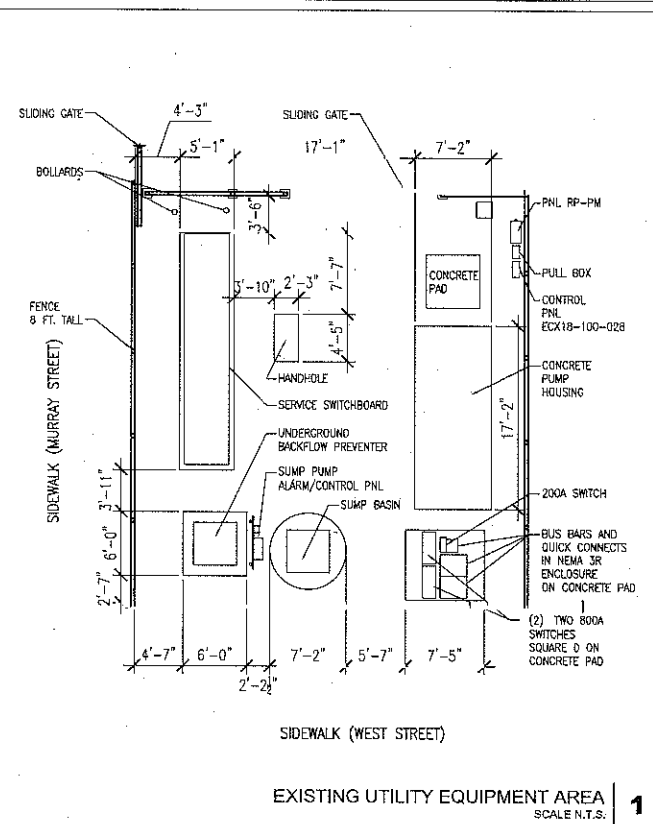
Project: BALL FIELDS SERVICE  
RECONSTRUCTION - SUPERSTORM SANDY  
BATTERY PARK CITY AUTHORITY  
Address: MANHATTAN  
NEW YORK, NY

Drawing Title:  
PANEL SCHEDULES AND  
POWER DISTRIBUTION  
ONE-LINE DIAGRAMS

Drawing No.:

E601.00

Sheets in Contract:  
09 of 12

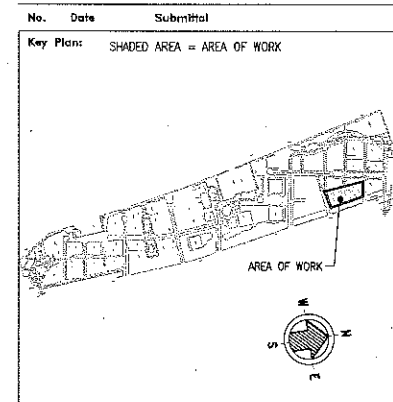


Consultants:

**ENSIGN ENGINEERING, P.C.**  
1111 Calhoun Ave.  
Bronx, N.Y. 10465  
TEL: 718-863-5590 FAX: 718-863-6178  
WWW.ENSIGNENGINEERING.COM

NOTE: Drawing may be printed at reduced scale. Refer to graphic scale.

No.	Date	Revision



Project Engineer: CARL J. CANNIZZARO, P.E.  
Designer: EUGENE KIELMANOWICZ, P.E.  
Drawn by: ALVIN WONG  
Checked by: CARL J. CANNIZZARO, P.E.

Design No. or LLW No.:	Facility Code:	Date:
	N/A	04/19/13

Project: BALL FIELDS SERVICE RECONSTRUCTION - SUPERSTORM SANDY BATTERY PARK CITY AUTHORITY  
Address: MANHATTAN NEW YORK, NY

Drawing Title: ELECTRICAL DETAILS

Drawing No.: E701.00  
Sheets in Contract: 10 of 12

GENERAL NOTES:

1. ALL MATERIALS AND CONSTRUCTION METHODS SHALL BE IN COMPLIANCE WITH THE REGULATIONS OF THE BUILDING CODE OF THE CITY OF NEW YORK, 2008 EDITION WITH LATEST AMENDMENTS.
2. NO WORK SHALL COMMENCE WITHOUT THE ISSUANCE OF THE REQUIRED PERMITS BY THE COMMISSIONER.
3. THE CONTRACTOR SHALL COMPLY WITH THE PROVISIONS OF SUBCHAPTER THREE ARTICLE SEVEN AND RS-19 REGARDING THE SAFETY OF PUBLIC AND PROPERTY DURING BUILDING OPERATIONS.
4. ALL NOTES, DIMENSIONS, DETAILS AND JOB CONDITIONS ARE TO BE VERIFIED IN THE FIELD PRIOR TO THE COMMENCEMENT OF WORK. ANY DISCREPANCIES SHALL BE IMMEDIATELY PRESENTED TO THE ENGINEER FOR SUBSEQUENT DIRECTION.
5. DRAWINGS SHALL NOT BE SCALED. DIMENSIONS ARE TO BE USED ONLY.
6. NO FOUNDATION OR EARTHWORK PERMIT SHALL BE ISSUED UNLESS AND UNTIL AT LEAST FIVE DAYS PRIOR WRITTEN NOTICE OF THE PERMIT APPLICATION SHALL HAVE BEEN GIVEN BY THE APPLICANT TO THE OWNERS OF ALL ADJOINING LOTS, BUILDINGS AND SERVICE FACILITIES WHICH MAY BE AFFECTED BY THE PROPOSED FOUNDATION WORK OR EARTHWORK OPERATIONS.
7. ALL FOUNDATION AND EARTHWORK OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF SUBCHAPTERS ELEVEN AND NINETEEN OF THE CODE, AND ALL LOTS, BUILDINGS AND SERVICE FACILITIES ADJOINING THE FOUNDATION AND EARTHWORK AREAS SHALL BE PROTECTED AND SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF SUBCHAPTER ELEVEN AND NINETEEN OF THE CODE AND SUBCHAPTER SEVENTEEN OF CHAPTER ONE OF TITLE TWENTY SIX OF THE ADMINISTRATIVE CODE.

CONCRETE:

1. CONCRETE MATERIALS, DESIGN, AND CONSTRUCTION SHALL MEET REQUIREMENTS OF CHAPTER 19 OF THE CODE.
2. CONCRETE FOR FOUNDATION WALLS, FOOTINGS AND FLOOR SLABS ON GRADE SHALL HAVE A COMPRESSIVE STRENGTH OF  $F_c = 4,000$  psi @ 28 DAYS, UNLESS OTHERWISE NOTED.
3. THE CONCRETE MIX SHALL BE DESIGNED, INSPECTED AND TESTED BY AN INDEPENDENT LABORATORY LICENSED BY THE BUILDING DEPARTMENT OF THE CITY OF NEW YORK. THREE TEST CYLINDERS SHALL BE TAKEN AT 50 CUBIC YARD INTERVALS OR FRACTION THEREOF. CEMENT SHALL CONFORM TO ASTM C150. AGGREGATES SHALL CONFORM TO ASTM C33. AIR ENTRAINMENT SHALL CONFORM TO ASTM C260 AND IN CONFORMANCE WITH SPECIAL INSPECTION BC 1704.1, BC 1905.6, BC 1905.3.
4. ALL REINFORCING STEEL SHALL BE ASTM BILLET STEEL A615 GRADE 60.
5. ALL WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 FOR SMOOTH WIRE AND A497 FOR DEFORMED WIRE.
6. REINFORCEMENT SHALL BE ACCURATELY PLACED AND ADEQUATELY SUPPORTED BEFORE CONCRETE IS PLACED.
7. ALL REINFORCEMENT SHALL BE BENT COLD, TO A MINIMUM OF SIX TIMES THE NORMAL DIAMETER OF THE BAR OR WIRE.
8. AT THE TIME OF CONCRETE PLACEMENT, THE REINFORCEMENT SHALL BE FREE OF MUD, OIL OR OTHER NONMETALLIC COATINGS THAT ADVERSELY AFFECT BONDING CAPACITY.
9. LAP SPlice LENGTH SHALL BE A MINIMUM OF THIRTY TIMES THE NORMAL DIAMETER OF THE REINFORCEMENT.
10. CONSTRUCTION JOINTS IN THE FLOOR SLAB SHALL BE LOCATED THE SPANS MIDDLE THIRD.
11. ALL EMBEDMENTS SHALL BE IN PLACE PRIOR TO CONCRETE PLACEMENT. ALUMINUM EMBEDMENTS SHALL BE COATED TO PREVENT ELECTROLYTIC ACTION BETWEEN THE ALUMINUM AND STEEL REINFORCEMENT.
12. THE FLOOR SLAB SHALL BE BROUGHT TO A HARD TROWLED FINISH.
13. THE CONTRACTOR SHALL COORDINATE CONCRETE PLACEMENT WITH THE ELECTRICAL CONTRACTOR TO DETERMINE OPTIMUM LOCATION OF PRESET ANCHORS, SLEEVES, LEVELING CHANNELS AND OTHER ACCESSORIES TO PROVIDE A COMPLETE AND INTEGRATED SYSTEM OF SUPPORT FOR THE ELECTRICAL EQUIPMENT PER NEC AND 2011 NYC.

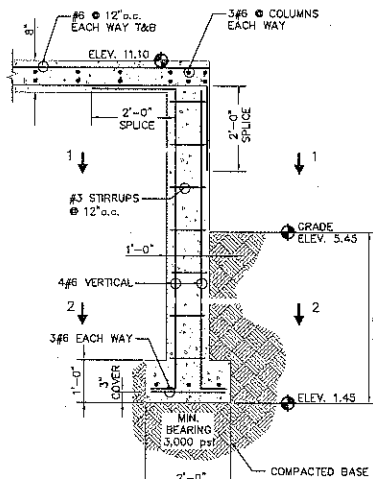
SPECIAL INSPECTION ITEMS:

CONCRETE CAST IN PLACE BC 1704.4  
CONCRETE TEST CYLINDERS BC 1905.6  
CONCRETE DESIGN MIX BC 1905.3

STRUCTURAL DRAWING LIST:		
DRAWING#	SHEET#	DRAWING TITLE
S-001.00	1 OF	STRUCTURAL GENERAL NOTES & DETAILS
S-002.00	2 OF	PARTIAL FOUNDATION & PLATFORM PLANS

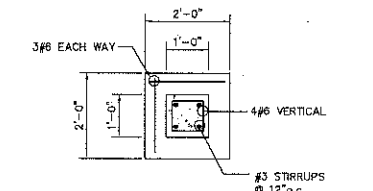
EARTHQUAKE NOTE:

1. PLANS & DETAILS COMPLY WITH NYC DOB CODE CHAPTER 16 SECTIONS BC 1613-BC 1623.



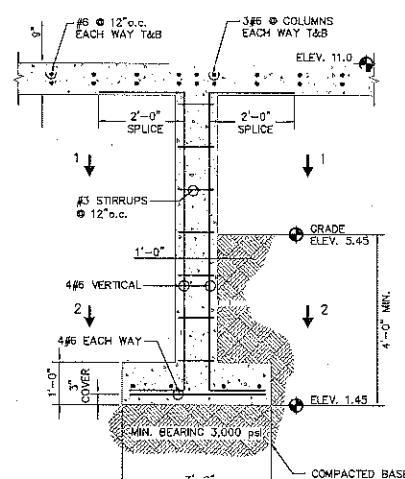
ELEVATION

COLUMN SECTION 1



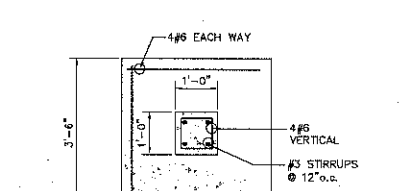
FOOTING SECTION 2

- NOTES:
1. CONCRETE:  $F_c = 4,000$  psi @ 28 DAYS
  2. REBAR:  $F_y = 60,000$  psi
  3. MIN. BEARING: 3,000 psi
  4. MIN. LAP SPICE: 2'-0"



ELEVATION

COLUMN SECTION 1

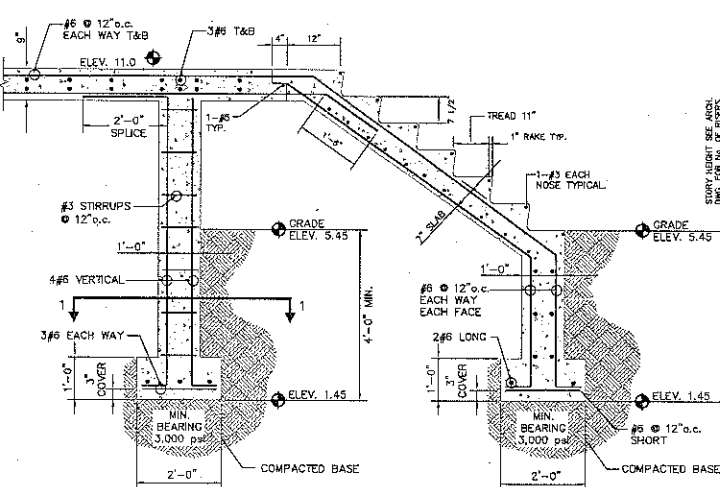


FOOTING SECTION 2

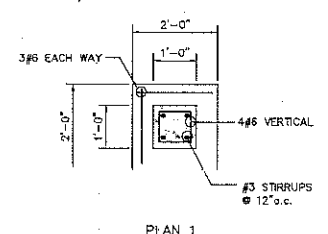
- NOTES:
1. CONCRETE:  $F_c = 4,000$  psi @ 28 DAYS
  2. REBAR:  $F_y = 60,000$  psi
  3. MIN. BEARING: 3,000 psi
  4. MIN. LAP SPICE: 2'-0"

2 | FOOTING, COL. SECTION & DTL.  
SCALE: N.T.S.

3 | FOOTING, COL. SECTION & DTL.  
SCALE: N.T.S.



4 | STAIR DETAIL  
SCALE: N.T.S.



PLAN 1

- NOTES:
1. CONCRETE:  $F_c = 4,000$  psi @ 28 DAYS
  2. REBAR:  $F_y = 60,000$  psi
  3. MIN. BEARING: 3,000 psi
  4. MIN. LAP SPICE: 2'-0"

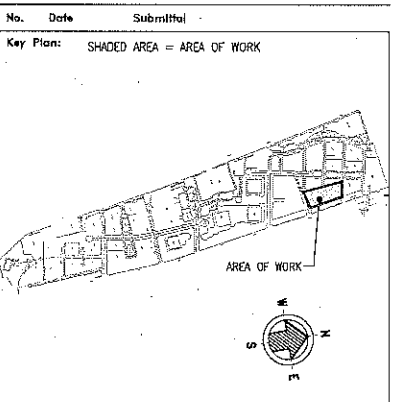
1 | STRUCTURAL GENERAL NOTES  
SCALE: N.T.S.



Consultants:  
**ENSGN ENGINEERING, P.C.**  
1111 Calhoun Ave.  
Bronx, N.Y. 10465  
TEL: 718-863-5590 FAX: 718-863-6178  
WWW.ENSGNENGINEERING.COM

NOTE: Drawing may be  
printed at reduced scale.  
Refer to graphic scale.

No.	Date	Revision



Project Engineer:	CARL J. GANNIZZARO, P.E.
Designer:	ANTHONY GENNARO, P.E.
Drawn by:	FELIX GONZALEZ
Checked by:	ANTHONY GENNARO, P.E.
Design No. or LLW No.:	N/A
Facility Code:	N/A
Date:	04/19/13

Project: **BALL FIELDS SERVICE  
RECONSTRUCTION - SUPERSTORM SANDY  
BATTERY PARK CITY AUTHORITY**  
Address: MANHATTAN  
NEW YORK, NY

Drawing Title:  
**STRUCTURAL GENERAL NOTES  
AND DETAILS**

Drawing No.:	<b>S001.00</b>
Sheets in Contract:	11 of 12





Consultants:



ENSIGN ENGINEERING, P.C.  
1111 Calhoun Ave.  
Bronx, N.Y. 10465

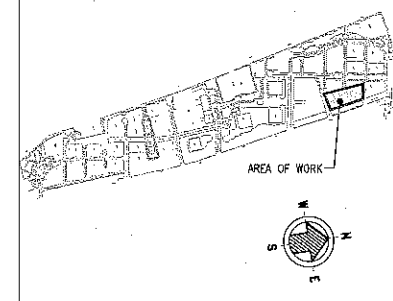
TEL. 718-863-5590 FAX. 718-863-6178  
WWW.ENSIGNENGINEERING.COM

NOTE: Drawing may be  
printed at reduced scale.  
Refer to graphic scale.

No. Date Revision

No. Date Submittal

Key Plan: SHADED AREA = AREA OF WORK



Project Engineer: CARL J. CANNIZZARO, P.E.

Designer: ANTHONY GENNARO, P.E.

Drawn by: FELIX GONZALEZ

Checked by: ANTHONY GENNARO, P.E.

Design No. or  
LLW No.:  
Facility Code: N/A  
Date: 04/19/13

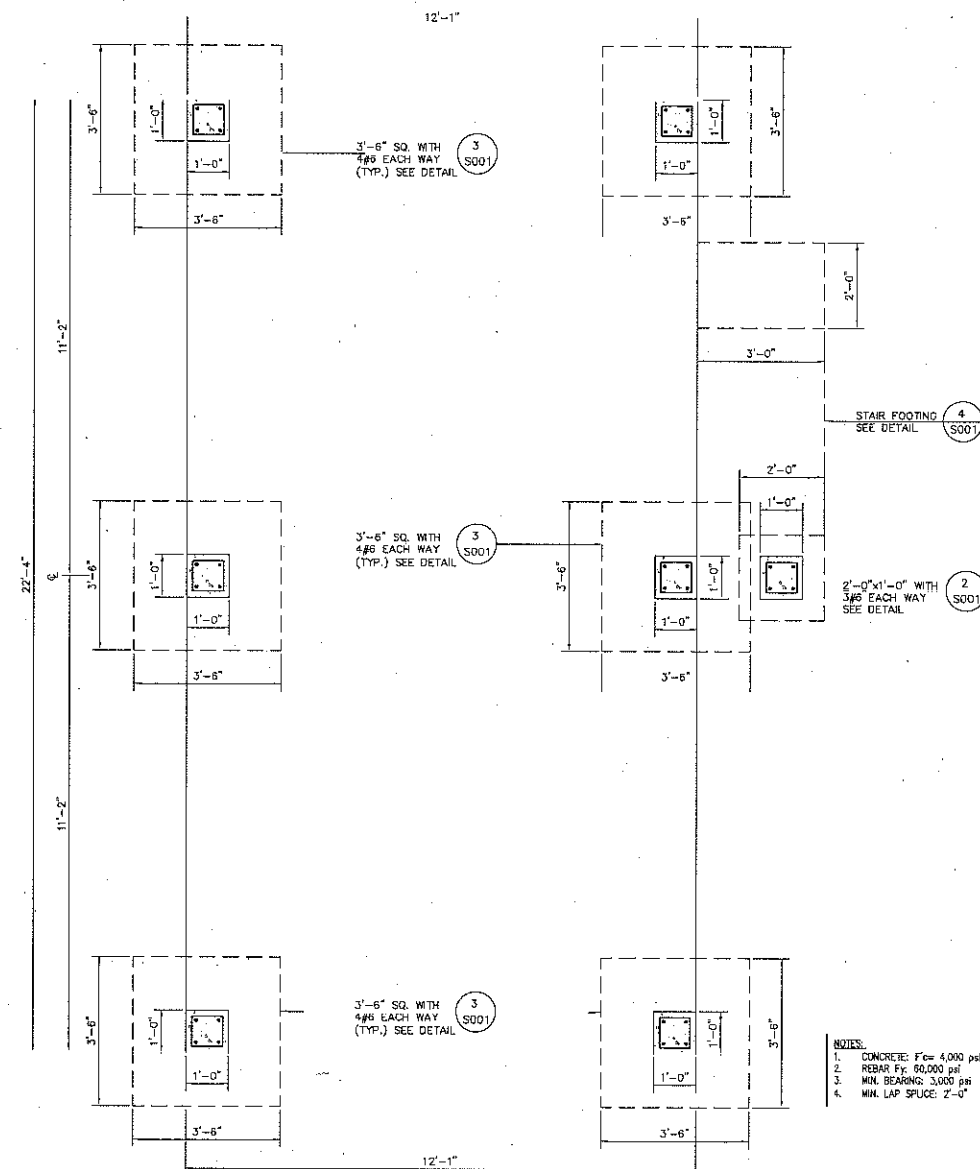
Project: BALL FIELDS SERVICE  
RECONSTRUCTION - SUPERSTORM SANDY  
BATTERY PARK CITY AUTHORITY  
Address: MANHATTAN  
NEW YORK, NY

Drawing Title:  
FOUNDATION & PART PLANS

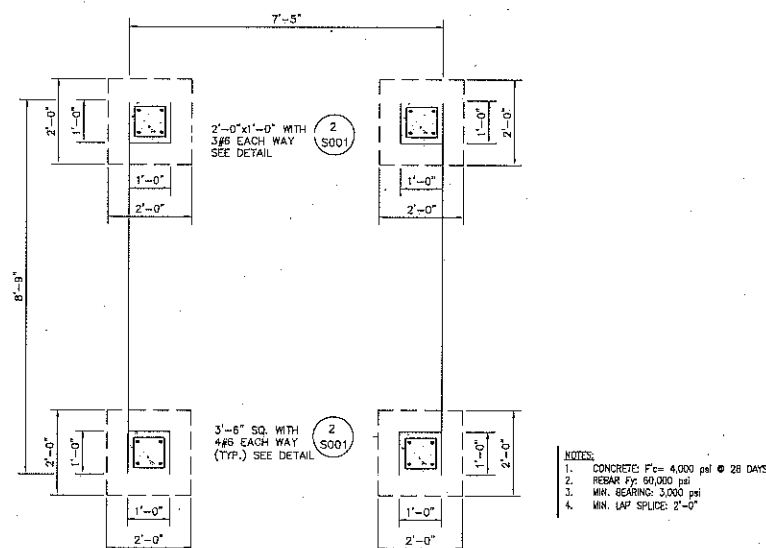
Drawing No.:

S002.00

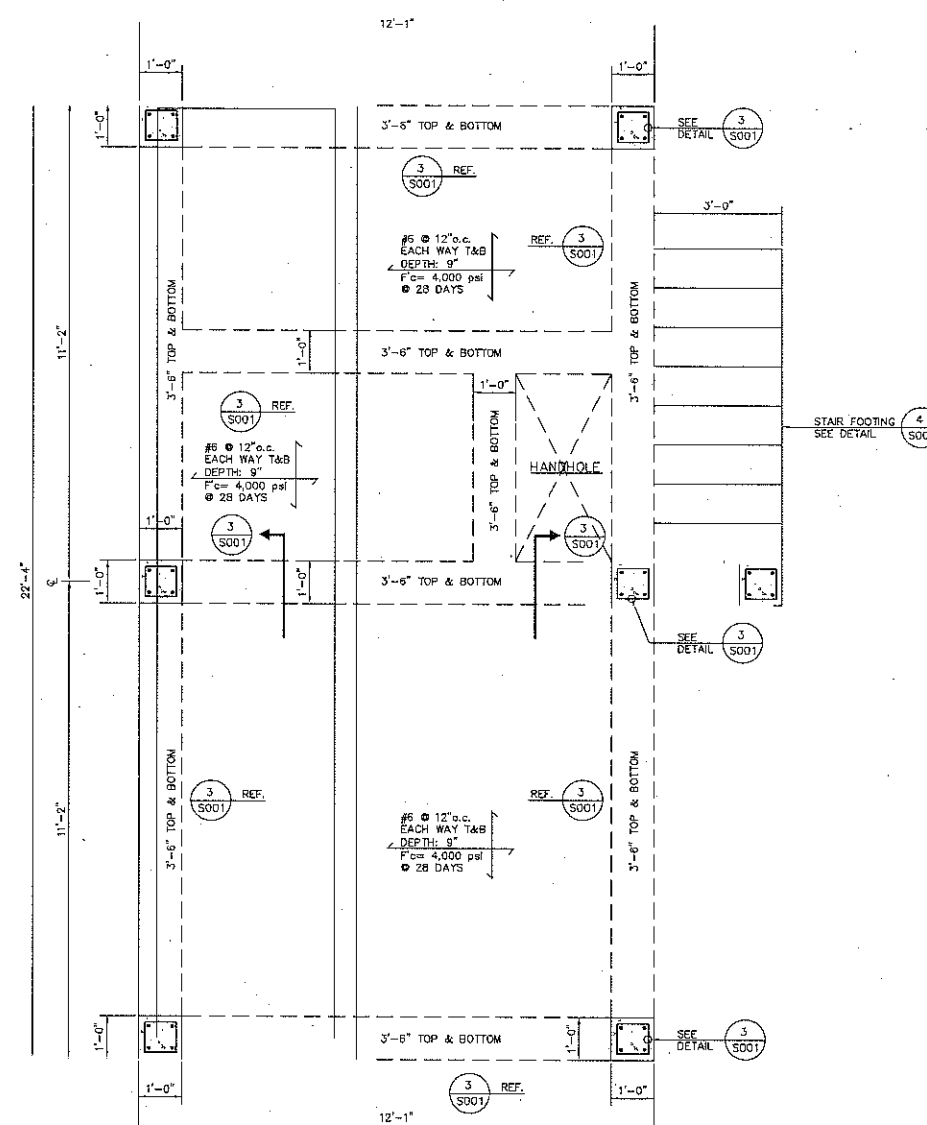
Sheets in Contract:  
12 of 12



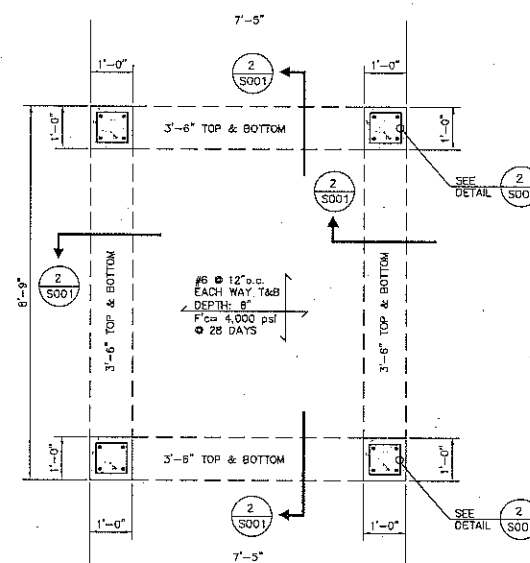
1 PARTIAL PLATFORM FOUNDATION PLAN - SERVICE SWITCHBOARD  
SCALE: 1/2"=1'-0"



3 PARTIAL PLATFORM FOUNDATION PLAN - ICE RINK EQUIPMENT  
SCALE: 1/2"=1'-0"



2 PARTIAL PLATFORM PLAN - SERVICE SWITCHBOARD  
SCALE: 1/2"=1'-0"



4 PARTIAL PLATFORM PLAN - ICE RINK EQUIPMENT  
SCALE: 1/2"=1'-0"

BATTERY PARK CITY AUTHORITY  
SPECIFICATIONS FOR Ball Field Service - SUPERSTORM SANDY

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4/29/2013

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\* \* \*

**SECTION 02201**  
**EARTHWORK**

**PART 1 - GENERAL****1.01 DESCRIPTION OF WORK**

- A. Remove all items designated to be removed and excavate for new construction, fill and backfill as required, prepare subgrades and place aggregate bases for pavements. Protect existing vegetation and all adjoining properties and existing structures from damage.

**1.02 RELATED SECTIONS**

- A. Asphaltic Concrete Paving.....Section 02511

**1.03 REFERENCES**

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

- A. American Society of Testing and Materials (ASTM) standards, latest editions.
- B. United States Department of Labor (USDOL), Occupational Safety and Health Administration (OSHA):  
  
29 CFR 1910, Occupational Safety and Health Standards
- G. All Applicable New York City Department of Environmental Protection (NYCDEP) Rules and Regulations
- H. All applicable New York City Department of Transportation (NYCDOT), Department of Sanitation (NYCDOS), Department of Buildings (NYCDOB), and Transit Authority (NYCTA) Rules and Regulations

**1.04 DEFINITIONS****A. Excavation**

Excavation is considered unclassified and consists of removal of material encountered to contract level, stockpiling, testing, loading, handling, transporting and subsequent legal disposal of such.

**B. Improvements**

Man-produced items such as concrete, brick, asphalt, piping, etc. Those items not naturally occurring.

**C. Non-Hazardous Excavated Material**

Material that may include or contain mixtures of the following: soil (including, but not limited to, natural undisturbed material), debris, concrete and concrete products (including steel or fiberglass reinforcing rods that are embedded in the concrete), asphalt pavement, brick, glass, rock, municipal solid waste, refuse, and incidental ash. This material includes material defined in Title 6 New York Code of Rules and Regulations 360-7.1(b)(1)(i) and will exceed 6 NYCRR 375-6 Unrestricted Use and Restricted Use Soil Cleanup Objectives and NYSDEC CP-51: Soil Cleanup Guidance Supplemental Soil Cleanup Objectives.

All material excavated from the site is assumed to meet the definition of non-hazardous excavated material.

**D. Environmentally Clean Fill and Backfill**

1. For fill and backfill proposed for use below cover material (as defined in the previous paragraph) and underneath areas with no potential for public contact (e.g., pavement), environmentally clean fill is defined as soil that has been tested utilizing methods which yield laboratory reporting limits that are below the regulatory comparison criteria and found to contain:

a. No detectable concentrations of volatile organic compounds;

- b. No other organic compounds or inorganic analytes at concentrations above the lower of DER-10 Technical Guidance for Site Investigation and Remediation, Appendix 5, "Allowable Constituent Levels for Imported Fill or Soil" Restricted Residential Use and Ecological Resources Soil Cleanup Objectives; and,
- c. No other organic compounds or inorganic analytes at concentrations above the lower of the NYSDEC CP-51: Soil Cleanup Guidance Residential Use, Protection of Ecological Resources, and Protection of Groundwater Supplemental Soil Cleanup Objectives.
- d. For sites with no ecological resources (as described in CP-51, Section V.C.) the Soil Cleanup Objectives for Ecological Resources shall not apply. The determination regarding whether ecological resources are present shall be made by the IEH Division of the Authority.

#### 1.05 SUBMITTALS

##### A. Product Data

Provide manufacturer's information on the compaction equipment to be used on each type of material for review.

##### B. Shop Drawings

Submit shop drawings and associated calculations for sheeting, shoring, and bracing. Shop drawings and calculations shall be signed and sealed by a New York State licensed professional

##### D. Quality Control Submittals

###### 1. Design Data:

Provide the following information:

- a. Gradation analysis for fill materials.
- b. Gradation analysis for aggregate bases.

- c. Gradation analysis for crushed stone.
- d. Material composition analysis of recycled concrete material.

2. Contractor Qualifications

Provide proof of Contractor qualifications specified under "Quality Assurance".

**1.06 QUALITY ASSURANCE**

A. Qualifications

- 1. Company specializing in performing the Work of this Section shall have a minimum of 3 years experience and shall have worked on 3 projects of similar size.

B. Regulatory Requirements

- 1. Work of this Section shall conform to all requirements of and all applicable regulations and guidelines of all governmental authorities having jurisdiction, including, but not limited to, safety, health, and anti-pollution regulations. Where more stringent requirements than those contained in the Building Code or other applicable regulations are given in this Section, the requirements of this Section shall govern.
- 2. Conform to requirements of "Safety and Health Standards, Subpart P - Excavations, Trenching and Shoring" - OSHA.

**1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Stockpile material in such a manner as to prevent erosion and dust. Provide silt curbs if necessary.
- B. Testing and certification of all imported environmentally clean fill and aggregate are the responsibilities of the Contractor.

**1.08 PROJECT/SITE CONDITIONS**

- A. Obtain all available on the site affecting or being affected by the project construction.
- B. Prior to clearing and removal or abandonment of improvements, ascertain the exact locations of all existing underground utilities. Protect these during subsequent operations.
  - 1. Demolish and remove underground utilities designated to be removed. Coordinate with utility companies for shut-off of services if lines are active.
  - 2. Consult immediately with the owner for directions should uncharted or incorrectly charted piping or other utilities be encountered during excavation. cooperate with the owner in keeping their respective services and facilities in operation. Repair damaged utilities to the satisfaction of the Utility Owner.
  - 3. Do not interrupt existing utilities serving facilities occupied others during occupied hours, except when permitted in writing by the owner, and only after acceptable temporary utility service has been provided. Do not proceed with interruption of services without providing a minimum of 48 -hours notice to the affected parties and receiving their written approval.
- C. Coordination

Examine drawings to determine sequence of operations, and relation to work of other trades. Start of work will signify acceptance of field conditions and will acknowledge coordination with other trades.

**1.09 SEQUENCING AND SCHEDULING**

- A. Perform work in such a manner to ensure a minimum interference with roads, walks, adjacent properties, and facilities to remain open. Do not close or obstruct these items without obtaining permission of the owner.

**PART 2 - PRODUCTS****2.01 MATERIALS**

## A. Restricted Excavated Material

Remove all debris not explicitly designated to be salvaged (to remain) from improvements and soil excavated during construction from premises and legally dispose of away from premises as part of the base bid. Any environmentally clean fill (as defined in Paragraph 1.04F of this Section and tested to meet such requirement) meeting the gradation requirements of Paragraph B below may be reused on the site pending credit to the Authority.

## B. Fill and Backfill

Only environmentally clean fill (as defined in Paragraph 1.04F of this Section) shall be used as fill and backfill. Composition shall consist of angular sands and gravels. Flat structured material such as mica (the main component of "mole" rock) falling into the acceptable gradation or other material affecting the permeability and structural characteristics of the sand material shall be no more than .4% of the total material. Material shall not contain salts or foreign materials of any kind and the material shall show a percentage of wear by the Los Angeles wear test (ASTM C131) of not more than 35%. These fill materials shall contain no particles exceeding 4" in the largest dimension. No more than 30% of the material by weight shall be retained on a  $\frac{3}{4}$ " sieve. Of the material passing the No. 4 sieve, no more than 10% shall pass the No. 200 sieve by weight. The Contractor shall provide the Authority with laboratory data on material proposed for use as fill/backfill. Samples shall be collected from imported material and material proposed for reuse on-site. The Contractor shall collect and analyze one representative sample of each material for every 500 cubic yards of imported fill/backfill brought to the site or material proposed for reuse on site for the complete list of 6 NYCRR Part 375 and NYSDEC CP-51 Supplemental Soil Cleanup Objectives Parameters as defined in Paragraph 1.04F.



## C. Aggregate Base

1. Aggregate base course, to be used under pavements shall be composed of crushed ledge rock (blue stone) or talus, roughly cubical or pyramidal in shape, and sand meeting the gradation and soundness requirements of New York State DOT, Item 3.04.02, Type 2. Material shall be uniform in quality and free of wood, loam, clay, dirt, roots, bark, and any other extraneous material. Material shall not contain salts or foreign materials of any kind. The aggregate shall be produced from material showing a percentage of wear by the Los Angeles wear test (ASTM C131) of not more than 35%.
2. Stone shall have the following gradation:

Sieve	Percent Passing by Weight
2"	100
1/4"	25-60
No. 40	5-40
No. 200	0-10

**2.02 EQUIPMENT**

- A. Provide proper compaction equipment to properly compact subgrade, fill and backfill, aggregate base, crushed stone and broken stone base.

**2.03 SOURCE QUALITY CONTROL**

1. Contractor's Responsibility

Inspections and testing performed by the Authority's agent(s) shall not relieve the Contractor of responsibility for performing all other testing and inspection specified herein or otherwise necessary to meet the quality control and quality assurance requirements of this Section.

**PART 3 - EXECUTION****3.01 EXAMINATION**

- A. Verification of Conditions

Verify existing site conditions match those of the Drawings and pre-bid inspections. Notify the Authority

in writing prior to commencement of Work of any discrepancies.

**B. Preparation**

1. Before starting any excavation work for new construction, ascertain the exact locations of all existing underground drain lines, piping, and conduits. Consult with the Mechanical Trades.
2. At location where any of the above services interfere with the excavation work, notify the Authority and Mechanical Trade under whose jurisdiction such work falls before continuing with any more excavation.

**3.02 PREPARATION AND PROTECTION**

**A. General**

1. Provide adequate protection measures to protect workmen and pedestrians at the site.
2. Prevent damage to existing improvements designated to remain. If they are damaged during construction, restore improvements to their original condition.
3. Prevent damage to improvements on the site. Restore damaged improvements to their original condition to the satisfaction of the owner. Restore grades and vegetation to their original condition or better.
4. Salvable Improvements
  - a. Carefully remove and protect all items to be saved and reused. Replace any items which are damaged by removal at own cost.
  - b. Notify the Authority in writing of any item which is damaged prior to removal so that they may ascertain the item's condition.

**B. Condition Survey**

1. General: The Contractor shall perform a condition survey of the adjoining structures prior to beginning excavation. Note damage to existing structures.

**C. Shoring, Sheeting, and Bracing****1. General**

- a. Inspect site, examine existing conditions and make all necessary preparations for the safe and proper sequence of work.
- b. Properly guard and protect excavations so as to prevent them from becoming dangerous to person or property.
- c. Brace, shore, and protect existing structures when excavations are made adjacent to the existing structures or within a distance that they will be affected by the excavation.
- d. Maintain sides and slope of excavation in safe condition until backfilling or other work is complete. Maintain shoring and bracing in place till completion of work.
- e. Provide materials for work in good serviceable order.
- f. All shoring, bracing, etc. is to be removed upon completion of the work where they are installed.

**C. Workability of Excavation Subgrade**

1. Take all steps necessary to prepare or improve existing conditions for proposed work, including general excavation throughout the project site.
2. Properly grade site and perform operations to avoid disturbing the existing subgrade and any intermediate subgrade.

3. If subgrade conditions are disturbed that prevent earthwork operations or safe operation of installation equipment, the Contractor shall take steps to improve subgrade conditions at own expense.

**3.03 EXCAVATION - GENERAL**

- A. No additional compensation will be allowed for excavation or foundation work carried below the levels shown on Drawings unless same has been authorized in writing by the Authority. Contractor is responsible for all remedial work due to unauthorized excavation.
- B. For pavements, excavate to depths required for installation of aggregate base or pavement as specified herein or shown on Drawings.
- C. Remove all excavated material from the site and legally dispose of away from the premises, in accordance with the requirements specified in this section. Burning of material on the site is not permitted.

**3.04 FILLING AND GRADING**

- A. Placement and Compaction of Aggregate Bases
  1. Provide aggregate base under all exterior pavements and wherever else indicated on the Drawings or specified herein. Provide crushed stone under all interior slabs. Provide 6" minimum unless specified otherwise elsewhere.
- B. Inspection
  1. Contractor's Responsibility: The Contractor shall notify the Authority at least 48 hours prior to filling operations, pouring of footings, and installation of excavation support to allow for the Authority to have the appropriate personnel at the site.
  2. Contractor's Inspections: Inspections and testing performed by the Authority shall not relieve the Contractor of responsibility for performing all

other testing and inspection specified herein or otherwise necessary to meet the quality control and quality assurance requirements of this Section.

C. Responsibility

1. All required testing and/or analysis not specifically defined as being provided by the Authority shall be provided by the Contractor as part of the included Work and costs of this Project.
2. No testing and/or analysis by the Authority shall relieve the Contractor of the responsibility of conforming to the requirements of these specifications.
3. Time for conducting the tests and/or inspections defined in these specifications shall be considered as part of the Work of this Project and neither extension of time nor additional costs shall be accepted as a result.

**3.04 PROTECTION**

- A. Protect graded and compacted areas from traffic and erosion. Keep free of trash and debris.
- B. When completed compacted areas are disturbed by subsequent construction or weather, scarify surface, re-shape, and compact to required density prior to further construction.
- C. Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

**END OF SECTION**

**LIST OF SUBMITTALS**

<b><u>SUBMITTAL</u></b>	<b><u>DATE SUBMITTED</u></b>	<b><u>DATE APPROVED</u></b>
Samples:	_____	_____
1. Fill and backfill		
2. Aggregate base		
3. Crushed stone		
Design Data:	_____	_____
1. Aggregate base		
Qualifications:	_____	_____
1. Contractor		

\* \* \*

## Template 1A

**Specification Section 02201**  
**Environmentally Clean Fill/Backfill Criteria**  
**Template for Summarizing Results of Analyses**  
**Sites with No Ecological Resources**

	Specification Section 02200 Criteria for Cover Material	Specification Section 02200 Criteria for Non-Contact Material	Insert Sample ID No. Insert Date of Sample Collection Insert Laboratory ID No. Insert Laboratory Name and ELAP No.
METALS	(mg/kg)	(mg/kg)	
Arsenic	13	16	
Barium	350	400	
Beryllium	7.2	47	
Cadmium	2.5	4.3	
Chromium, hexavalent	1	19	
Chromium, trivalent	30	180	
Cobalt	30	30	
Copper	50	270	
Cyanide (total)	27	27	
Iron	2,000	2,000	
Lead	63	400	
Manganese	1,600	2,000	
Mercury (total)	0.18	0.73	
Nickel	30	130	
Selenium	3.9	4	
Silver	2	8.3	
Vanadium	100	100	
Zinc	109	2,480	

	Specification Section 02200 Criteria for Cover Material (mg/kg)	Specification Section 02200 Criteria for Non-Contact Material (mg/kg)	Insert Sample ID No. Insert Date of Sample Collection Insert Laboratory ID No. Insert Laboratory Name and ELAP No.
PESTICIDES			
2,4,5-T	1.9	1.9	
2,4,5-TP Acid (SILVEX)	3.8	3.8	
2,4-D (2,4-Dichloro-phenoxyacetic acid)	0.5	0.5	
4,4'-DDD	0.0033	13	
4,4'-DDE	0.0033	8.9	
4,4'-DDT	0.0033	7.9	
Aldrin	0.005	0.097	
alpha-BHC	0.02	0.02	
alpha-Chlordane	0.094	2.9	
beta-BHC	0.036	0.09	
delta-BHC	0.04	0.25	
Dibenzofuran	6.2	59	
Dieldrin	0.005	0.1	
Endosulfan I <sup>1</sup>	2.4	24	
Endosulfan II <sup>1</sup>	2.4	24	
Endosulfan sulfate <sup>1</sup>	2.4	24	
Endrin	0.014	0.06	
gamma-BHC (Lindane)	0.1	0.1	
gamma-Chlordane	0.54	0.54	
Heptachlor	0.042	0.38	
Heptachlor epoxide	0.02	0.02	
Methoxychlor	100	100	
Parathion	1.2	1.2	
POLYCHLORINATED BIPHENYLS (PCBS)			
Aroclor-1016	0.1	1	
Aroclor-1221			
Aroclor-1232			
Aroclor-1242			
Aroclor-1248			
Aroclor-1254			
Aroclor-1260			
Aroclor-1262			
Aroclor-1268			
<sup>1</sup> The SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.			



	Specification Section 02200 Criteria for Cover Material	Specification Section 02200 Criteria for Non-Contact Material	Insert Sample ID No. Insert Date of Sample Collection Insert Laboratory ID No. Insert Laboratory Name and ELAP No.
SEMIVOLATILE ORGANIC COMPOUNDS	(mg/kg)	(mg/kg)	
2,4,5-Trichlorophenol	0.1	0.1	
2,4-Dichlorophenol	0.40	0.40	
2,4-Dinitrophenol	0.2	0.2	
2,6-Dinitrotoluene	1.0	1.0	
2-Chlorophenol	100	100	
2-Methylnaphthalene	0.41	0.41	
2-Nitroaniline	0.4	0.4	
2-Nitrophenol	0.3	0.3	
3-Nitroaniline	0.5	0.5	
4-Chloroaniline	0.22	0.22	
4-Methyl-2-pentanone	1.0	1.0	
4-Nitrophenol	0.1	0.1	
Acenaphthene	20	98	
Acenaphthylene	100	100	
Aniline	0.33	0.33	
Anthracene	100	100	
Benzo(a)anthracene	1	1	
Benzo(a)pyrene	1	1	
Benzo(b)fluoranthene	1	1	
Benzo(g,h,i)perylene	100	100	
Benzo(k)fluoranthene	0.8	1.7	
Benzoic Acid	2.7	2.7	
Bis(2-ethylhexyl)phthalate	50	50	
Butylbenzyl-phthalate	100	100	
Chloroethane	1.9	1.9	
Chrysene	1	1	
Dibenz(a,h)anthracene	0.33	0.33	
Diethylphthalate	7.1	7.1	
Dimethylphthalate	27	27	
Di-n-butylphthalate	8.1	8.1	
Di-n-octylphthalate	100	100	
Fluoranthene	100	100	
Fluorene	30	100	
Hexachlorobenzene	0.41	0.41	
Indeno(1,2,3-cd)pyrene	0.5	0.5	
Isophorone	4.4	4.4	
m-Cresol (3-Methylphenol)	0.33	0.33	
Naphthalene	12	12	
Nitrobenzene	0.17	0.17	
o-Cresol (2-Methylphenol)	0.33	0.33	
p-Cresol (4-Methylphenol)	0.33	0.33	
Pentachlorophenol	0.8	0.8	
Phenanthrene	100	100	
Phenol	0.33	0.33	
Pyrene	100	100	

	Specification Section 02200 Maximum Reporting Limit (mg/kg)	Insert Sample ID No. Insert Date of Sample Collection Insert Laboratory ID No. Insert Laboratory Name and ELAP No.
VOLATILE ORGANIC COMPOUNDS		
1,1,1-Trichloroethane	0.68	
1,1,2,2-Tetrachloroethane	0.6	
1,1-Dichloroethane	0.27	
1,1-Dichloroethene	0.33	
1,2,3-Trichloropropane	0.34	
1,2,4-Trichlorobenzene	3.4	
1,2,4-Trimethylbenzene	3.6	
1,2-Dichlorobenzene	1.1	
1,2-Dichloroethane	0.02	
1,3,5-Trimethylbenzene	8.4	
1,3-Dichlorobenzene	2.4	
1,3-Dichloropropane	0.3	
1,4-Dichlorobenzene	1.8	
1,4-Dioxane	0.1	
2,6-Dinitrotoluene	0.17	
4-Methyl-2-Pentanone	1.0	
Acetone	0.05	
Benzene	0.06	
Carbon Disulfide	2.7	
Carbon Tetrachloride	0.76	
Chlorobenzene	1.1	
Chloroform	0.37	
cis-1,2-Dichloroethene	0.25	
Ethylbenzene	1	
Freon 113 (1,1,2-TFE)	6	
Hexachlorobenzene	0.33	
Isopropylbenzene	2.3	
Methyl ethyl ketone (2-Butanone)	0.12	
Methyl tert-butyl ether (MTBE)	0.93	
Methylene chloride	0.05	
n-Butylbenzene	12	
n-Propylbenzene	3.9	
p-Isopropyltoluene	10	
sec-Butylbenzene	11	
tert-Butylbenzene	5.9	
Tetrachloroethene	1.3	
Toluene	0.7	
trans-1,2-Dichloroethene	0.19	
Trichloroethene	0.47	
Vinyl Chloride	0.02	
Xylene (mixed)	0.26	

## Template 1B

Specification Section 02201  
 Environmentally Clean Fill/Backfill Criteria  
 Template for Summarizing Results of Analyses  
 Sites with Ecological Resources

	Specification Section 02200 Criteria for Cover Material (mg/kg)	Specification Section 02200 Criteria for Non-Contact Material (mg/kg)	Insert Sample ID No. Insert Date of Sample Collection Insert Laboratory ID No. Insert Laboratory Name and ELAP No.
<b>METALS</b>			
Aluminum	10,000	10,000	
Antimony	12	12	
Arsenic	13	13	
Barium	350	400	
Beryllium	7.2	10	
Boron	0.5	0.5	
Cadmium	2.5	4	
Calcium	10,000	10,000	
Chromium, hexavalent	1	1	
Chromium, trivalent	30	41	
Cobalt	20	20	
Copper	50	50	
Cyanide (total)	27	27	
Iron	2,000	2,000	
Lead	63	63	
Lithium	2	2	
Manganese	1,600	1,600	
Mercury (total)	0.18	0.18	
Molybdenum	2	2	
Nickel	30	30	
Selenium	3.9	3.9	
Silver	2	2	
Technetium	0.2	0.2	
Thallium	5	5	
Tin	50	50	
Uranium	5	5	
Vanadium	39	39	
Zinc	109	109	

	Specification Section 02200 Criteria for Cover Material (mg/kg)	Specification Section 02200 Criteria for Non-Contact Material (mg/kg)	Insert Sample ID No. Insert Date of Sample Collection Insert Laboratory ID No. Insert Laboratory Name and ELAP No.
PESTICIDES			
2,3,7,8-TCDD	0.000001	0.000001	
2,3,7,8-TCDF	0.000001	0.000001	
2,4,5-T	1.9	1.9	
2,4,5-TP Acid (SILVEX)	3.8	3.8	
2,4-D (2,4-Dichloro-phenoxyacetic acid)	0.5	0.5	
4,4'-DDD	0.0033	0.0033	
4,4'-DDE	0.0033	0.0033	
4,4'-DDT	0.0033	0.0033	
Aldrin	0.005	0.097	
alpha-BHC	0.02	0.02	
alpha-Chlordane	0.094	1.3	
beta-BHC	0.036	0.09	
Biphenyl	60	60	
Chlordecone (Kepone)	0.06	0.06	
delta-BHC	0.04	0.04	
Dibenzofuran	6.2	59	
Dieldrin	0.005	0.006	
Endosulfan I <sup>1</sup>	2.4	24	
Endosulfan II <sup>1</sup>	2.4	24	
Endosulfan sulfate <sup>1</sup>	2.4	24	
Endrin	0.014	0.014	
Furan	600	600	
gamma-BHC (Lindane)	0.1	0.1	
gamma-Chlordane	0.54	0.54	
Heptachlor	0.042	0.14	
Heptachlor epoxide	0.02	0.02	
Methoxychlor	1.2	1.2	
Parathion	1.2	1.2	
POLYCHLORINATED BIPHENYLS (PCBS)			
Aroclor-1016	0.1	1	
Aroclor-1221			
Aroclor-1232			
Aroclor-1242			
Aroclor-1248			
Aroclor-1254			
Aroclor-1260			
Aroclor-1262			
Aroclor-1268			
<sup>1</sup> The SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.			

	Specification Section 02200 Criteria for Cover Material	Specification Section 02200 Criteria for Non-Contact Material	Insert Sample ID No. Insert Date of Sample Collection Insert Laboratory ID No. Insert Laboratory Name and ELAP No.
SEMIVOLATILE ORGANIC COMPOUNDS	(mg/kg)	(mg/kg)	
1,2,3,6,7,8-HCDF	0.00021	0.00021	
2,3,4,5-Tetrachlorophenol	20	20	
2,3,5,6-Tetrachloroaniline	20	20	
2,4,5-Trichloroaniline	20	20	
2,4,5-Trichlorophenol	0.1	0.1	
2,4,6-Trichlorophenol	10	10	
2,4-Dichlorophenol	0.40	0.40	
2,4-Dinitrophenol	0.2	0.2	
2,6-Dinitrotoluene	1.0	1.0	
2-Chlorophenol	0.8	0.8	
2-Methylnaphthalene	0.41	0.41	
2-Nitroaniline	0.4	0.4	
2-Nitrophenol	0.3	0.3	
3,4-Dichlorophenol	20	20	
3-Chloroaniline	20	20	
3-Chlorophenol	7	7	
3-Nitroaniline	0.5	0.5	
4-Chloroaniline	0.22	0.22	
4-Methyl-2-pentanone	1.0	1.0	
4-Nitrophenol	0.1	0.1	
Acenaphthene	20	20	
Acenaphthylene	100	100	
Aniline	0.33	0.33	
Anthracene	100	100	
Benzo(a)anthracene	1	1	
Benzo(a)pyrene	1	1	
Benzo(b)fluoranthene	1	1	
Benzo(g,h,i)perylene	100	100	
Benzo(k)fluoranthene	0.8	1.7	
Benzoic Acid	2.7	2.7	
Bis(2-ethylhexyl)phthalate	50	50	
Butylbenzyl-phthalate	100	100	
Chloroethane	1.9	1.9	
Chrysene	1	1	
Dibenz(a,h)anthracene	0.33	0.33	
Diethylphthalate	7.1	7.1	
Dimethylphthalate	27	27	
Di-n-butylphthalate	0.014	0.014	
Di-n-hexyl-phthalate	0.91	0.91	
Di-n-octylphthalate	100	100	
Fluoranthene	100	100	
Fluorene	30	100	
Hexachlorobenzene	0.41	0.41	
Indeno(1,2,3-cd)pyrene	0.5	0.5	
Isophorone	4.4	4.4	
m-Cresol (3-Methylphenol)	0.33	0.33	
Naphthalene	12	12	
Nitrobenzene	0.17	0.17	
o-Cresol (2-Methylphenol)	0.33	0.33	
p-Cresol (4-Methylphenol)	0.33	0.33	
Pentachloroaniline	100	100	
Pentachlorophenol	0.8	0.8	
Phenanthrene	100	100	
Phenol	0.33	0.33	
Pyrene	100	100	

	Specification Section 02200 Maximum Reporting Limit (mg/kg)	Insert Sample ID No. Insert Date of Sample Collection Insert Laboratory ID No. Insert Laboratory Name and ELAP No.
VOLATILE ORGANIC COMPOUNDS		
1,1,1-Trichloroethane	0.68	
1,1,2,2-Tetrachloroethane	0.6	
1,1-Dichloroethane	0.27	
1,1-Dichloroethene	0.33	
1,2,3,4-Tetrachlorobenzene	10	
1,2,3-Trichlorobenzene	20	
1,2,3-Trichloropropane	0.34	
1,2,4-Trichlorobenzene	3.4	
1,2,4-Trimethylbenzene	3.6	
1,2-Dichlorobenzene	1.1	
1,2-Dichloroethane	0.02	
1,2-Dichloropropane	700	
1,3,5-Trimethylbenzene	8.4	
1,3-Dichlorobenzene	2.4	
1,3-Dichloropropane	0.3	
1,4-Dichlorobenzene	1.8	
1,4-Dioxane	0.1	
2,4-Dichloroaniline	100	
2,6-Dinitrotoluene	0.17	
3,4-Dichloroaniline	20	
4-Methyl-2-Pentanone	1.0	
Acetone	0.05	
Benzene	0.06	
Carbon Disulfide	2.7	
Carbon Tetrachloride	0.76	
Chloroacetamide	2	
Chlorobenzene	1.1	
Chloroform	0.37	
cis-1,2-Dichloroethene	0.25	
Dibromochloromethane	10	
Ethylacetate	48	
Ethylbenzene	1	
Freon 113 (1,1,2-TFE)	6	
Hexachlorobenzene	0.33	
Hexachlorocyclopentadiene	10	
Isopropylbenzene	2.3	
Methanol	6.5	
Methyl ethyl ketone (2-Butanone)	0.12	
Methyl tert-butyl ether (MTBE)	0.93	
Methylene chloride	0.05	
n-Butylbenzene	12	
n-Nitrosodiphenylamine	20	
n-Propylbenzene	3.9	
Pentachlorobenzene	20	
Pentachloronitrobenzene	10	
p-Isopropyltoluene	10	
sec-Butylbenzene	11	
Styrene	300	
tert-Butylbenzene	5.9	
Tetrachloroethene	1.3	
Toluene	0.7	
trans-1,2-Dichloroethene	0.19	
Trichloroethene	0.47	
Vinyl Chloride	0.02	
Xylene (mixed)	0.26	

***Template 2***

**Excavated Materials Disposal Plan (EMDP) for Larger Earthwork Projects**  
***(Insert School/Site Name and Address)***  
***(Date)***

General notes regarding this template:

1. The EMDP **must** be signed by a Certified Hazardous Materials Manager approved by the Institute of Hazardous Materials Management in Rockville, Maryland, or Qualified Environmental Professional, approved by the Institute of Professional Environmental Practice, Pittsburgh, Pennsylvania, or similar board-certified profession.
2. Directions to EMDP preparers are provided within this template as ***bold and italicized*** text. In general, bold ***and italicized*** text indicates where information unique to the Site is to be inserted by the writer.



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Introduction

This Excavated Materials Disposal Plan (EMDP) describes the procedures to be followed for the characterization, excavation, management, transportation and disposal of material excavated at \_\_\_\_\_ (*insert Site name and location*) in accordance with SCA Specification Section 02201, (*insert Design # and date*). This work will be performed by \_\_\_\_\_ (*insert name of excavation contractor*) under contract with \_\_\_\_\_ (*insert name of general contractor, if applicable*).

Project activities associated with this EMDP include the characterization, excavation, management, transportation, and disposal of approximately \_\_\_\_\_ (*insert amount*) cubic yards of non-hazardous excavated material (*change to appropriate category if the EMDP is being prepared for non-hazardous industrial waste, petroleum contaminated material, and/or hazardous waste*) for the construction of the \_\_\_\_\_ (*insert project type – new school, addition, flood elimination project, etc.*).

All material excavated from the Site is assumed to meet the definition of non-hazardous excavated material (*change to appropriate category if the EMDP is being prepared for non-hazardous industrial waste, petroleum contaminated material and/or hazardous waste*). According to Specification Section 02201, Section 1.0, the following definitions apply to this project: (*conform below with the project specifications*)

Non-Hazardous Excavated Material

Material that may include or contain mixtures of the following: soil (including, but not limited to, natural undisturbed material), debris, concrete and concrete products (including steel or fiberglass reinforcing rods that are embedded in the concrete), asphalt pavement, brick, glass, rock, municipal solid waste, refuse, and incidental ash. This material includes material defined in Title 6 New York Code of Rules and Regulations 360-7.1(b)(1)(i) and will exceed 6 NYCRR 375-6 Unrestricted Use and Restricted Use Soil Cleanup Objectives and NYSDEC CP-51: Soil Cleanup Guidance Supplemental Soil Cleanup Objectives.

All material excavated from the site is assumed to meet the definition of non-hazardous excavated material.

Petroleum-Contaminated Material

Material (soil, concrete, sediment, UST contents, fill, debris, etc.) that meets the NYSDEC STARS Memo #1 definition of petroleum-contaminated material from known source areas. Petroleum-contaminated material shall be evidenced by the following observations **and** be from a known source area: producing higher than background responses on a portable vapor meter such as a photo ionization detector or flame ionization detector, petroleum-like odor, visual impacts (e.g., staining or discoloration), proximity to known releases from existing or historic petroleum storage tanks or systems, and exceed the soil cleanup levels for gasoline and/or fuel oil contaminated soil provided in the NYSDEC CP-51: Soil Cleanup Guidance. The determination as to whether the excavated material is petroleum-contaminated or is non-petroleum contaminated material will be made by analytical testing of representative material samples. All sampling shall be performed under the supervision of the Authority's IEH Division or its representative. The Contractor shall provide the IEH Division with qualitative and quantitative information, and the IEH Division shall make the final determination as to whether or not the material is petroleum-contaminated and the appropriate disposal.

Hazardous Waste

Material meeting the definition of a Resource Conservation and Recovery Act hazardous waste as defined in 40 CFR Part 261, New York State ECL Section 27-09 or 6 NYCRR Part 371.

Environmentally Clean Fill and Backfill

Refer to Section 02201 for definition and requirements associated with fill and backfill.

**A. PRE-EXCAVATION UTILITY SURVEYS**

- 1. Describe how buried utilities (e.g. electric, gas, water, sewers, telephone, etc.) will be located and marked out.*
- 2. Describe how utility mark-out information will be provided to the Authority.*
- 3. Confirm appropriate contact will be made with underground facilities protective organizations in accordance with applicable laws and regulations.*

**B. WASTE CHARACTERIZATION SAMPLING**

Waste characterization samples will be collected and analyzed in accordance with the proposed disposal facility(ies) requirements, outlined in Section D.

*(Describe the type of soil sampling – i.e., will the sampling be performed in-situ [with a Geoprobe] or will samples be collected from excavated stockpiles.)*

*Describe the soil sampling frequency and analyte list. For example, use text such as...*

A total of \_\_\_\_(*insert number*) soil samples will be collected for analysis. This number of soil samples equates to one sample for every 500 cubic yards (*change as required based on disposal facility requirements*) of excavated material. Each sample will be analyzed for the following parameters:

- Volatile organic compounds (VOCs) by USEPA Method 8260
- Semi-volatile organic compounds (SVOCs) by USEPA Method 8270
- Polychlorinated biphenyls (PCBs) by USEPA Method 8082
- Pesticides via USEPA Method 8081
- Herbicides via USEPA Method 8151
- RCRA Metals via USEPA Method 6010
- Mercury via USEPA Method 7471

In addition, a total of \_\_\_\_(*insert number*) samples, one soil sample for every 5,000 cubic yards (*change as required based on disposal facility requirements*), will be collected and analyzed for the following parameters:

- RCRA Characteristics
- Full TCLP

*Introduce and provide a to-scale site plan (Figure 1). Figure 1 shall show the site, an outline of the proposed new construction, proposed excavation areas, and quantities of excavated materials.*

*Introduce and provide a to-scale sampling plan (Figure 2). Figure 2 shall show the Site, the locations on the Site where soil samples shall be collected, and which discrete soil samples shall make up composite sample(s), as applicable. Note that the Figure should show sampling grids with estimated average depths of excavation in each grid.*

Discrete grab samples will be collected for VOCs. A five-point (*change as required based on disposal facility requirements*) composite sample will be collected for all other analytes listed above. Samples will be analyzed by \_\_\_\_\_ (*insert name and address of laboratory*), a New York State Department of Health Environmental Laboratory Approval Program (ELAP) -certified laboratory.

After sample collection, the soil samples will be shipped to the NYSDOH ELAP certified

laboratory in chilled coolers, and accompanied by appropriate chain of custody records. Analytical results will be provided to the proposed disposal facilities for their review and approval. In addition, the results will be submitted to the NYCSCA's IEH Division. A letter on \_\_\_\_\_(*insert excavation contractor name*) letterhead will be provided to the NYCSCA that states that all available analytical data has been provided to the disposal facility. The disposal facility(ies) will provide an original signed letter indicating that the soil meets the acceptance criteria for their facility(ies) and the excavated material is accepted for disposal. This letter will be forwarded to the NYCSCA upon receipt.

**C. MANAGEMENT OF EXCAVATED SOIL**

*(Describe the procedures for excavation work – for instance, number and types of excavators? Is there any hand excavation work anticipated?)*

On-site personnel involved in excavation activities shall comply with applicable Occupational Safety and Health Administration (OSHA) rules and regulations, New York City Department of Buildings (NYCDOB) requirements, and the Health and Safety Plan (HASP) presented as Appendix A to this EMDP.

Excavated soil, if not directly loaded into trucks for transportation and disposal, will be stockpiled on-site. Stockpiles will be placed on and covered with heavy duty tarps secured by sand bags.

Dust suppression will be performed during work activities where the potential for elevated dust conditions exists. Water will be used to spray/mist excavation areas in these instances. There will be no visible dust emissions from the work areas. Other dust suppression techniques which may be utilized include speed limits for trucks in unpaved areas, maintenance of Site paving as long as practical, and minimization of excavation activities during periods of high winds. *(Note – if a community air monitoring program [CAMP] is required by the specifications, briefly describe the CAMP requirements and implementation.)*

**D. DISPOSAL FACILITIES AND WASTE HAULERS**

Excavated material transportation will be performed by licensed transporters with valid NYSDEC 6 NYCRR 364 Waste Transporter Permits. All proposed disposal facilities shall be listed on the waste transporter permits. Loaded vehicles leaving the Site will be appropriately cleaned, lined, and covered in accordance with applicable laws and regulations. The proposed licensed transporters with valid 6 NYCRR 364 Permits for this project are as follows:

- *Transporter 1 Name and Address*  
*NYSDEC Part 364 Waste Transporter Permit # and Date of Expiration –*  
*Disposal Facilities permitted for transport to -*
- *Transporter 2 Name and Address*  
*NYSDEC Part 364 Waste Transporter Permit # and Date of Expiration –*  
*Disposal Facilities permitted for transport to -*
- *Transporter 3 Name and Address*  
*NYSDEC Part 364 Waste Transporter Permit # and Date of Expiration –*  
*Disposal Facilities permitted for transport to -*
- *Add additional haulers as necessary*

Please refer to Appendix B for copies of the waste transporter permits.

Non-hazardous excavated material shall be transported to an off-site disposal facility meeting the requirements of 6 NYCRR Part 360 or equivalent out-of-state facility approved by the appropriate regulatory agency of that State with a permit to receive non-hazardous excavated material. (*Note - change to appropriate category if the EMDP is being prepared for non hazardous industrial waste, hazardous waste and/or petroleum contaminated material*).

The proposed disposal facilities meeting the criteria described above for this project are as follows:

- *Disposal Facility 1 Name and Name of Owner*  
*Address and Phone Number -*  
*Type of Permit (i.e., Part 360?, NJDEP?, etc.)*
- *Disposal Facility 2 Name and Name of Owner*  
*Address and Phone Number -*  
*Type of Permit (i.e., Part 360?, NJDEP?, etc.)*
- *Disposal Facility 3 Name and Name of Owner*  
*Address and Phone Number -*  
*Type of Permit (i.e., Part 360?, NJDEP?, etc.)*
- *Add additional disposal facilities as necessary*

Please refer to Appendix C for copies of the disposal facility permits and soil testing requirements, and acceptance criteria for each proposed disposal facility.

Waste characterization data will be provided to the proposed disposal facilities for their review and approval. An original signed approval letter from each disposal facility will be submitted to



the NYCSCA IEH Division at least 48 hours prior to transportation and off-site disposal.

If the excavated material is rejected by the above proposed disposal facilities for any reason, an alternate disposal facility (including required documentation) meeting the requirements of the Specification Section 02201 will be proposed for NYCSCA IEH Division's consideration.

**E. QUALITY ASSURANCE/ QUALITY CONTROL**

A qualified person will coordinate and manage the sampling and analysis program, management, transportation, and disposal of excavated materials from the Site. \_\_\_\_\_ (*insert name of the qualified person and the excavation firm responsible for these activities*) will direct these activities.

Laboratories used will be NYSDOH ELAP certified laboratories. The laboratories will communicate directly with the samplers regarding the analytical results and reporting and will be responsible for providing all labels, sample containers, trip blanks, shipping coolers, and laboratory documentation.

Periodic quality assurance/quality control (QA/QC) audits of the EMDP will be performed by the Contractor, and may also be performed by the NYCSCA, or the NYCSCA's auditors. Any items noted to be in non-compliance will be documented and audit findings will be presented to \_\_\_\_\_ (*insert name of excavation firm*) for resolution (with a copy to the NYCSCA IEH Division). Verification of resolution(s) will be determined through re-inspecting or re-auditing the non-compliant item.

All records regarding the removal and disposal of excavated materials shall be maintained by \_\_\_\_\_ (*insert name of excavation firm*) at the project site. These records will be made available to the NYCSCA or their designated representatives at their request. Shipping manifests and/or bills of lading for excavated material will be provided to the NYCSCA on a daily basis.

**F. SIGNATURE OF CERTIFIED PREPARER**

\_\_\_\_\_ (*insert name, certification*) has prepared this EMDP for the  
\_\_\_\_\_ (*insert site name, address, and type of work being  
performed*) in accordance with the requirements of Specification Section 02201. Additionally,  
\_\_\_\_\_ (*insert name*) hereby certifies that (*he/she*) is a currently  
licensed/certified \_\_\_\_\_ (*insert correct certification - Certified  
Hazardous Materials Manager approved by the Institute of Hazardous Materials Management in  
Rockville, Maryland, or Qualified Environmental Professional, approved by the Institute of  
Professional Environmental Practice, Pittsburgh, Pennsylvania, or similar board-certified  
profession*).

PREPARED BY: \_\_\_\_\_  
*Name*  
*Certification and Certification Number*

**FIGURES**

**APPENDIX A**  
**HEALTH AND SAFETY PLAN**

**APPENDIX B**  
**WASTE TRANSPORTER PERMITS**

**APPENDIX C**

**DISPOSAL FACILITY PERMITS AND SUPPORTING  
DOCUMENTATION**

(including a copy of the NYSDEC Part 360 Permit or equivalent out of state regulatory agency  
permit)

*Template 2*

**Excavated Materials Disposal Plan (EMDP) for Smaller Earthwork Projects**  
*(Insert School/Site Name and Address)*  
*(Date)*

General notes regarding this template:

1. This template should be used if the net cut is expected to be 100 cubic yards or less.
2. Directions to EMDP preparers are provided within this template as ***bold and italicized*** text. In general, bold ***and italicized*** text indicates where information unique to the Site is to be inserted by the writer



**Introduction**

This Excavated Materials Disposal Plan (EMDP) describes the procedures to be followed for the characterization, excavation, management, transportation and disposal of material excavated at \_\_\_\_\_ (*insert Site name and location*) in accordance with SCA Specification Section 02201, (*insert Design # and date*). This work will be performed by \_\_\_\_\_ (*insert name of excavation contractor*) under contract with \_\_\_\_\_ (*insert name of general contractor, if applicable*).

Project activities associated with this EMDP include the characterization, excavation, management, transportation, and disposal of approximately \_\_\_\_\_ (*insert amount*) cubic yards of non-hazardous excavated material for the construction of the \_\_\_\_\_ (*insert project type – new school, addition, flood elimination project, etc.*).

All material excavated from the Site is assumed to meet the definition of non-hazardous excavated material. According to Specification Section 02201, Section 1.0, the following definition applies to this project: (*conform below with the project specifications*)

**Non-Hazardous Excavated Material**

Material that may include or contain mixtures of the following: soil (including, but not limited to, natural undisturbed material), debris, concrete and concrete products (including steel or fiberglass reinforcing rods that are embedded in the concrete), asphalt pavement, brick, glass, rock, municipal solid waste, refuse, and incidental ash. This material includes material defined in Title 6 New York Code of Rules and Regulations 360-7.1(b)(1)(i) and will exceed 6 NYCRR 375-6 Unrestricted Use and Restricted Use Soil Cleanup Objectives and NYSDEC CP-51: Soil Cleanup Guidance Supplemental Soil Cleanup Objectives.

**Excavation Procedures**

Prior to excavation a pre-excavation utility survey will be performed. *Describe how buried utilities (e.g. electric, gas, water, sewers, telephone, etc.) will be located and marked out.*

On-site personnel involved in excavation activities shall comply with applicable Occupational Safety and Health Administration (OSHA) rules and regulations, and New York City Department of Buildings (NYCDOB) requirements.

Excavated soil, if not directly loaded into trucks for transportation and disposal, will be stockpiled on-site. Stockpiles will be placed on and covered with heavy duty tarps secured by sand bags.

Dust suppression will be performed during work activities where the potential for elevated dust conditions exists. Water will be used to spray/mist excavation areas in these instances. There will be no visible dust emissions from the work areas. Other dust suppression techniques which may be utilized include speed limits for trucks in unpaved areas, maintenance of Site paving as long as practical, and minimization of excavation activities during periods of high winds.

**Proposed Waste Transporters and Disposal Facilities**

Excavated material transportation will be performed by licensed transporters with valid NYSDEC 6 NYCRR 364 Waste Transporter Permits. All proposed disposal facilities shall be listed on the waste transporter permits. Loaded vehicles leaving the Site will be appropriately

cleaned, lined, and covered in accordance with applicable laws and regulations. The proposed licensed transporters with valid 6 NYCRR 364 Permits for this project are as follows:

- *Transporter 1 Name and Address*  
*NYSDEC Part 364 Waste Transporter Permit # and Date of Expiration –*  
*Disposal Facilities permitted for transport to -*
- *Transporter 2 Name and Address*  
*NYSDEC Part 364 Waste Transporter Permit # and Date of Expiration –*  
*Disposal Facilities permitted for transport to -*
- *Add additional haulers as necessary*

Non-hazardous excavated material shall be transported to an off-site disposal facility meeting the requirements of 6 NYCRR Part 360 or equivalent out-of-state facility approved by the appropriate regulatory agency of that State with a permit to receive non-hazardous excavated material.

The proposed disposal facilities meeting the criteria described above for this project are as follows:

- *Disposal Facility 1 Name and Name of Owner*  
*Address and Phone Number -*  
*Type of Permit (i.e., Part 360?, NJDEP?, etc.)*
- *Disposal Facility 2 Name and Name of Owner*  
*Address and Phone Number -*  
*Type of Permit (i.e., Part 360?, NJDEP?, etc.)*
- *Add additional disposal facilities as necessary*

Waste characterization samples will be collected and analyzed in accordance with the proposed disposal facility(ies) requirements. Waste characterization data will be provided to the proposed disposal facilities for their review and approval. An original signed approval letter from each disposal facility will be submitted to the NYCSCA IEH Division at least 48 hours prior to transportation and off-site disposal.

If the excavated material is rejected by the above proposed disposal facilities for any reason, an alternate disposal facility (including required documentation) meeting the requirements of the Specification Section 02201 will be proposed for NYCSCA IEH Division's consideration.

Please refer to Appendix A for copies of the waste transporter permits, disposal facility permits and soil testing requirements, and acceptance criteria for each proposed disposal facility.

**APPENDIX A**

**WASTE TRANSPORTER AND DISPOSAL FACILITY PERMITS AND  
SUPPORTING DOCUMENTATION**

**SECTION 03733**  
**CONCRETE REPAIR WORK**

**PART 1 - GENERAL****1.01 DESCRIPTION OF WORK**

- A. Provide labor, materials, equipment, and services to provide for the structural repair of concrete members with manufactured structural repair concrete/mortar as shown on Drawings and as specified herein. Work includes removing spalled concrete and cleaning and coating of exposed steel reinforcement.

**1.02 RELATED SECTIONS**  
(NOT USED)**1.03 REFERENCE STANDARDS**

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

- A. American Society of Testing and Materials (ASTM)
- B. International Concrete Restoration Institute (ICRI)

**1.04 SUBMITTALS**

- A. Product Data

Provide manufacturer's information on the anti-corrosion coating and structural repair concrete/mortar, including application instructions and specifications.

- B. Quality Control Submittals

1. Certificates:

- a. Furnish manufacturer's certification that materials meet or exceed Specification requirements.

2. Repair Procedure: Furnish written description of repair procedures and operations sequencing prior to commencing the Work.

4. Contractor Qualifications

Provide proof of Installer and Manufacturer qualifications specified under "Quality Assurance".

#### **1.05 QUALITY ASSURANCE**

A. Qualifications

1. Installer: Company specializing in the Work of this Section shall have a minimum of three years experience and at least two projects with similar quantity of materials. Contractor shall be trained by the repair mortar manufacturer and shall have a certificate of training on file from the manufacturer.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

A. Materials specified shall be delivered to the site in sealed, properly labeled containers. Containers shall indicate manufacturer's name, trade name of product, lot number, shelf life of product, and mix ratio (if applicable).

B. Keep containers tightly closed when not in use. Comply with manufacturer's printed instructions for storing and protecting materials.

C. Do not store liquid material in hot sun. Keep material from freezing.

#### **1.07 ENVIRONMENTAL REQUIREMENTS**

A. Do not apply if the temperature is below 50°F or above 85°F unless the material manufacturer is consulted for recommendations.

B. Do not use frozen materials or materials coated with ice or frost.

C. Do not apply when there is expectation of rain within 24 hours.

**PART 2 - PRODUCTS****2.01 MANUFACTURERS**

- A. Sto Concrete Restoration Div., Atlanta, GA 30331
- B. Sika Corp, Lyndhurst, NJ 07071
- C. Strongwall Industries, Ridgewood, NJ 07451

**2.02 MATERIALS**

- A. Structural Repair Concrete/Mortar - Horizontal Application
  - 1. Shall have non-shrink characteristics and be of high compressive and bond strength. Material shall be capable of being poured or troweled in place for horizontal applications and for formed applications of sufficient dimensions to allow for proper placement of material and conform to the following properties:
    - a. Compressive strength of 5000 psi in 28 days when tested in accordance with ASTM C109.
    - b. Bond strength of 2000 psi in 28 days when tested in accordance with ASTM C882 modified). Results of tests showing failure of base material is acceptable alternative.
    - c. Flexural strength of 1600 psi in 28 days when tested in accordance with ASTM C78 or ASTM C293.
    - d. Maximum linear length change shall be maximum of 0.08% at 28 days when tested in accordance with ASTM C157.
    - e. Modulus of elasticity shall be between 3.0 and  $3.5 \times 10^6$  when tested in accordance with ASTM C469.

2. Repair concrete/mortar shall be "CR701 Sto Trowel-Grade Mortar" as manufactured by Sto Concrete Restoration Division, "Sikatop 122 Plus" as manufactured by Sika Corporation, or "SW-81/SW-81F" as manufactured by Strongwall Industries.

B. Anti-corrosion Coating

1. Corrosion-inhibiting, epoxy/acrylic resin, protective coating for steel reinforcing bars that will not form a vapor barrier or bond break with the repair mortar with the following properties:
  - a. Bond strength of 1800 psi in 2 hours when tested in accordance with ASTM C882.
  - b. Flexural strength of 2000 psi in 28 days when tested in accordance with ASTM C78.
  - c. Tensile strength of 800 psi in 28 days when tested in accordance with ASTM C190.
2. Anti-corrosion coating shall be "CR246 Sto Bonding and Anti-corrosion Agent" by Sto Concrete Restoration Division or "Armatec 110" as manufactured by Sika Corporation.

E. Miscellaneous Materials

1. Water: Potable water, ASTM C94
2. J hooks: 1/4" diameter threaded rod, Type 316 stainless steel
3. Epoxy paste adhesive: ASTM C882
4. Coarse aggregate: Clean, washed crushed stone, 3/8" maximum size, conforming to ASTM C33.

**PART 3 - EXECUTION**

**3.01 EXAMINATION**

- A. Examine all adjoining work on which this Work is in anyway dependent for proper installation and workmanship. Report to the Authority any conditions that prevent the performance of this Work.

B. The Contractor shall determine the most suitable material indicated in Part 2 of this Specification to be used for each application to achieve the most structural sound repair with appropriate finish, unless specifically indicated on the Drawings. As an example, the Contractor may decide to form an application on a vertical surface in lieu of using the overhead repair mortar. The contractor shall include in the repair work procedure what materials will be used where and how the repair will be achieved for both the structural integrity of the patch and the correct finish.

### 3.02 PREPARATION AND PROTECTION

#### A. Protection

Protect adjacent surfaces not to be restored. Protect sills, ledges, and projections from material droppings.

#### B. Surface Preparation

1. Remove spalled and weak concrete and remove all loose and foreign material. Chip substrate by bush hammering or other mechanical means acceptable to the repair concrete/mortar manufacturer to obtain a minimum aggregate-fractured surface profile of  $1/8+$ " conforming to an ICRI CSP 7 or greater surface preparation. Minimum depth of repair shall be  $1/2$ ", with the perimeter of the repair having a minimum of  $1/8$ " in depth. Feather edging is not permitted.
2. If steel reinforcing is exposed, chip out behind the reinforcing steel. Chip a minimum of  $1/2$ " behind the bar and 3" past the point where the bar is exposed. Concrete behind bars shall be removed enough to allow for the entire circumference of the bar to be cleaned. Remove concrete to the point past where sound material begins.
3. Exposed steel reinforcement and steel beams shall be free of all rust, scale, oil, paint, grease, loose mill scale, and all other foreign matter that will prevent bonding with the repair concrete. Use power chipping or power driven brushes and clean to an SSPC-SP2 or SP3 surface preparation.



4. Where additional reinforcement is not shown to be anchored in and for patches greater than 1<sup>1</sup>/<sub>2</sub>" in depth and overhead patches, install stainless steel threaded J hooks set in epoxy paste adhesive. Anchor is to be 3/4" clear minimum from finished face of repair. Hooks are to be embedded a minimum of 3" into concrete, installed diagonally to plane of concrete surface. Holes are to be drilled 1/8" larger than rod diameter and shall be cleaned thoroughly. Space hooks at 16" o.c.

### **3.03 ANTI-CORROSION COATING APPLICATION**

- A. Mix anti-corrosion coating in accordance with manufacturer's instructions. Apply to dry reinforcing steel using a stiff bristle brush. Brush in well to ensure continuous coverage. Apply in two coats of approximately 10 mils each or as per manufacturer's latest recommendations.
- B. Protect coated steel from weather and allow to dry a minimum of 30-45 minutes between coats or repair concrete/mortar application. However, apply repair material within 24 hours after last coating. If 24 hour period elapses, reapply bonding agent and allow to dry as above.

### **3.04 REPAIR CONCRETE/MORTAR APPLICATION**

- A. Mix structural repair concrete in accordance with manufacturer's instruction. Follow time limits set by manufacturer to prevent hardening of material prior to placement. For material requiring extension with aggregate due to depth of repair, provide 3/8" aggregate of proportions specified by the repair mortar manufacturer.
- B. Prior to application of material, thoroughly saturate surface with water. Remove any standing water prior to patching.
- C. Apply a scrub coat of the repair material of proportions determined by manufacturer (indicate in written repair procedure). While still damp, apply repair concrete/mortar.
- D. Apply material behind and around rebars first to completely fill void.

- E. Overhead/Vertical Repairs - Apply repair concrete/mortar, non-formed/overhead application, on vertical and overhead members with a trowel or other such device, all in accordance with the manufacturer's recommendations. Apply in lifts of up to 2" or as determined by material manufacturer at a consistency that the material will not slump. Follow manufacturer's instructions for scoring, curing, priming, and approximate time between layers. Do not leave voids. Trowel exposed surface smooth and to same shape and finish as the adjacent existing surface.
- F. Horizontal Repairs - Pour or trowel repair concrete/mortar, horizontal application, into hole until it is to the same level and at the same pitch as the surrounding slab. For deep repairs, extend mortar with clean aggregate by the amount recommended by the manufacturer. Provide finish as follows:
1. Surfaces to receive bonded applied cementitious applications such as full-set terrazzo and vitreous ceramic tile: Darby and float surface and follow with a rough broom finish.
  2. Surfaces to receive floor coverings such as resilient flooring, thin-set terrazzo and vitreous ceramic tile, carpeting, wood floors, or surfaces which are intended as walking surfaces such as exposed or painted (cement finish), unless specified otherwise: Steel trowel surface to a smooth plane finish, free of score marks, grooves, depressions and ripples with a tolerance no greater than  $\pm 1/8"$  in ten feet.
  3. Surfaces intended to receive roofing, waterproofing membranes: Darby and float surface. Leave surface free from depressions, bulges, rough spots, and other defects.
  4. Ramps, Exterior Concrete Steps: Level surface with wood float and follow with a broom finish perpendicular to direction of traffic.
- G. Formed Repairs
1. Apply repair concrete, horizontal application, on vertical members where formwork can be utilized to

confine the concrete and the width of repair permits its proper installation.

2. Apply flowable repair mortar for repairs to be formed, especially for thin repairs.
3. Place so as not to leave voids. Vibrate forms with pencil vibrator to removed air bubbles. Remove formwork as soon as possible and trowel exposed surface smooth and to same shape and finish as the adjacent existing surface.

### **3.05 CURING**

- A. As soon as surface of patch has hardened, cure patch a minimum of 48 hours by applying water-based acrylic curing compounds conforming to ASTM C309 or C1315, misting, wet burlap, etc. For patches to be covered with other material, only use curing compounds acceptable to the finish material manufacturer, unless the compound is removed prior to placing the finish material in a manner acceptable to the finish manufacturer.
- B. Follow manufacturer's latest recommendations for any other recommendations. The curing provision of A above shall not be waved unless manufacturer does not permit it.

### **3.06 PROTECTION AND CLEANING**

- A. Clean all adjacent areas of excess material and clean all floors and walls of powder and droppings. Remove misplaced materials from surfaces immediately.
- B. Protect material from freezing and from rainfall prior to final set.

### **3.07 FIELD QUALITY CONTROL**

- A. The Authority will inspect surfaces and reject any that contain cracks or other defects. The repair will be tested for soundness and structural integrity. Any defective areas shall be fixed at Contractor's expense. Notify the Authority's representative in advance of the concrete repairs. The Authority's representative will review the mixing, surface preparation and proper application of all materials.

- B. Engage the services of the material manufacturer's representative to inspect the surface preparation, instruct in the proper usage of the material and to inspect the work throughout the project. Pay for all required fees.

**END OF SECTION**

LIST OF SUBMITTALS

<u>SUBMITTAL</u>	<u>DATE SUBMITTED</u>	<u>DATE APPROVED</u>
Product Data:	_____	_____
1. Anti-corrosion coating		
2. Repair concrete/mortar		
Certificates:	_____	_____
1. Material certification		
2. Training certificate		
Procedure:	_____	_____
1. Detailed written repair procedure		
Reports:	_____	_____
1. Manufacturer's written field reports.		
Qualifications	_____	_____
1. Installer		
2. Manufacturer		

\* \* \*

**SECTION 09900**  
**PAINTING**

**PART 1 - GENERAL**

**1.01 DESCRIPTION OF WORK**

A. This Section includes surface preparation and field painting of the following:

1. Exposed exterior items and surfaces.
2. Surface preparation, priming and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

**1.02 REFERENCES**

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. Federal Specifications (FS)
2. N.Y.S. Department of Environmental Conservation
3. U.S. Department of Labor
4. Occupational Safety and Health Administration (OSHA)
5. Steel Structures Painting Council (SSPC)

**DEFINITIONS**

A. The term "Painting" as used in this Section, means the application of all coatings such as paint, primer, enamel.

- B. The term "Painting" also includes preparation of surfaces for such applications, and the clean-up as hereinafter specified.
- C. Touching-up bare spots specified for previously primed or painted surfaces is in addition to the coats specified for the paint system.
- D. Finishes:
  - 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
  - 2. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.
  - 3. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
  - 4. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.
- d. Elevator shafts.

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#### 1.04 SUBMITTALS

##### A. Product Data

Provide manufacturers' product literature for all materials specified and material manufacturer's printed directions and recommendations for environmental conditions, surface preparation, priming, mixing, reduction, spreading rate, application, storage and VOC content, as applicable for each of the materials specified.

##### B. Samples

- 1. Initial Selection

Submit manufacturer's color charts for each type of finish for approval by the Authority. Verify colors specified with manufacturers' color charts for availability and notify the Authority if any discrepancies should occur.

2. Verification prior to installation
  - a. Contractor shall furnish color chips for surfaces to be painted.
3. All samples shall be labeled; and include the following information:
  - a. Manufacturer's name
  - b. Type of paint/stain/hardener
  - c. Manufacturer's stock number
  - d. Color: name and number
  - e. Federal Specification number, as specified
  - f. Federal regulations for amount of lead in paint.
  - g. VOC content

C. Quality Assurance

1. Certification that materials for each system are obtained from a single manufacturer.
2. Certification that Work shall be performed by personnel with a minimum of three years experience who meet the qualifications set forth in OSHA, 29 CFR 1926.62 (Lead In Construction Standard).
3. Certification that material meets or exceeds the performance requirements of Federal Specifications.

D. Guarantee

Provide Guarantee per Article 1.08.



**1.05 QUALITY ASSURANCE****A. General**

1. All painting materials shall arrive at the job ready-mixed.
3. Remove all rejected materials from the premises immediately.
4. All thinning and tinting materials shall be as recommended by the manufacturer. Generally, all paints shall not require additional thinning.
5. Verify that the specified shop prime paint for each applicable item in this Project is compatible with the total coating system, prior to application.

**B. Qualifications**

1. Work of this Section shall be performed by personnel with a minimum of three years experience in performing this type of Work.
2. The Contractor shall ensure that all employees meet the qualifications set forth in OSHA, 29 CFR 1926.62 (Lead In Construction Standard).

**F. Field Samples**

1. Provide samples of each color and finish, under natural lighting conditions, in a location where each finish is to be applied.
2. Primer coat is to be inspected and approved in all locations before any subsequent finish coats are applied.

**1.06 DELIVERY, STORAGE, AND HANDLING****A. Delivery**

Deliver materials to the site in original, unopened containers bearing manufacturers name and label containing the following information:

1. Product name or title of material
2. Manufacturer's stock number, batch number, VOC content in grams per liter and date of manufacture.
3. Manufacturer's name
4. Federal Specification number, if applicable.
5. Federal regulations for amount of lead in paint (less the 0.06% lead in non-volatile ingredients)
6. Contents by volume for major pigment and vehicle constitutions
7. Thinning instructions
8. Application instructions
9. Color name and number

#### **1.07 PROJECT CONDITIONS**

##### **A. Environmental Requirements**

1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied.
2. Do not apply finish in areas where dust is being generated or will be generated while the material is drying.
3. Provide paint and coating products to comply with applicable environmental regulations, VOC requirements and local authorities.

**1.08 GUARANTEES**

- A. Adherence of workmanship and materials to Specifications requirements shall be maintained for the one year Contract guarantee period. These requirements shall include the following:
  - 1. There shall be no evidence of blistering, peeling, crazing, alligatoring, streaking, staining, or chalking.
  - 2. Dirt shall be removed without blemishing the finish by washing with mild soap and water.
  - 3. Colors of surfaces shall remain free from serious fading; the variation, if any, shall be uniform.
- B. Correct all defects, appearing within the guarantee period, by removal of the defective work and replacement as directed.
- C. All corrective measures shall be the Contractor's responsibility, and shall be made at no extra cost to the Authority. The requirements set forth in Part 3 of these Specifications shall be strictly adhered to.

**PART 2 - PRODUCTS****2.01 MANUFACTURERS**

- A. Subject to compliance with specified requirements, provide "First Line" or "Top Quality" products of one of the following manufacturers:
  - 1. Benjamin Moore and Co.
  - 2. Devoe and Reynolds Co.
  - 3. Glidden Coatings and Resins.
  - 4. PPG Industries, Pittsburgh Paints Inc.
  - 5. Pratt and Lambert
  - 6. The Sherwin-Williams Co.

7. Tnemec Company, Inc.
8. MAB Paints
9. Carboline
10. Mercury Paint Corp.

**2.02 MATERIALS**

- A. Provide products which meet all Federal regulations for amount of lead in paint (less than 0.06% lead in non-volatile ingredients).
- B. Provide best quality grade of various types of coatings as regularly manufactured by the paint materials manufacturers. Materials not displaying manufacturers' identification as a standard, best-grade product will not be acceptable.
- C. Use only thinners approved by paint manufacturers for applications intended and use only within recommended limits.

**2.03 REFERENCE STANDARDS**

- A. Paint materials shall meet or exceed the requirements of the following standards:

Federal Specifications

1. Primers, Sealers, Undercoats

- A. Acrylic Primer TT-P-650-C

2. Finish Paints

- A. Ext. Acrylic Latex Paint; Flat: FS TT-P-19
  - B. Gloss Acrylic Latex Enamel: FS TT-P-1511-B

**2.04 COLORS****A. Selection**

1. Paint colors, surface treatments and finishes will be selected by the Authority.
2. Color Schedule will be issued to the Contractor after award of the Contract.
  - a. Final acceptance of colors will be from actual job applications.

**2.05 EXTERIOR PAINT SYSTEMS****A. New Ferrous Metal**

Structural steel, all ferrous metals, and steel window trim.

1st Coat - Touch up with epoxy Polyamide  
Paint

2nd Coat - Polyamide Epoxy Paint  
applied at the rate of -- 4.0 to 6.0  
Mils DFT.  
SSPC-PS  
Guide 13.01

3rd Coat (Top Coat) - Acrylic Aliphatic  
Polyurethane applied at rate of -- 1.5 to 2.0  
Mils DFT.  
SSPC-PS  
Guide 17.00  
Type 5.

**PART 3 - EXECUTION****3.01 EXAMINATION****A. Verification of Conditions**

1. The application of painter's finish to any surface shall be taken to indicate that the Contractor considers such surfaces suitable for a first-class finish.

2. Do not apply painter's finish in any locations until the Work of other Contractors that might damage the new finish is completed.
3. Notify the Authority in writing regarding Work by others that does not provide a suitable surface for the new finish.
4. In case of dispute regarding the suitability of any surface, the Authority's decision shall be final and conclusive upon all concerned.
5. Contractor shall check the compatibility of previously painted surface with the new coating by applying a test panel 4 foot wide x wall height. Allow test panel to dry thoroughly; verify proper adhesion before proceeding with painting Work.

### **3.02 PREPARATION AND APPLICATION**

#### **A. Protection**

1. For exterior metal surfaces on the building or site the ground beneath the work area shall be surrounded on all sides by a washable construction tarp or 10-mil polyethylene. The covering need not be airtight; however, it must be of adequate size and durability to completely enclose the work area and prevent the dispersal of any paint chips or dust during paint removal activities. Any dust and debris shall be contained in the work area and shall be removed immediately upon generation. Protect from damage landscaping, paving, and other improvements near the building. Protect and seal all windows and openings within the work area with a minimum of 1 layer of 6-mil polyethylene sheeting.
2. All protection is to be carefully removed, cleaned or discarded after painting is complete.

## 3. Touch-Up

1. Spot prime defects in existing Work and Work primed under other Paragraphs of Work as necessary to produce an even plane in the new finish.

## B. Existing Metal:

- a. Prepare surfaces as indicated in Art. 3.02,C., Subparagraphs 1., 2., 3., 4., above.
- b. Machine tool clean exposed steel to an SSPC-SP3 surface preparation.
- b. For steel surfaces exposed to view, repair defects in surfaces to provide for an even plane in the new finish. Use auto-body filler to even out surface and sand smooth.

**3.03 APPLICATION**

## A. General

1. No Work shall be performed where cement or plaster is being applied or is in the process of drying.
2. No Work shall be performed in spaces that are not broom clean and free of dust and waste.
3. Apply paint materials to produce smooth finished surfaces, free of brush or roller marks, drops, runs, or sags.
4. Paint materials shall be kept at a proper and uniform consistency.
5. Thin only when necessary to achieve best results.
6. Thinners shall be material recommended by manufacturer of paint, and in quantity as recommended.
7. Excessive use of thinner as indicated by variation in absorption, lack of "hide", thickness of dry film, mottled or streaky coat, shall be cause for rejection. Correct as directed.

8. Apply all coats with brush or roller, varying slightly the color of succeeding coats. Spraying will not be permitted.
9. Brush out or roll on first or prime coat; work well into surface.
10. Each coat shall be inspected, approved and dry before proceeding with additional coats.
11. Allow at least 48 hrs for enamels and exterior oil paint to dry.

### **3.04 FIELD QUALITY CONTROL**

- A. The Authority reserves the right to require the following material testing procedures at any time, and any number of times during period of field painting:
  1. Measurement of dry film thickness (DFT) by use of a dry film thickness gauge in accordance with use and calibration requirements of Structural Steel Painting Council [SSPC], "Method of Measurement of Dry Paint Thickness with Magnetic Gauges".
  2. Engage services of an independent testing laboratory, recommended by the Authority, to sample paint being used. Samples of materials delivered to construction site will be taken, identified and sealed, and certified in presence of Contractor
  3. Testing laboratory will perform appropriate tests for any or all of the following characteristics: Abrasion resistance, apparent reflectivity, flexibility, washability, absorption, accelerated weathering, dry opacity, accelerated yellowness, recoating, skinning, color retention, alkali resistance and quantitative materials analysis.
  4. If test results show that material being used does not comply with specified requirements, Contractor shall be directed to stop painting Work, and remove non-complying paint; repaint surfaces coated with rejected paint; remove rejected paint from previously painted surfaces if, upon



repainting with specified paint, the two coatings are non-compatible.

- a. If the samples do not comply with requirements of the Specifications, costs of testing and remediation of rejected work shall be borne by Contractor.
- b. If the tests find that the samples do comply with the requirements of the Specifications, the cost of the testing will be borne by the Authority.

### **3.05 CLEANING**

#### **A. General**

Contractor shall clean-up behind each paint crew such that painting and clean-up will be a continuous uninterrupted operation. The practice of one general clean-up after completion of all painting will be strictly prohibited. This clean-up will include, but not be limited to the following:

1. Remove spots or defacement resulting from Work of this Section.
2. Retouch all damaged surfaces to leave Work in perfect finished condition.
3. If spots or defacement cannot be satisfactorily removed and retouched, re-finish the surfaces as directed.

### **3.08 PROTECTION**

- A. Provide caution tape and/or locked entryways during paint removal activities in existing buildings to prevent access to the work area from unauthorized personnel.
- B. Provide "Wet Paint" signs to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their Work after completion of painting operations.

- C. At the completion of Work of other trades, touch-up and restore all damaged or defaced painted surfaces as

**END OF SECTION**

LIST OF SUBMITTALS

<u>SUBMITTAL</u>	<u>DATE SUBMITTED</u>	<u>DATE APPROVED</u>
Product Data:	_____	_____
1. Manufacturer's product literature for all materials with directions and recommendations for environmental conditions, surface preparation, priming, mixing, reduction, spreading rate, application, storage and VOC content.		
Samples:	_____	_____
1. Initial selection: manufacturer's color charts for each type of finish.		
2. Verification prior to installation: color chips for surfaces to be painted.		
3. Verification prior to installation: two samples of each color and material on 12" x 12" hard-board.		
Quality Assurance:	_____	_____
1. Certification that materials for each system are obtained from a single manufacturer.		
2. Certification that Work shall be performed by personnel with a minimum of three years experience who meet the qualifications set forth in OSHA, 29 CFR 1926.62 (Lead In Construction Standard.		
Field samples:	_____	_____
1. Samples of each color and Finish.		
2. Corridor wall sample.		

Guarantees

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**SECTION 16010**  
**GENERAL PROVISIONS FOR ELECTRICAL WORK**

**PART 1 - GENERAL****1.01 SCOPE OF WORK**

- A. Provide labor, materials, tools, machinery, equipment, and services necessary to complete the Electrical Work under this Contract. All systems and equipment shall be complete in every aspect and all items of material, equipment and labor shall be provided for a fully operational system and ready for use. Coordinate the work with the work of the other trades in order to resolve all conflicts without impeding the job progress.
- B. When an item of equipment is indicated on a layout plan and not shown on associated riser diagram or vice-versa, the Contractor shall provide said item and all required conduit and wiring connections for a complete system as part of the Contract.
- C. **All penetrations made into other trades work are to be sealed to air tight/watertight condition. Penetrations through insulated systems, shall be insulated and sealed on both sides of penetration. Sealant on interior side of such insulated spaces/equipment shall be silicone recommended by manufacturer.**
- 3

D. The electrical contractor shall comply with the Commissioning Requirements of Section S01660 for all new electrical equipment. Testing of the electrical systems as listed in each technical Specification Section in Division 16 shall be completed prior to commencement of the commissioning process, as written tests results and sign-offs by the Authority must be submitted to the Commissioning Agent prior to starting the commissioning process.

**1.03 EXAMINATION OF SITE**

- A. The Contractor shall be held to have examined the site and to have compared it with the Drawings and Specifications, and deemed to have been satisfied as to the conditions existing at the site, as relating to the actual conditions of the site at the time estimating the Work, the storage and handling of materials, and all other matters as may be incidental to the Work under the Contract, before bidding, and no allowance will subsequently be made to the Contractor by reason of any error due to the Contractor's neglect to comply with the requirements of this clause.

**1.04 RELATED DOCUMENTS**

- A. Drawings and General Provisions of the Contract.
- B. Division 1 - General and Supplementary Requirements.

**1.05 ELECTRICAL EQUIPMENT**

- A. All electrical equipment shall be the latest of the current year in design, material and workmanship, and shall be the type or model called for in these Specifications.
- B. If the type or model specified has been superseded by a later type or model, the latest shall be submitted for approval and shall be provided as part of the Contract.

**1.06 SUBMITTALS**

Provide as outlined in each individual section of these Specifications, including but not limited to:

- A. Product Data: Submit manufacturer's product data for equipment including capacity, performance charts, test data, materials, dimensions, weights, and installation instructions.
- B. Shop Drawings: Submit manufacture's shop drawings indicating dimensions, weight loading, required clearances, location, and method of assembly of components.  
Submittals are mandatory as noted in the respective specifications. Schedules, installation instructions, startup manuals, operation and maintenance manuals, and shop drawings are always required to be submitted.
- C. Samples
- D. Special Warranty
- E. Quality Assurance submittals
- F. Operation and Maintenance Manuals
- G. Test results and certificates
- H. Manuals and video tape of the personnel training.

#### **1.07 COORDINATION DRAWINGS**

- A. Coordination Drawings: The Electrical contractor shall cooperate with other contractors and Fire Protection Systems contractors in the development of the coordination drawings. The specified order in which the trade contractors impose their work on the coordination drawings is not intended to grant priority to any one trade contractor in the allocation of space. At the completion of this phase, hold a coordination meeting to eliminate any interference among the trades that the drawings indicate and to avoid any conflicts in installing the Work.

#### **1.08 BUREAU OF ELECTRICAL CONTROL**

- A. Drawings and Specifications:
  - 1. The Contract Drawings and Specifications shall be submitted by the Contractor to the Bureau of Electrical Control to facilitate any inspections that may be made by that agency.
  - 2. It is the intent of these Specifications that all electric work shall be done in strict accordance with the rules of the Bureau of Electrical Control, and with the NYC Amendments to the 2008 National Electrical Code together with NFPA's 2008 National Electrical Code. Where the requirement of the Drawings or Specifications exceeds the requirements of the Electrical Code, the requirements of the Drawings and Specifications shall be binding upon the Contractor.
  - 3. Should the Bureau of Electrical Control inspect the work and issue a violation, the Contractor shall correct the Work and eliminate the violation as part of the Contract.
- B. Interpretation
  - 1. The electric work detailed in these Specifications and shown on Drawings shall be under the jurisdiction of the Authority, subject to the approval of the Bureau of Electric Control.
  - 2. The Authority shall be the sole source for interpretation of the Contract Documents. Any discrepancies or conflicts shall be brought to the attention of the Authority for clarification.
- C. Materials and Appliance: All materials and appliance shall be approved by the Authority's Representative and installed in accordance with the rules and regulations of the Building Department, Bureau of

Electrical Control; certificates of approval including the temporary light and power wiring, shall be obtained by the Contractor and delivered to the Authority's Representative before the Work is finally accepted.

#### **1.09 WORK IN EXISTING STRUCTURES**

- A. The Contractor is referred to Section 01900 on General Requirements of Work in Existing Structures which shall apply to the Work of this Contract.
- B. Refer to Section S01900 on the "Ownership of Removed Materials." Generally that article shall apply except for those items which are listed here in for delivery to the Bureau of Shops at 44-36 Vernon Boulevard, Long Island City, New York 11101. All other existing material, fixtures, and equipment which have been removed shall not be used again unless specifically required by the Drawings or Specifications.
- C. Removals, Replacements, Adjustments
  - 1. The Contractor shall remove, relocate, replace, adjust or adapt, all existing conduit, wiring and other electric equipment or apparatus, as required, to provide a complete installation.
  - 2. The Work shall include, providing all materials, all necessary extensions, connections, cuttings, repairing, adapting and other Work incidental thereto, together with such temporary connections as may be required to maintain service pending the completion of the permanent Work. All Work shall be left in good working order and in a condition equal to the adjacent new or existing Work.
- D. Care in Removing Existing Conductors
  - 1. The Contractor shall use due care and diligence in removing existing conductors from existing conduits in order to prevent conductors from breaking and becoming an irretrievable obstruction within the conduits.
- E. Cutting and Repairing
  - 1. Whenever the cutting, or drilling, or removal of any part of the structure, is required in order to remove, relocate, alter or install any article of electrical equipment (including conduits, boxes, fittings, etc.), the Contractor shall perform all cutting, drilling, etc., and remove the section of structure required. After removal and installation of the electric equipment, the Contractor shall repair the section of structure, as directed by the Authority's Representative, with new materials, equal to that of adjacent structure of the same type.

Note that in general, all holes through existing structures for conduit installation shall be core drilled, unless prior written approval is provided by the Authority.

Contractor shall use extreme care when core drilling to avoid damaging the existing infrastructure.
  - 2. Whenever holes are cut in fire-rated structures in order to permit the installation of conduit or electrical equipment, these holes shall be repaired with material that will restore the fire rating of the wall or floor slab to its original condition.
  - 3. The Contractor shall paint all repaired areas of the building. The paint shall match the paint of adjacent surface areas, or extend to the nearest architectural break-line, as directed.
  - 4. Wherever any part of the structure is marred or damaged, the Contractor shall repair the damaged or marred areas of the structure.

5. Where a piece of electrical equipment is removed, the Contractor shall finish that part of the surface to match surroundings.
- F. Damaged Apparatus: Should any damage, due to the execution of this Contract, occur to the fixtures, or any equipment or apparatus, such damage shall be properly repaired and/or replaced by the Contractor without charge.
- G. Non-Interruption of Services
  1. It is imperative that all existing services (electric, light, power, fire alarm, telecommunications, etc.) be kept in operation at all times, unless prior written approval is received from the Authority.
  2. Provide fire watch services, as necessary, during disruption of fire alarm system.

#### **1.10 TESTS**

- A. The Contractor shall demonstrate to the Authority operation of all equipment and systems. All tests shall be completed to the satisfaction of the Authority. Each test shall be performed as indicated in the individual specification section.

#### **1.11 GUARANTEES, WARRANTIES, BONDS, AND MAINTENANCE CONTROL**

- A. Refer to Section G01740 for procedures and submittal requirements for warranties. Refer to individual equipment specifications for warranty requirements.
  1. Compile and assemble the warranties specified for Electrical work into a separated set of documents, tabulated and indexed for easy reference.
  2. Provide complete warranty information for each item to include product or equipment including duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.
  3. Warranties for the equipment, workmanship and materials should be provided for the period of one year with the exception of the warranty on the refrigeration compressors. Five- (5) years warranty shall be provided for the refrigeration compressors.
  4. Manufacturers', in addition to Contractors' warranties, shall be provided for all Electrical equipment and accessories.
  5. All warranties are to start from the date of Substantial Completion.

#### **1.12 OPERATIONS, TRAINING, AND MAINTENANCE MANUALS**

- A. General
  1. Refer to Section S01730: SYSTEMS OPERATION AND MAINTENANCE MANUAL for procedures and requirements for preparation and submittal of operation and maintenance manuals for each equipment. Refer to individual equipment specifications for maintenance manual additional requirements. In addition, include the following information:
  2. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.



3. Manufacturer's printed operating procedures to include start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shut-down, and emergency instructions; and summer and winter operating instructions.
  4. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassemble; aligning and adjusting instructions.
  5. Servicing instructions and lubrication charts and schedules.
- B. Bind all the other Sections maintenance manuals in a single final Operating and Maintenance Manual with the requirements of Section S01730: SYSTEMS OPERATION AND MAINTENANCE MANUAL.
- C. Refer to Section S01650: FACILITY START-UP, DEMONSTRATION AND TRAINING for procedures and requirements for training on each equipment. Refer to individual equipment specifications for the additional training requirements.
- D. Contractor shall videotape all the training sessions for various equipment and systems as specified in individual sections of these Specifications. If a manufacturer's particular equipment item is furnished with a training video, the manufacturer's video shall be provided in addition to the requirements of this Section, not in lieu thereof and at no additional cost to the Authority. Contractor shall be responsible for providing informative videotapes covering all the materials and content outlined in each individual section of these Specifications.

#### **1.13 CLEANING AND REPAIR**

- A. On completion of installation, inspect interior and exterior of installed equipment. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.
- B. Contractor shall not leave sharp exposed metal edges (bottom of threaded rods, electrical equipment supports, etc.) that could otherwise present safety hazards to the building's occupants/work staff.

#### **1.14 SEISMIC RESTRAINT**

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- A. All Electrical systems need to be functional following a major earthquake. Accordingly, all conduit, and equipment must be seismically secured (with the exception of systems qualifying for exclusions as defined in Specification Section 16503, Vibration Isolation and Seismic Controls, Electrical Systems).

#### **END OF SECTION**

\* \* \*

LIST OF SUBMITTALS

<u>SUBMITTAL</u>	<u>DATE SUBMITTED</u>	<u>DATE APPROVED</u>
Product Data	_____	_____
Shop Drawings	_____	_____
Samples	_____	_____
Special Warranty	_____	_____
Quality Assurance submittals	_____	_____
Operation and Maintenance Manuals	_____	_____
Test results and certificates	_____	_____
Manuals and video tape of the personnel training.	_____	_____

\* \* \*

## SECTION 16050 - BASIC ELECTRICAL MATERIALS AND METHODS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes the following electrical materials and methods:
  - 1. Building wire, connectors, and splices for branch circuits and feeders.
  - 2. Supporting devices for electrical components.
  - 3. Concrete equipment bases.
  - 4. Electrical identification.
  - 5. Electrical demolition.
  - 6. Cutting and patching for electrical construction.
  - 7. Touchup painting.
  - 8. Meter sockets.

## 1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for each type of product specified.
- C. Shop Drawings detailing fabrication and installation of supports and anchorage for electrical items.
- D. Coordination Drawings for electrical installation.
  - 1. Prepare Coordination Drawings according to Division 1 Section "Submittals" to a 1/4-inch-equals-1-foot (1:50) scale or larger. Detail major elements, components, and systems of electrical equipment and materials in relation to each other and to other systems, installations, and building components. Indicate locations and space requirements for installation, access, and working clearance. Show where sequence and coordination of installations are important to the efficient flow of the Work. Coordinate drawing preparation with effort specified in other Specification Sections. Include the following:
    - a. Provisions for scheduling, sequencing, moving, and positioning large equipment in the building during construction.
    - b. Floor plans, elevations, and details, including the following:
      - 1) Clearances to meet safety requirements and for servicing and maintaining equipment, including space for equipment disassembly required for periodic maintenance.
      - 2) Equipment support details.

- 3) Exterior wall, roof, and foundation penetrations of cable and raceway; and their relation to other penetrations and installations.
  - 4) Fire-rated interior wall and floor penetrations by electrical installations.
  - 5) Sizes and locations of required concrete pads and bases.
- c. Reflected ceiling plans to coordinate and integrate installing air outlets and inlets, light fixtures, alarm and communication systems components, sprinklers, and other ceiling-mounted items.
- E. Samples of color, lettering style, and other graphic representation required for each identification product for Project.

#### 1.4 QUALITY ASSURANCE

- A. Comply with NYCEC 2011 for components and installation.
- B. Comply with NYCDOT requirements.
- C. Listing and Labeling: Provide products specified in this Section that are listed and labeled.
  - 1. The Terms "Listed and Labeled": As defined in the National Electrical Code, Article 100.
  - 2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.

#### 1.5 SEQUENCING AND SCHEDULING

- A. Coordinate electrical equipment installation with other building components.
- B. Arrange for chases, slots, and openings in building structure during progress of construction to allow for electrical installations.
- C. Coordinate installing required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.
- D. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the Work. Coordinate installing large equipment requiring positioning prior to closing in the building.
- E. Coordinate connecting electrical service to components furnished under other Sections.
- F. Coordinate connecting electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies.
- G. Coordinate requirements for access panels and doors where electrical items requiring access are concealed by finished surfaces. Access panels and doors are specified in Division 8 Section "Access Doors."
- H. Coordinate installing electrical identification after completion of finishing where identification is applied to field-finished surfaces.
- I. Coordinate installing electrical identifying devices and markings prior to installing acoustical ceilings and similar finishes that conceal such items.

## PART 2 - PRODUCTS

## 2.1 BUILDING WIRE

- A. Description: Single conductor, copper. Solid conductor for No. 10 AWG and smaller; stranded conductor for larger than No. 10 AWG.
- B. Thermoplastic Insulated Wire: Conform to NEMA WC 5.
- C. Cross-Linked, Polyethylene Insulated Wire: Conform to NEMA WC 7.
- D. Connectors and Splices: Units of size, ampacity rating, material, type, and class suitable for service indicated. Select to comply with Project's installation requirements.

## 2.2 SUPPORTING DEVICES

- A. Channel and angle support systems, hangers, anchors, sleeves, brackets, fabricated items, and fasteners are designed to provide secure support from the building structure for electrical components.
  - 1. Material: Steel, except as otherwise indicated, protected from corrosion with zinc coating or with treatment of equivalent corrosion resistance using approved alternative finish or inherent material characteristics.
  - 2. Metal Items for Use Outdoors or in Damp Locations: Hot-dip galvanized steel, except as otherwise indicated.
- B. Steel channel supports have 9/16-inch (14-mm) diameter holes at a maximum of 8 inches (203 mm) o.c., in at least 1 surface.
  - 1. Fittings and accessories mate and match with channels and are from the same manufacturer.
- C. Nonmetallic Channel and Angle Systems: Structural-grade, factory-formed, fiberglass-resin channels and angles with 9/16-inch (14-mm) diameter holes at a maximum of 8 inches (203 mm) o.c., in at least 1 surface.
  - 1. Fittings and accessories mate and match with channels or angles and are from the same manufacturer.
  - 2. Fitting and Accessory Material: Same as channels and angles, except metal items may be stainless steel.
- D. Raceway and Cable Supports: Manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring steel clamps or "click"- type hangers.
- E. Sheet-Metal Sleeves: 0.0276-inch (0.7-mm) or heavier galvanized sheet steel, round tube, closed with welded longitudinal joint.
- F. Pipe Sleeves: ASTM A 53, Type E, Grade A, Schedule 40, galvanized steel, plain ends.
- G. Cable Supports for Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug for nonarmored electrical cables in riser conduits. Plugs have number and size of conductor gripping holes as required to suit individual risers. Body constructed of malleable iron casting with hot-dip galvanized finish.
- H. Expansion Anchors: Carbon-steel wedge or sleeve type.

- I. Toggle Bolts: All-steel springhead type.
- J. Powder-Driven Threaded Studs: Heat-treated steel.

## 2.3 CONCRETE EQUIPMENT BASES

- A. Forms and Reinforcing Materials: As specified in Division 3 Section "Cast-in-Place Concrete."
- B. Concrete: 3000-psi (20.7-MPa), 28-day compressive strength as specified in Division 3 Section "Cast-in-Place Concrete."

## 2.4 ELECTRICAL IDENTIFICATION

- A. Manufacturer's Standard Products: Where more than one type is listed for a specified application, selection is Installer's option, but provide single type for each application category. Use colors prescribed by ANSI A13.1, NFPA 70, and these Specifications.
- B. Raceway and Cable Labels: Conform to ANSI A13.1, Table 3, for minimum size of letters for legend and minimum length of color field for each raceway or cable size.
  - 1. Type: Preprinted, flexible, self-adhesive, vinyl. Legend is overlaminated with a clear, weather- and chemical-resistant coating.
  - 2. Color: Black legend on orange field.
  - 3. Legend: Indicates voltage.
- C. Colored Adhesive Marking Tape for Raceways, Wires, and Cables: Self-adhesive vinyl tape not less than 3 mils thick by 1 inch wide (0.08 mm thick by 25 mm wide).
- D. Underground Line Warning Tape: Permanent, bright-colored, continuous-printed, vinyl tape with the following features:
  - 1. Size: Not less than 4 mils thick by 6 inches wide (0.102 mm thick by 152 mm wide).
    - a. Compounded for permanent direct-burial service.
  - 2. Embedded continuous metallic strip or core.
    - a. Printed Legend: Indicates type of underground line.
- E. Tape Markers: Vinyl or vinyl-cloth, self-adhesive, wraparound type with preprinted numbers and letters.
- F. Color-Coding Cable Ties: Type 6/6 nylon, self-locking type. Colors to suit coding scheme.
- G. Engraved, Plastic-Laminated Labels, Signs, and Instruction Plates: Engraving stock, melamine plastic laminate punched for mechanical fasteners 1/16-inch (1.6-mm) minimum thick for signs up to 20 sq. in. (129 sq. cm), 1/8 inch (3.2 mm) thick for larger sizes. Engraved legend in black letters on white face.
- H. Interior Warning and Caution Signs: Preprinted, aluminum, baked-enamel finish signs, punched for fasteners, with colors, legend, and size appropriate to the application.

- I. Exterior Warning and Caution Signs: Weather-resistant, nonfading, preprinted, cellulose acetate butyrate signs with 0.0396-inch (1-mm), galvanized steel backing, with colors, legend, and size appropriate to the application. 1/4-inch (6.4-mm) grommets in corners for mounting.
- J. Fasteners for Plastic-Laminated and Metal Signs: Self-tapping stainless-steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.

## 2.5 TOUCHUP PAINT

- A. For Equipment: Provided by equipment manufacturer and selected to match equipment finish.
- B. For Nonequipment Surfaces: Matching type and color of undamaged, existing adjacent finish.
- C. For Galvanized Surfaces: Zinc-rich paint recommended by item manufacturer.

## PART 3 - EXECUTION

### 3.1 EQUIPMENT INSTALLATION REQUIREMENTS

- A. Install components and equipment to provide the maximum possible headroom where mounting heights or other location criteria are not indicated.
- B. Install items level, plumb, and parallel and perpendicular to other building systems and components, except where otherwise indicated.
- C. Install equipment to facilitate service, maintenance, and repair or replacement of components. Connect for ease of disconnecting, with minimum interference with other installations.
- D. Give right of way to raceways and piping systems installed at a required slope.

### 3.2 ELECTRICAL SUPPORTING METHODS

- A. Damp Locations and Outdoors: Hot-dip galvanized materials or nonmetallic, U-channel system components.
- B. Dry Locations: Steel materials.
- C. Support Clamps for PVC Raceways: Click-type clamp system.
- D. Conform to manufacturer's recommendations for selecting supports.
- E. Strength of Supports: Adequate to carry all present and future loads, times a safety factor of at least 4; 200-lb- (90-kg-) minimum design load.

### 3.3 INSTALLATION

- A. Install wires in raceway according to manufacturer's written instructions and NECA's "Standard of Installation."
- B. Conductor Splices: Keep to the minimum and comply with the following:

1. Install splices and taps that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
  2. Use splice and tap connectors that are compatible with conductor material.
- C. Wiring at Outlets: Install with at least 12 inches (300 mm) of slack conductor at each outlet.
- D. Connect outlets and components to wiring systems and to ground as indicated and instructed by manufacturer. Tighten connectors and terminals, including screws and bolts, according to equipment manufacturer's published torque-tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals according to tightening requirements specified in UL 486A.
- E. Install devices to securely and permanently fasten and support electrical components.
- F. Raceway Supports: Comply with NFPA 70 and the following requirements:
1. Conform to manufacturer's recommendations for selecting and installing supports.
  2. Install individual and multiple raceway hangers and riser clamps to support raceways. Provide U bolts, clamps, attachments, and other hardware necessary for hanger assembly and for securing hanger rods and conduits.
  3. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.
  4. Spare Capacity: Size supports for multiple conduits so capacity can be increased by a 25 percent minimum in the future.
  5. Support individual horizontal raceways with separate, malleable iron pipe hangers or clamps.
  6. Hanger Rods: 1/4-inch (6-mm) diameter or larger threaded steel, except as otherwise indicated.
  7. Spring Steel Fasteners: Specifically designed for supporting single conduits or tubing. May be used in lieu of malleable iron hangers for 1-1/2-inch (38-mm) and smaller raceways serving lighting and receptacle branch circuits above suspended ceilings and for fastening raceways to channel and slotted angle supports.
  8. In vertical runs, arrange support so the load produced by the weight of the raceway and the enclosed conductors is carried entirely by the conduit supports, with no weight load on raceway terminals.
- G. Vertical Conductor Supports: Install simultaneously with conductors.
- H. Miscellaneous Supports: Install metal channel racks for mounting cabinets, panelboards, disconnects, control enclosures, pull boxes, junction boxes, transformers, and other devices except where components are mounted directly to structural features of adequate strength.
- I. In open overhead spaces, cast boxes threaded to raceways need not be separately supported, except where used for fixture support; support sheet-metal boxes directly from the building structure or by bar hangers. Where bar hangers are used, attach the bar to raceways on opposite sides of the box and support the raceway with an approved fastener not more than 24 inches (610 mm) from the box.
- J. Sleeves: Install for cable and raceway penetrations of concrete slabs and walls, except where core-drilled holes are used. Install for cable and raceway penetrations of masonry and fire-rated gypsum walls and of all other fire-rated floor and wall assemblies. Install sleeves during erection of concrete and masonry walls.
- K. Firestopping: Apply to cable and raceway penetrations of fire-rated floor and wall assemblies. Perform firestopping as specified in Division 7 Section "Firestopping" to reestablish the original fire-resistance rating of the assembly at the penetration.
- L. Fastening: Unless otherwise indicated, securely fasten electrical items and their supporting hardware to the building structure. Perform fastening according to the following:



1. Fasten by means of wood screws or screw-type nails on wood; toggle bolts on hollow masonry units; concrete inserts or expansion bolts on concrete or solid masonry; and by machine screws, welded threaded studs, or spring-tension clamps on steel.
  2. Threaded studs driven by a powder charge and provided with lock washers and nuts may be used instead of expansion bolts, machine screws, or wood screws.
  3. Welding to steel structure may be used only for threaded studs, not for conduits, pipe straps, or any other items.
  4. In partitions of light steel construction use sheet-metal screws.
  5. Drill holes in concrete beams so holes more than 1-1/2 inches (38 mm) deep do not cut main reinforcing bars.
  6. Drill holes in concrete so holes more than 3/4 inch (19 mm) deep do not cut main reinforcing bars.
  7. Fill and seal holes drilled in concrete and not used.
  8. Select fasteners so the load applied to any fastener does not exceed 25 percent of the proof-test load.
- M. Install concrete pads and bases according to requirements of Division 3 Section "Cast-in-Place Concrete."
- N. Install utility-metering equipment according to utility company's written requirements. Provide grounding and empty conduits as required by company.
- O. Install identification devices where required.
1. Install labels where indicated and at locations for best convenience of viewing without interference with operation and maintenance of equipment.
  2. Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated on the Contract Documents or required by codes and standards. Use consistent designations throughout the Project.
  3. Self-Adhesive Identification Products: Clean surfaces of dust, loose material, and oily films before applying.
  4. Identify raceways and cables of certain systems with color banding as follows:
    - a. Bands: Colored adhesive marking tape. Make each color band 2 inches (51 mm) wide, completely encircling conduit, and place adjacent bands of 2-color markings in contact, side by side.
    - b. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot (15-m) maximum intervals in straight runs, and at 25 feet (8 m) in congested areas.
    - c. Colors: As follows:
      - 1) Fire-Alarm System: Red.
      - 2) Security System: Blue and yellow.
      - 3) Telecommunications System: Green and yellow.
  5. Tag or label power circuits for future connection and circuits in raceways and enclosures with other circuits. Identify source and circuit numbers in each cabinet, pull box, junction box, and outlet box. Color coding may be used for voltage and phase indication.
  6. Identify Paths of Underground Electrical Lines: During trench backfilling, for exterior underground power, control, signal, and communication lines, install continuous underground plastic line marker located directly above power and communication lines. Locate 6 to 8 inches (150 to 200 mm) below finished grade. Where multiple lines installed in a common trench or concrete envelope do not exceed an overall width of 16 inches (400 mm), use a single line marker.
  7. For panelboards, provide framed, typed circuit schedules with explicit description and identification of items controlled by each individual breaker.

### 3.4 DEMOLITION

- A. Where electrical work to remain is damaged or disturbed in the course of the Work, remove damaged portions and install new products of equal capacity, quality, and functionality.
- B. Accessible Work Indicated to Be Demolished: Remove exposed electrical installation in its entirety.
- C. Abandoned Work: Cut and remove buried raceway and wiring indicated to be abandoned in place, 2 inches (50 mm) below the surface of adjacent construction. Cap and patch surface to match existing finish.
- D. Removal: Remove demolished material from the Project site.
- E. Temporary Disconnection: Remove, store, clean, reinstall, reconnect, and make operational components indicated for relocation.

### 3.5 CUTTING AND PATCHING

- A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces necessary for electrical installations. Perform cutting by skilled mechanics of the trades involved.
- B. Repair disturbed surfaces to match adjacent undisturbed surfaces.

### 3.6 TOUCHUP PAINTING

- A. Thoroughly clean damaged areas and provide primer, intermediate, and finish coats to suit the degree of damage at each location.
- B. Follow paint manufacturer's written instructions for surface preparation and for timing and application of successive coats.

END OF SECTION 16050

## SECTION 16120 - CONDUCTORS AND CABLES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes building wires and cables and associated connectors, splices, and terminations for wiring systems rated 600 V and less.

## 1.3 SUBMITTALS

- A. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

## 1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: In addition to requirements specified in Division 1 Section "Quality Control," an independent testing agency shall meet OSHA criteria for accreditation of testing laboratories, Title 29, Part 1907; or shall be a full-member company of the InterNational Electrical Testing Association.
  - 1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies, to supervise on-site testing specified in Part 3.
- B. Listing and Labeling: Provide wires and cables specified in this Section that are listed and labeled.
  - 1. The Terms "Listed" and "Labeled": As defined in NFPA 70, Article 100.
  - 2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.
- C. Comply with NYCEC 2011.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wires and cables according to NEMA WC 26.

## 1.6 COORDINATION

- A. Coordinate layout and installation of cables with other installations.
- B. Revise locations and elevations from those indicated, as required to suit field conditions and as approved by BPCA.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Wires and Cables:
    - a. Alcan Aluminum Corporation; Alcan Cable Div.
    - b. American Insulated Wire Corp.; Leviton Manufacturing Co.
    - c. BICC Brand-Rex Company.
    - d. Carol Cable Co., Inc.
    - e. Senator Wire & Cable Company.
    - f. Southwire Company.
  - 2. Connectors for Wires and Cables:
    - a. AMP Incorporated.
    - b. General Signal; O-Z/Gedney Unit.
    - c. Monogram Co.; AFC.
    - d. Square D Co.; Anderson.
    - e. 3M Company; Electrical Products Division.
    - f. Polaris.

### 2.2 BUILDING WIRES AND CABLES

- A. UL-listed building wires and cables with conductor material, insulation type, cable construction, and rating as specified in Part 3 "Wire and Insulation Applications" Article.
- B. Rubber Insulation Material: Comply with NEMA WC 3.
- C. Thermoplastic Insulation Material: Comply with NEMA WC 5.
- D. Cross-Linked Polyethylene Insulation Material: Comply with NEMA WC 7.
- E. Ethylene Propylene Rubber Insulation Material: Comply with NEMA WC 8.
- F. Conductor Material: Copper.
- G. Stranding: Solid conductor for No. 10 AWG and smaller; stranded conductor for larger than No. 10 AWG.

### 2.3 CONNECTORS AND SPLICES

- A. UL-listed, factory-fabricated wiring connectors of size, ampacity rating, material, type, and class for application and service indicated. Comply with Project's installation requirements and as specified in Part 3 "Wire and Insulation Applications" Article.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine raceways and building finishes to receive wires and cables for compliance with requirements for installation tolerances and other conditions affecting performance of wires and cables. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 WIRE AND INSULATION APPLICATIONS

- A. Service Entrance: Type USE.
- B. Service Entrance: Type RHW or THWN, in raceway.
- C. Feeders: Type XHHW, in raceway.
- D. Feeders: Type UF, 90C insulation.
- E. Branch Circuits: Type XHHW, in raceway.
- F. Class 1 Control Circuits: Type THHN/THWN, in raceway.
- G. Class 2 Control Circuits: Power-limited tray cable, in cable tray.
- H. Class 2 Control Circuits: Power-limited cable, concealed in building finishes.
- I. Class 2 Control Circuits: Type THHN/THWN, in raceway.

### 3.3 INSTALLATION

- A. Install wires and cables as indicated, according to manufacturer's written instructions and NECA's "Standard of Installation."
- B. Remove existing wires from raceway before pulling in new wires and cables.
- C. Pull Conductors: Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- E. Support cables according to Division 16 Section "Basic Electrical Materials and Methods."
- F. Seal around cables penetrating fire-rated elements according to Division 7 Section "Firestopping."
- G. Identify wires and cables according to Division 16 Section "Basic Electrical Materials and Methods."

### 3.4 CONNECTIONS

- A. Conductor Splices: Keep to minimum.
- B. Install splices and tapes that possess equivalent or better mechanical strength and insulation ratings than conductors being spliced.
- C. Use splice and tap connectors compatible with conductor material.
- D. Use oxide inhibitor in each splice and tap connector for aluminum conductors.
- E. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches (300 mm) of slack.
- F. Connect outlets and components to wiring and to ground as indicated and instructed by manufacturer.
- G. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

### 3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing agency to perform field quality-control testing.
- B. Testing Agency: Engage a qualified independent testing agency to perform field quality-control testing.
- C. Testing: On installation of wires and cables and before electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
  - 1. Procedures: Perform each visual and mechanical inspection and electrical test stated in NETA ATS, Section 7.3.1. Certify compliance with test parameters.
- D. Correct malfunctioning conductors and cables at Project site, where possible, and retest to demonstrate compliance; otherwise, remove and replace with new units and retest.

END OF SECTION 16120

## SECTION 16130 - RACEWAYS AND BOXES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

- 1. Raceways include the following:

- a. RMC.
  - b. IMC.
  - c. PVC externally coated, rigid steel conduits.
  - d. PVC externally coated, IMC.
  - e. FMC.
  - f. LFMC.
  - g. Wireways.

- 2. Boxes, enclosures, and cabinets include the following:

- a. Device boxes.
  - b. Outlet boxes.
  - c. Pull and junction boxes.
  - d. Cabinets and hinged-cover enclosures.

- B. Related Sections include the following:

- 1. Division 7 Section "Firestopping."
  - 2. Division 16 Section "Basic Electrical Materials and Methods" for raceways and box supports.
  - 3. Division 16 Section "Wiring Devices" for devices installed in boxes.

## 1.3 DEFINITIONS

- A. FMC: Flexible metal conduit.
- B. IMC: Intermediate metal conduit.
- C. LFMC: Liquidtight flexible metal conduit.
- D. RMC: Rigid metal conduit.

## 1.4 SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, hinged-cover enclosures, and cabinets.

- B. Shop Drawings: Include layout drawings showing components and wiring for nonstandard boxes, enclosures, and cabinets.

## 1.5 QUALITY ASSURANCE

- A. Listing and Labeling: Provide raceways and boxes specified in this Section that are listed and labeled.
  - 1. The Terms "Listed" and "Labeled": As defined in NFPA 70, Article 100.
  - 2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.
- B. Comply with NECA's "Standard of Installation."
- C. Comply with NFPA 70.

## 1.6 COORDINATION

- A. Coordinate layout and installation of raceways and boxes with other construction elements to ensure adequate headroom, working clearance, and access.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Metal Conduit and Tubing:
    - a. Alflec Corp.
    - b. Anamet, Inc.; Anaconda Metal Hose.
    - c. Anixter Brothers, Inc.
    - d. Carol Cable Co., Inc.
    - e. Cole-Flex Corp.
    - f. Electri-Flex Co.
    - g. Flexcon, Inc.; Coleman Cable Systems, Inc.
    - h. Grinnell Co.; Allied Tube and Conduit Div.
    - i. Monogram Co.; AFC.
    - j. Spiraduct, Inc.
    - k. Triangle PWC, Inc.
    - l. Wheatland Tube Co.
  - 2. Conduit Bodies and Fittings:
    - a. American Electric; Construction Materials Group.
    - b. Crouse-Hinds; Div. of Cooper Industries.
    - c. Emerson Electric Co.; Appleton Electric Co.



- d. Hubbell, Inc.; Killark Electric Manufacturing Co.
  - e. Lamson & Sessions; Carlon Electrical Products.
  - f. O-Z/Gedney; Unit of General Signal.
  - g. Scott Fetzer Co.; Adalet-PLM.
  - h. Spring City Electrical Manufacturing Co.
- 3. Metal Wireways:
  - a. Hoffman Engineering Co.
  - b. Keystone/Rees, Inc.
  - c. Square D Co.
- 4. Nonmetallic Wireways:
  - a. Hoffman Engineering Co.
  - b. Lamson & Sessions; Carlon Electrical Products.
- 5. Boxes, Enclosures, and Cabinets:
  - a. American Electric; FL Industries.
  - b. Butler Manufacturing Co.; Walker Division.
  - c. Crouse-Hinds; Div. of Cooper Industries.
  - d. Electric Panelboard Co., Inc.
  - e. Erickson Electrical Equipment Co.
  - f. Hoffman Engineering Co.; Federal-Hoffman, Inc.
  - g. Hubbell Inc.; Killark Electric Manufacturing Co.
  - h. Hubbell Inc.; Raco, Inc.
  - i. Lamson & Sessions; Carlon Electrical Products.
  - j. O-Z/Gedney; Unit of General Signal.
  - k. Parker Electrical Manufacturing Co.
  - l. Robroy Industries, Inc.; Electrical Division.
  - m. Scott Fetzer Co.; Adalet-PLM.
  - n. Spring City Electrical Manufacturing Co.
  - o. Thomas & Betts Corp.
  - p. Woodhead Industries, Inc.; Daniel Woodhead Co.

## 2.2 METAL CONDUIT AND TUBING

- A. Rigid Steel Conduit: ANSI C80.1.
- B. IMC: ANSI C80.6.
- C. Plastic-Coated Steel Conduit and Fittings: NEMA RN 1.
- D. Plastic-Coated IMC and Fittings: NEMA RN 1.
- E. FMC: Zinc-coated steel.
- F. LFMC: Flexible steel conduit with PVC jacket.
- G. Fittings: NEMA FB 1; compatible with conduit/tubing materials.

## 2.3 METAL WIREWAYS

- A. Material: Sheet metal sized and shaped as indicated.
- B. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- C. Select features, unless otherwise indicated, as required to complete wiring system and to comply with NFPA 70.
- D. Wireway Covers: As indicated
- E. Wireway Covers: Hinged type.
- F. Wireway Covers: Screw-cover type.
- G. Wireway Covers: Flanged-and-gasketed type.
- H. Finish: Manufacturer's standard enamel finish.

## 2.4 OUTLET AND DEVICE BOXES

- A. Sheet Metal Boxes: NEMA OS 1.
- B. Cast-Metal Boxes: NEMA FB 1, Type FD, cast box with gasketed cover.
- C. Nonmetallic Boxes: NEMA OS 2.

## 2.5 PULL AND JUNCTION BOXES

- A. Small Sheet Metal Boxes: NEMA OS 1.
- B. Cast-Metal Boxes: NEMA FB 1, cast aluminum with gasketed cover.

## 2.6 ENCLOSURES AND CABINETS

- A. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous hinge cover and flush latch.
  - 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
  - 2. Nonmetallic Enclosures: Plastic, finished inside with radio-frequency-resistant paint.
- B. Cabinets: NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and concealed hinge. Key latch to match panelboards. Include metal barriers to separate wiring of different systems and voltage, and include accessory feet where required for freestanding equipment.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine surfaces to receive raceways, boxes, enclosures, and cabinets for compliance with installation tolerances and other conditions affecting performance of raceway installation. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 WIRING METHODS

- A. Outdoors: Use the following wiring methods:
  - 1. Exposed: Rigid steel or IMC.
  - 2. Concealed: Rigid steel or IMC.
  - 3. Underground, Single Run: PVC coated RGS.
  - 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
  - 5. Boxes and Enclosures: NEMA 250, Type 3R or Type 4.

### 3.3 INSTALLATION

- A. Install raceways, boxes, enclosures, and cabinets as indicated, according to manufacturer's written instructions.
- B. Minimum Raceway Size: 1/2-inch trade size (DN16).
- C. Minimum Raceway Size: 3/4-inch trade size (DN21).
- D. Install raceways level and square and at proper elevations. Provide adequate headroom.
- E. Complete raceway installation before starting conductor installation.
- F. Support raceways as specified in Division 16 Section "Basic Electrical Materials and Methods."
- G. Use temporary closures to prevent foreign matter from entering raceways.
- H. Protect stub-ups from damage where conduits rise through floor slabs. Arrange so curved portion of bends is not visible above the finished slab.
- I. Make bends and offsets so ID is not reduced. Keep legs of bends in the same plane and straight legs of offsets parallel, unless otherwise indicated.
- J. Use raceway fittings compatible with raceways and suitable for use and location. For intermediate steel conduit, use threaded rigid steel conduit fittings, unless otherwise indicated.
- K. Run concealed raceways, with a minimum of bends, in the shortest practical distance considering the type of building construction and obstructions, unless otherwise indicated.
- L. Raceways Embedded in Slabs: Install in middle third of slab thickness where practical, and leave at least 1-inch (25-mm) concrete cover.
  - 1. Secure raceways to reinforcing rods to prevent sagging or shifting during concrete placement.
  - 2. Space raceways laterally to prevent voids in concrete.
  - 3. Run conduit larger than 1-inch trade size (DN27) parallel to or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
  - 4. Transition from nonmetallic tubing to Schedule 80 nonmetallic conduit, rigid steel conduit, or IMC before rising above floor.

- M. Install exposed raceways parallel to or at right angles to nearby surfaces or structural members, and follow the surface contours as much as practical.
  - 1. Run parallel or banked raceways together, on common supports where practical.
  - 2. Make bends in parallel or banked runs from same centerline to make bends parallel. Use factory elbows only where elbows can be installed parallel; otherwise, provide field bends for parallel raceways.
- N. Join raceways with fittings designed and approved for the purpose and make joints tight.
  - 1. Make raceway terminations tight. Use bonding bushings or wedges at connections subject to vibration. Use bonding jumpers where joints cannot be made tight.
  - 2. Use insulating bushings to protect conductors.
- O. Tighten set screws of threadless fittings with suitable tools.
- P. Terminations: Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against the box. Where terminations are not secure with 1 locknut, use 2 locknuts: 1 inside and 1 outside the box.
- Q. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into the hub so the end bears against the wire protection shoulder. Where chase nipples are used, align raceways so the coupling is square to the box and tighten the chase nipple so no threads are exposed.
- R. Install pull wires in empty raceways. Use No. 14 AWG zinc-coated steel or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of the pull wire.
- S. Install raceway sealing fittings according to manufacturer's written instructions. Locate fittings at suitable, approved, and accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
  - 1. Where conduits pass from warm to cold locations, such as the boundaries of refrigerated spaces.
  - 2. Where otherwise required by NFPA 70.
- T. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment. Install with an adjustable top or coupling threaded inside for plugs set flush with the finished floor. Extend conductors to equipment with rigid steel conduit; FMC may be used 6 inches (150 mm) above the floor. Install screwdriver-operated, threaded flush plugs flush with floor for future equipment connections.
- U. Flexible Connections: Use maximum of 6 feet (1830 mm) of flexible conduit for recessed and semirecessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Use liquidtight flexible conduit in wet or damp locations. Install separate ground conductor across flexible connections.
- V. PVC Externally Coated, Rigid Steel Conduits: Use only fittings approved for use with that material. Patch all nicks and scrapes in PVC coating after installing conduits.
- X. Surface Raceways: Install a separate, green, ground conductor in raceways from junction box supplying the raceways to receptacle or fixture ground terminals.

1. Select each surface raceway outlet box, to which a lighting fixture is attached, of sufficient diameter to provide a seat for the fixture canopy.
2. Where a surface raceway is used to supply a fluorescent lighting fixture having central-stem suspension with a backplate and a canopy (with or without extension ring), no separate outlet box is required.
3. Provide surface metal raceway outlet box, and the backplate and canopy, at the feed-in location of each fluorescent lighting fixture having end-stem suspension.
4. Where a surface metal raceway extension is made from an existing outlet box on which a lighting fixture is installed, no additional surface-mounted outlet box is required. Provide a backplate slightly smaller than the fixture canopy.

Z. Install hinged-cover enclosures and cabinets plumb. Support at each corner.

### 3.4 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure coatings, finishes, and cabinets are without damage or deterioration at the time of Substantial Completion.
1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
  2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

### 3.5 CLEANING

- A. On completion of installation, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finish, including chips, scratches, and abrasions.

END OF SECTION 16130

## SECTION 16145 - LIGHTING CONTROL DEVICES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors.
- B. Related Sections include the following:
  - 1. Division 16 Section "Wiring Devices".

## 1.3 SUBMITTALS

- A. Product Data: Include dimensions and data on features, components, and ratings for lighting control devices.
- B. Samples: Occupancy sensors for color selection and evaluation of technical features.
- C. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.
- D. Maintenance Data: For lighting control devices to include in maintenance manuals specified in Division 1.

## 1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain lighting control devices from a single source with total responsibility for compatibility of lighting control system components specified in this Section, in Division 13 Section "Lighting Controls," and in Division 16 Section "Dimming Controls."
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, for their indicated use and installation conditions by a testing agency acceptable to authorities having jurisdiction.
- C. Comply with 47 CFR 15, Subparts A and B, for Class A digital devices.
- D. Comply with NYCEC 2011.

## 1.5 COORDINATION

- A. Coordinate features of devices specified in this Section with systems and components specified in other Sections to form an integrated system of compatible components. Match components and interconnections for optimum performance of specified functions.

## PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Contactors and Relays:
    - a. Automatic Switch Co.
    - b. Challenger Electrical Equipment Corp.
    - c. Cutler-Hammer Products; Eaton Corporation.
    - d. Furnas Electric Co.
    - e. GE Lighting Controls.
    - f. Hubbell Lighting, Inc.
    - g. Siemens Energy and Automation, Inc.
    - h. Square D Co.; Power Management Organization.
    - i. Zenith Controls, Inc.
    - j. American Electronic Components, Inc. (Durakool)
  - 2. Time Switches:
    - a. Diversified Electronics, Inc.
    - b. Grasslin Controls Corp.
    - c. Intermatic, Inc.
    - d. Leviton Manufacturing.
    - e. Paragon Electric Co., Inc.
    - f. Tork, Inc.
    - g. Zenith Controls, Inc.
  - 3. Photoelectric Relays:
    - a. Allen-Bradley/Rockwell Automation.
    - b. Area Lighting Research, Inc.
    - c. Fisher Pierce.
    - d. Grasslin Controls, Corp.
    - e. Intermatic, Inc.
    - f. Paragon Electric Co., Inc.
    - g. Rhodes: M H Rhodes, Inc.
    - h. SSAC, Inc.
    - i. Tork, Inc.

## 2.2 TIME SWITCHES

- A. Description: Solid-state programmable units with alphanumeric display complying with UL 917.
- B. Description: Electromechanical-dial type complying with UL 917.
  - 1. Astronomic dial.
  - 2. Two contacts, rated 30 A at 277-V ac, unless otherwise indicated.

3. Two pilot-duty contacts, rated 2 A at 240-V ac, unless otherwise indicated.
4. Eight-day program uniquely programmable for each weekday and holidays.
5. Skip-day mode.

## 2.3 PHOTOELECTRIC RELAYS

- A. Description: Solid state, with single-pole, double-throw dry contacts rated to operate connected relay or contactor coils or microprocessor input, and complying with UL 773A.
- B. Light-Level Monitoring Range: 0 to 3500 fc (0 to 37 673 lx), with an adjustment for turn-on/turn-off levels.
- C. Time Delay: Prevents false operation.
- D. Indoor Ceiling- or Wall-Mounting Units: Adjustable for turn-on/turn-off levels, semiflush, calibrated to detect adequacy of daylighting in perimeter locations, and arranged to turn artificial illumination on and off to suit varying intensities of available daylighting.
- E. Indoor Skylight Units: Housed in a threaded plastic fitting for mounting under skylight.
- F. Outdoor Sealed Units: Weathertight housing, resistant to high temperatures and equipped with sun-glare shield and ice preventer.

## 2.4 MULTIPOLE CONTACTORS AND RELAYS

- A. Description: Electrically operated and held, and complying with UL 508 and NEMA ICS 2.
  1. Current Rating for Switching: UL listing or rating consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballasts with 15 percent or less total harmonic distortion of normal load current).
  2. Control Coil Voltage: Match control power source.

# PART 3 - EXECUTION

## 3.1 INSTALLATION

- A. Install equipment level and plumb and according to manufacturer's written instructions.
- B. Mount lighting control devices according to manufacturer's written instructions and requirements in Division 16 Section "Basic Electrical Materials and Methods."
- C. Mounting heights indicated are to bottom of unit for suspended devices and to center of unit for wall-mounting devices.

## 3.2 CONTROL WIRING INSTALLATION

- A. Install wiring between sensing and control devices according to manufacturer's written instructions and as specified in Division 16 Section "Conductors and Cables" for low-voltage connections.
- B. Wiring Method: Install all wiring in raceway as specified in Division 16 Section "Raceways and Boxes."



- C. Wiring Method: Install all wiring in raceway as specified in Division 16 Section "Raceways and Boxes," unless run in accessible ceiling space and gypsum board partitions.
- D. Bundle, train, and support wiring in enclosures.
- E. Ground equipment.
- F. Connections: Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

### 3.3 IDENTIFICATION

- A. Identify components and power and control wiring according to Division 16 Section "Basic Electrical Materials and Methods."
- B. Identify components and power and control wiring according to Division 16 Section "Electrical Identification."

### 3.4 FIELD QUALITY CONTROL

- A. Schedule visual and mechanical inspections and electrical tests with at least seven days' advance notice.
- B. Inspect control components for defects and physical damage, testing laboratory labeling, and nameplate compliance with the Contract Documents.
- C. Check tightness of electrical connections with torque wrench calibrated within previous six months. Use manufacturer's recommended torque values.
- D. Verify settings of photoelectric devices with photometer calibrated within previous six months.
- E. Electrical Tests: Use particular caution when testing devices containing solid-state components. Perform the following according to manufacturer's written instructions:
  - 1. Continuity tests of circuits.
  - 2. Operational Tests: Set and operate devices to demonstrate their functions and capabilities in a methodical sequence that cues and reproduces actual operating functions.
    - a. Include testing of devices under conditions that simulate actual operational conditions. Record control settings, operations, cues, and functional observations.
- F. Correct deficiencies, make necessary adjustments, and retest. Verify that specified requirements are met.
- G. Test Labeling: After satisfactory completion of tests and inspections, apply a label to tested components indicating test results, date, and responsible agency and representative.
- H. Reports: Written reports of tests and observations. Record defective materials and workmanship and unsatisfactory test results. Record repairs and adjustments.

### 3.5 CLEANING

- A. Cleaning: Clean equipment and devices internally and externally using methods and materials recommended by manufacturers, and repair damaged finishes.

### 3.6 DEMONSTRATION

- A. Coordinate with training for low-voltage, programmable lighting control system specified in Division 13 Section "Lighting Controls."
- B. Engage a factory-authorized service representative to train Owner's maintenance personnel as specified below:
  - 1. Train Owner's maintenance personnel on troubleshooting, servicing, adjusting, and preventive maintenance. Provide a minimum of three hours' training.
  - 2. Training Aid: Use the approved final version of maintenance manuals as a training aid.
  - 3. Schedule training with Owner, through Architect, with at least seven days' advance notice.

### 3.7 ON-SITE ASSISTANCE

- A. Occupancy Adjustments: Within one year of date of Substantial Completion, provide up to three Project site visits, when requested, to adjust light levels, make program changes, and adjust sensors and controls to suit actual conditions.

END OF SECTION 16145

**SECTION 16289**  
**TRANSIENT VOLTAGE SURGE SUPPRESSION**

**PART 1 – GENERAL****1.01 DESCRIPTION OF WORK**

- A. Provide complete transient voltage surge suppression for the protection of the low voltage, control and communication systems.

**SUPPLEMENTAL SUBMITTALS**

- A. Product Certificates

Signed by manufacturers of transient voltage suppression devices, certifying that the products furnished comply with the following testing and labeling requirements:

1. UL 1283 certification.
  2. UL 1449 3rd Edition listing and classification
- B. Operation and Maintenance instructions.
- C. **Certificate of compliance with Quality Assurance requirements.**
- D. **Certificate of compliance with field quality control.**
- E. **Warranty.**
- F. Training videotape as specified under paragraph 3.05 herein.

**1.03 QUALITY ASSURANCE**

- A. Source Limitations: Obtain suppression devices and accessories through one source from a single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. IEEE Compliance: Comply with IEEE C62.41, "IEEE Guide for Surge Voltages in Low Voltage AC Power Circuits," and test devices according to IEEE C62.45, "IEEE Guide for Surge Suppressor Testing."
- D. NEMA Compliance: Comply with NEMA LS 1, "Low Voltage Surge Protective Devices."
- E. UL Compliance: Comply with UL 1283, "Electromagnetic Interference Filters," and UL 1449 3rd Edition, "Transient Voltage Surge Suppressors."

**1.05 WARRANTY**

- A. The surge suppressor manufacturer shall warrant the surge suppression device and supporting components against defects and workmanship for a period of 10 years from date of substantial completion.

- B. The Contractor shall provide preventative maintenance during the warranty period. Maintenance shall include, but no be limited to:
1. Labor and materials, to repair, test and adjust surge suppression devices.
  2. Regular inspections.

## **PART 2- PRODUCTS**

### **2.01 APPROVED MANUFACTURERS**

- A. The approved manufacturers for the surge suppression devices shall be Cutler-Hammer, Siemens Energy & Automation, Square D, Leviton, MCG Electronics, LEA International, Advanced Protection Technologies, Current Technology, Ademco and Transjector Systems.

### **2.02 SURGE SUPPRESSION DEVICES**

- A. Service Entrance Suppressors



Modular type suppression devices shall be installed, inside or adjacent to electrical service entrance panel and shall have the following features and accessories:

1. LED indication lights (Green & Red) for power and protection status.
2. Audible alarm, with silencing switch, to indicate when protection has failed.
3. One set of Form C dry contacts (normally open/normally closed) rated at 5 Amp, 250 VAC, for remote monitoring of protection status.
4. Suppression elements shall be between each phase conductor and neutral, between each phase conductor and ground and between neutral conductor and ground.
5. Fuses, rated at 200 KA interrupting capacity.
6. Minimum single impulse current rating (L-N + L-G): 240,000 amps per phase for service entrance
7. UL1449 3<sup>rd</sup> Edition (ANSI C62.41-2002) clamping voltage for service entrance shall not exceed the following:

<u>VOLTAGE</u>	<u>L-N</u>	<u>L-G</u>	<u>N-G</u>
120/208	700	700	700

8. Suppressors shall exhibit redundant protection with redundant fusing for each phase and consist of solid state components and shall operate bi-directionally. Gas diodes or silicon avalanche diodes in surge path are not acceptable. Series installed protectors are not acceptable.

- B. Panelboard Suppressors

Modular type suppression devices shall be installed, inside or adjacent to electrical panel and shall have the following features and accessories:

1. LED indication lights (Green & Red) for power and protection status.

2. Audible alarm, with silencing switch, to indicate when protection has failed.
3. One set of dry contacts rated at 5 Amp, 250 VAC, for remote monitoring of protection status.
4. The suppressor shall be capable of interrupting a 200 KA, short circuit current delivered from the AC power line.
5. Minimum single impulse current rating (L-N + L-G): 120,000 amps per phase for panelboard.
6. UL1449 3<sup>rd</sup> Edition (ANSI C62.41-2002) clamping voltage for local panel shall not exceed the following:

<u>VOLTAGE</u>	<u>L-N</u>	<u>L-G</u>	<u>N-G</u>
120/208	700	700	700

C. Enclosures

NEMA 250, with type matching the enclosure of panel or device being protected, unless factory installed within equipment enclosure.

### **PART 3- EXECUTION**

#### **3.01 SERVICE ENTRANCE**



- A. Install devices at service entrance on line side, with ground lead bonded to service entrance ground.
- B. Conductors between suppressor and point of attachment shall be at least #10 AWG stranded copper conductor or larger. The conductors shall be kept as short and straight as possible for best performance. Lead length of connecting conductors shall be within 36 inches.

#### **3.02 LOCAL PANELS**

- A. Install devices for panelboard with conductors between suppressor and points of attachment as short and straight as possible. Do not exceed manufacturer's recommended lead length. Do not bond neutral and ground.
- B. A 20A overcurrent protection is required at the panel to protect the leads used to connect the surge protector to the panel.

#### **3.03 CONNECTIONS**

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

#### **3.04 FIELD QUALITY CONTROL**

- A. Perform the following field quality-control testing:
  1. Complete startup checks according to manufacturer's written instructions.

2. Perform each visual and mechanical inspection and electrical test stated in NETA ATS, Section 7.19. Certify compliance with test parameters.
- B. Contractor shall engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including piping and electrical connections. Report results in writing.
  1. Certify that electrical wiring installation complies with manufacturer's installation requirements.

### 3.05 TRAINING

The Contractor shall arrange with the manufacturer of the equipment to instruct school personnel in the proper operation and care of the surge suppression system. In addition, the Contractor shall provide the following:

- A. A set of simple operating instructions for operation and maintenance of the equipment shall be delivered to the Authority.
- B. Training of Personnel shall be videotaped.

#### LIST OF SUBMITTALS

<u>SUBMITTAL</u>	<u>DATE SUBMITTED</u>	<u>DATE APPROVED</u>
Product Data	_____	_____
Shop Drawings	_____	_____
Product Certificates	_____	_____
Certificate of compliance with Quality Assurance requirements	_____	_____
Certificate of compliance with field quality control	_____	_____
Warranty	_____	_____
Operation and Maintenance instructions	_____	_____
Training videotape	_____	_____

\* \* \*

**SECTION 16420**  
**SERVICE ENTRANCE EQUIPMENT**

**PART 1 - GENERAL****1.01 DESCRIPTION OF WORK**

- A. Immediately upon award of the Contract, the Contractor shall arrange for a meeting at the site with the Utility Company to coordinate the installation of the new or reinforced main service. Advise the Authority at least one (1) week in advance of said meeting.
- B. The Contractor shall apply for and receive from the Utility company information relative to the requirements for property line splice box, end box, meter pans, meter blocks, current transformer cabinets, meter wiring, and other equipment in connection with service entrance.
- C. All work shall be performed in accordance with the Utility Company's rules and regulations; to the satisfaction of the Authority and to be accepted by the Bureau of Electrical Control.
- D. All charges by the Utility Company in performing any part of the installation for the Project shall be paid by the Contractor as a part of the Contract.
- E. Provide ground fault trip devices and relays as required by code.
- F. Provide lighting arrestors as required for a Master Label Lightning Protection System.

**1.02 ELECTRIC SERVICE**

- A. Type of Electric Service
  - 1. Electric service shall be 277/480 Volts, 3-phase, 4-wire, 60-Hz Alternating Current Service.
- B. Approval of Advisory Board
  - 1. New service equipment of 1,000 KVA or more shall be filed by the Contractor with the Advisory Board of the Bureau of Electrical Control. Approval of the Advisory Board shall be obtained by the Contractor prior to commencement of work.
- C. Approval of Con Edison
  - 1. Service Equipment with total rating over 800 Amps must be submitted to Con Edison to ensure compliance with requirements for service end box and metering arrangements.

**1.03 SUPPLEMENTAL SUBMITTALS**

- A. The Contractor shall submit for the Authority's approval, a comprehensive Drawing 1/4" scale showing the assembled arrangement of service switches, current transformer cabinets, meters, pull boxes, conduit, raceways, and all other equipment in connection with service entrance, prior to fabrication of equipment. All dimensions shall be indicated on the Drawing including height, width and depth of each unit and mounting height above floor.
- B. Plans approved by Advisory Board.
- C. Plans approved by Con Edison.
- D. Warranty.

**1.04     WARRANTY**

- A.     In addition to the warranties specified in Section G01740, provide one year manufacturer's warranty for equipment and materials.

**PART 2 - PRODUCTS****2.01     SERVICE SWITCHES**

- A.     Service switches shall be externally operated, rated at 600-volts minimum, with three blades, three fuses and solid neutral and enclosed in NEMA type enclosures.
- B.     Switches shall meet Underwriters Laboratory and NEMA Standards, and labeled for service entrance use.
  - 1.     Service Switches rated 800 Amps or less shall be standard quick make, quick break type. When an interlock is provided, provide means of voiding same for access to fuses under load.
  - 2.     Service switches rated over 800 Amps shall be pressure type of the bolted pressure load break type. All contacts and line, load and fuse terminal shall be silver or pure tin-plated.
  - 3.     Switches serving step-up transformer shall be High Pressure Contact (HPC) type.
  - 4.     All HPC switches shall be rated for "making" and "breaking" twelve (12) times nominal current at 600 V ac for at least three operations.
  - 5.     Switches operating at 480/277 Volt, rated 1000 Amps and over shall be provided with ground-fault protection.
- C.     Switches shall be as manufactured by Square D, General Electric, Siemens, Eaton/Cutler-Hammer and Pringle.
- D.     NOTE: Service switches may be provided as an integral part of switchboard.

**2.02     PROPERTY LINE BOX**

- A.     The property line box, and all conduits and conductors from that box to the service switches shall be provided by the Contractor. All work with the property line box; its size, material, arrangements, splices, etc shall be as per utility company requirements.

**2.03     SERVICE END BOX**

- A.     Service end box and splices within when required by the Utility Company shall be furnished and installed as per utility company requirements.

**2.04     SERVICE EQUIPMENT CABINETS**

- A.     Provide cabinets of meter pans, current transformers, and all other equipment in accordance with utility company requirements.



**2.05 METERING INSTALLATIONS**

- A. The Utility Company furnishes, installs, connects, and maintains meters required for metering electric energy and demand for Con Edison billing purposes. Utility Company will furnish and the contractor must install and connect current transformers.
- B. **The Contractor is to request from the Utility Company (and pay for any additional fees required) pulse type meters and “demarcation boxes” to permit connection to BMS system. The Contractor is responsible for providing the conduit, wiring and connections to the “demarcation box”.**

**2.06 CABLE LIMITERS**

- A. Provide cable limiters on each conductor of each phase of the incoming service feeders. Limiters shall have heat resistant shell to confine the arc and insulating sleeve. Provide sufficient cable slack for replacement. Cable limiters shall be Bussmann, Littelfuse Inc., Burndy.

**PART 3 - EXECUTION****3.01 MOUNTING OF SERVICE EQUIPMENT**

- A. Comply with manufacturer instructions. Anchor floor mounted cabinets to floor. Comply with seismic restrictions. Only service equipment with front access only shall be acceptable.
- B. All openings for the entrance of conduits shall be made by the use of sleeves, which shall be grouted in place, waterproofed and vermin-proofed by an approved sealing compound extending 3” inside mouth of conduit. The contractor shall coordinate the number, size and location of these sleeves. In new installations, such sleeves shall be furnished and delivered to the General Construction trade prior to the pouring of concrete. When actual installation of conduits is made, all areas around the conduits shall be properly sealed. The Contractor shall at no time use a single large opening in the foundation wall for conduits in lieu of individual sleeves. Any deviation from this procedure shall be approved in writing by the Authority’s Representative.

**3.02 NAMEPLATES**

- A. Each unit of equipment shall be provided with a phenolic nameplate, identifying the equipment and its rating.

**3.03 TRENCHING, SIDEWALK AND STREET REPAIR**

- A. All trenching, back filling and sidewalk repair shall be performed by the Contractor in accordance with applicable Sections of the Specification.

**3.04 GROUNDING AND BONDING**

- A. All switchboards, main distribution boards, panels, raceways, and other equipment shall be grounded and bonded as per the latest Electrical Code of the City of New York.

**3.05 TESTING**

- A. Demonstrate switch operation with circuit unloaded. Test door interlock and defeating device.

**END OF SECTION**

LIST OF SUBMITTALSSUBMITTALDATE SUBMITTALDATE APPROVED

Product Data \_\_\_\_\_

Shop Drawings \_\_\_\_\_

Plans approved by Advisory Board \_\_\_\_\_

Plans approved by Con Edison \_\_\_\_\_

\* \* \*

**SECTION 16425**  
**SWITCHBOARDS**

**PART 1 - GENERAL****1.01 DESCRIPTION OF WORK**

Provide switchboards.

**1.02 SUPPLEMENTAL SUBMITTALS**

A. Submittals Package

Submit the Shop Drawings and Product Data specified below at the same time as a single package.

B. Shop Drawings

1. Dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings. Include the following:

- a. Enclosure types and details for types other than NEMA 250, Type 1.
- b. Bus configuration, current, and voltage ratings.
- c. Short-circuit current rating of switchboards and overcurrent protective devices.
- d. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.

2. Wiring Diagrams: power, signal, and control wiring. Diagrams should differentiate between manufacturer-installed and field-installed wiring.

C. Product Data

1. For each type of switchboard, overcurrent protective device, ground-fault protector, accessory, and component indicated.
2. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes

D. Contract Closeout Submittals

Provide:

1. Operation instructions
2. Maintenance requirements including torque-tightening values
3. Manufacturer's certification and field test reports.

E. Warranty.

**1.03 DELIVERY, STORAGE AND HANDLING**

- A. Deliver in sections of lengths that can be moved past obstructions in delivery path.

- B. Store indoors in clean dry space with uniform temperature to prevent condensation. Protect from exposure to dirt, fumes, water, corrosive substances, and physical damage.
- C. Handle switchboard according to NEMA PB 2.1. Instructions for Proper handling, Installation and Maintenance of Switchboard).

#### 1.04 **WARRANTY**

- A. In addition to the warranties specified in section G01740, provide one year Manufacturer's warranty for equipment and materials. Warranty period starts at the substantial completion of work.

#### 1.05 **COORDINATION**

- A. Coordinate layout and installation of switchboards and components with other construction, including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

### **PART 2 – PRODUCTS**

#### 2.01 **MANUFACTURES**

- A. Available Manufacturers:
  - 1. **All-City Switchboard Corp.**
  - 2. Eaton Corp.; Cutler-Hammer Products.
  - 3. General Electric Co.; Electrical Distribution & Control Div.
  - 4. Siemens Energy & Automation, Inc.
  - 5. Square D Co.

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#### 2.02 **MANUFACTURED UNITS**

- A. Front-Connected, Front-Accessible, rear aligned sections Switchboard mounted with:
  - 1. Main Devices and Branch Devices: Individual and fixed.
- B. Nominal System Voltage: 480Y/277 Volt
- C. Main-Bus Continuous ampere rating
- D. Switchboard shall be adequately braced to withstand the short circuit stress of 200,000 amperes RMS.

#### 2.03 **FABRICATION AND FEATURES**

- A. Enclosure: Steel: NEMA 250 type 3R. Cabinet shall consist of a rigidly constructed enclosure not less than # 14 gauge, cold rolled, steel for sections up to 900 square inches in area, and # 12 gauge for larger panel areas Gutter space shall be adequate for the conductors to be installed. Side gutters shall be not less than 4" for 100-ampere units, 6" for 200-ampere units and 8" for 400-600 ampere units. Top and bottom gutter space shall be not less than 12". Front trim of cabinet shall be designed so that gutter spaces will be accessible through hinged sections. No. 14-gauge steel angles or channels shall be provided to adequately support distribution equipment from floor with necessary bracing. Enclosure Finish: Factory-applied **electro-static powder coating** in manufacturer's standard gray finish

- B. Insulation and isolation for main and vertical buses of feeder sections.
- C. Insulation and isolation for main bus of main section and main and vertical buses of feeder sections.
- D. Pull Box on Top of Switchboard: Include the following features:
  - 1. Adequate ventilation to maintain temperature in pull box within same limits as switchboard.
  - 2. Insulated supports for all conductors shall be arranged to facilitate cabling.
  - 3. Pull box shall be #12 gauge sheet steel, and finished in a manner similar to Distribution Board.
- E. Buses and Connections: Three phase, four wire,. Include the following features:
  - 1. Phase- and Neutral-Bus Material: Hard-drawn copper of 98 percent conductivity with feeder circuit-breaker line connections.
  - 2. Ground Bus: 1/4-by-2-inch (6-by-50-mm) minimum size, drawn-temper copper of 98 percent conductivity, equipped with pressure connectors for feeder and branch-circuit ground conductors. For busway feeders, extend insulated equipment grounding cable to busway ground connection and support cable at intervals in vertical run.
  - 3. Contact Surfaces of Buses: Silver plated.
  - 4. Main Phase Buses, Neutral Buses, and Equipment Ground Buses: Uniform capacity for entire length of switchboard's main and distribution sections. Provide for future extensions from both ends.
  - 5. Isolation Barrier Access Provisions: Permit checking of bus-bolt tightness.
  - 6. Neutral Buses: 100 percent of the ampacity of the phase buses, unless otherwise indicated, equipped with pressure connectors for outgoing circuit neutral cables. Bus extensions for busway feeder neutral bus is braced.
  - 7. **Switchboard bus shall be rated per New York City Electrical Code articles 230.42 and 408.51.**
  - 8. **All live parts shall be minimum 12" above the finished floor.**

## **2.04 METERING**

- A. Contractor shall provide selectable display of the following values with maximum accuracy tolerances as indicated:
  - 1. Phase Currents, Each Phase: Plus or minus 1 percent.
  - 2. Phase-to-Phase Voltages, Three Phase: Plus or minus 1 percent.
  - 3. Phase-to-Neutral Voltages, Three Phase: Plus or minus 1 percent.
  - 4. Mounting: unit flush or semiflush mounted in door.
- B. Ammeters, Voltmeters

1. Meters: 4-inch (100-mm) diameter or 6 inches (150 mm) square, flush or semiflush, with antiparallax 250-degree scales and external zero adjustment.
  2. Voltmeters: Cover an expanded-scale range of nominal voltage plus 10 percent.
  3. **Provide control power fuses and shorting blocks.**
  4. **Digital multimeters shall be accepted.**
- C. Instrument Switches: Rotary type with off position **or digital pushbutton.**
1. Voltmeter Switches: Permit reading of all phase-to-phase voltages and, where a neutral is indicated, phase-to-neutral voltages.
  2. Ammeter Switches: Permit reading of current in each phase and maintain current-transformer secondaries in a closed-circuit condition at all times.

## 2.05 OVERCURRENT PROTECTIVE DEVICES

- A. Fused Switch: NEMA KS 1, Type HD; clips to accommodate specified fuses; external lockable handle.

Fusible Switch Units shall consist of twin or single type units of ampere (and corresponding horsepower) rating indicated. Unit shall have provision for padlocking. The individual units shall bear Underwriter's Laboratories, Inc. label of approval. Individual 30-ampere units shall be interchangeable with 60-ampere units and operating handles shall not exceed 6'-7" above floor not less than 18" above floor.

- B. Molded-Case Circuit Breaker: NEMA AB 1, with interrupting capacity to meet available fault currents. Entire assembly shall be securely fastened to switchboard structure. All breakers shall be of the bolt on type. Breakers shall be mounted so that they can be removed without disturbing bus work or the adjacent breaker. Where space for future breaker is called for, all copper connectors and provisions for mounting the breaker shall be provided.

- C. Series ratings are not permitted for any overcurrent protection device.

## 2.06 NAMEPLATES

- A. Each unit of equipment shall be provided with a riveted phenolic nameplate, identifying the equipment and its rating.
- B. On each Circuit breakers and fused switch: ampere rating, fuse size and fuse type (or circuit breaker type and setting) circuit designation).
- C. On Switchboard: ampere rating, nominal voltage, phases short-circuit current rating of switchboard, and switchboard designation.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Switchboard
1. Install switchboards on concrete bases, 4-inch (100-mm) nominal thickness.
  2. Foundation Channel and Bolts: Install channel for anchoring and leveling of the switchboard and solidly anchor to floor and/or wall.

**3.02 CONNECTIONS**

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

**3.03 NAMEPLATES**

1. Label each switchboard compartment and circuits with phenolic nameplate. Precision engrave letters and numbers with uniform margins, character size minimum 3/16" high.
2. Install identity sign on switchboard entry door as follows:

-- ELECTRICAL SWITCHBOARD --  
-- NO STORAGE PERMITTED --

Lettering in luminous-white shall be not less than 2 1/2" height and 5/8" width.

**3.04 TESTS**

- A. Provide **third party** services to completely test the installed switchboard, including insulation resistance of each switchboard bus and components and megger tests.
- B. Provide certification and test reports from the manufacturer's representative that the assembled switchboard, as installed meets UL, NEMA, and SCA Standards.
- C. Switchboard shall have a label indication approval by the Underwriters Laboratories, Inc.

**3.05 CLEANING**

On completion of installation, Contractor shall inspect interior and exterior of switchboards. Remove paint splatters and spots and vacuum dirt and debris. Repair exposed surfaces to match original finish.

**END OF SECTION**

LIST OF SUBMITTALSSUBMITTAL DATE SUBMITTEDDATE APPROVED

Shop Drawings	_____	_____
Wiring Diagrams	_____	_____
Product Data	_____	_____
Contract Closeout Submittals:	_____	_____
Operation instructions	_____	_____
Maintenance requirements	_____	_____
Manufacturer's certification and field test reports	_____	_____
Warranty	_____	_____

\* \* \*



## SECTION 16452 - GROUNDING

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes grounding of electrical systems and equipment and basic requirements for grounding for protection of life, equipment, circuits, and systems. Grounding requirements specified in this Section may be supplemented in other Sections of these Specifications.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 16 Section "Wires and Cables" for requirements for grounding conductors.

## 1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for grounding rods, connectors and connection materials, and grounding fittings.
- C. Qualification data for firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Field tests and observation reports certified by the testing organization and indicating and interpreting the test reports for compliance with performance requirements.

## 1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7, or a full member company of the InterNational Electrical Testing Association (NETA).
  - 1. Testing Agency Field Supervision: Use persons currently certified by NETA or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
- B. Comply with NYCEC 2011.
- C. Comply with UL 467.
- D. Listing and Labeling: Provide products specified in this Section that are listed and labeled.

1. The Terms "Listed" and "Labeled": As defined in the National Electrical Code, Article 100.
2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Apache Grounding; Nashville Wire Products.
  2. Boggs: H. L. Boggs & Co.
  3. Chance: A. B. Chance Co.
  4. Dossert Corp.
  5. Erico Inc.; Electrical Products Group.
  6. Galvan Industries, Inc.
  7. Hastings Fiber Glass Products, Inc.
  8. Heary Brothers Lightning Protection Co.
  9. Ideal Industries, Inc.
  10. ILSCO.
  11. Kearney.
  12. Korns: C. C. Korns Co.
  13. Lightning Master Corp.
  14. Lyncole XIT Grounding.
  15. O-Z/Gedney Co.
  16. Raco, Inc.
  17. Salisbury: W.H. Salisbury & Co., Utility.
  18. Thomas & Betts, Electrical.
  19. Utilco Co.

### 2.2 GROUNDING AND BONDING PRODUCTS

- A. Governing Requirements: Where types, sizes, ratings, and quantities indicated are in excess of National Electrical Code (NEC) requirements, the more stringent requirements and the greater size, rating, and quantity indications govern.

### 2.3 WIRE AND CABLE GROUNDING CONDUCTORS

- A. Comply with Division 16 Section "Wires and Cables." Conform to NEC Table 8, except as otherwise indicated, for conductor properties, including stranding.
  1. Material: Aluminum and copper. Use only copper wire for both insulated and bare grounding conductors in direct contact with earth, concrete, masonry, crushed stone, and similar materials.
- B. Equipment Grounding Conductors: Insulated with green color insulation.
- C. Grounding-Electrode Conductors: Stranded cable.

- D. Underground Conductors: Bare, tinned, stranded, except as otherwise indicated.
- E. Bare Copper Conductors: Conform to the following:
  - 1. Solid Conductors: ASTM B 3.
  - 2. Assembly of Stranded Conductors: ASTM B 8.
  - 3. Tinned Conductors: ASTM B 33.

## 2.4 MISCELLANEOUS CONDUCTORS

- A. Grounding Bus: Bare, annealed-copper bars of rectangular cross section.
- B. Braided Bonding Jumpers: Copper tape, braided No. 30 AWG bare copper wire, terminated with copper ferrules.
- C. Bonding Straps: Soft copper, 0.05 inch (1 mm) thick and 2 inches (50 mm) wide, except as indicated.

## 2.5 CONNECTOR PRODUCTS

- A. Pressure Connectors: High-conductivity-plated units.
- B. Bolted Clamps: Heavy-duty type.
- C. Exothermic-Welded Connections: Provided in kit form and selected per manufacturer's written instructions for specific types, sizes, and combinations of conductors and connected items.

## 2.6 GROUNDING ELECTRODES AND TEST WELLS

- A. Grounding Rods: Copper-clad steel.
- B. Grounding Rods: Sectional type; copper-clad steel.
  - 1. Size: 3/4 inch by 120 inches (19 by 3000 mm).
  - 2. Size: 5/8 inch by 96 inches (16 by 2400 mm).
- C. Plate Electrodes: Copper, square or rectangular shape. Minimum 0.10 inch (3 mm) thick, size as indicated.
- D. Test Wells: Fabricate from 15-inch- (400-mm-) long, square-cut sections of 8-inch- (200-mm-) diameter, Schedule 80, PVC pipe.

## PART 3 - EXECUTION

### 3.1 APPLICATION

- A. Equipment Grounding Conductors: Comply with NYCEC 2011 Article 250 for types, sizes, and quantities of equipment grounding conductors, except where specific types, larger sizes, or more conductors than required by NYCEC are indicated.

1. Install equipment grounding conductor with circuit conductors for the items below in addition to those required by Code:
  - a. Feeders and branch circuits.
  - b. Lighting circuits.
  - c. Receptacle circuits.
  - d. Flexible raceway runs.
  - e. Armored and metal-clad cable runs.
- B. Metal Poles Supporting Outdoor Lighting Fixtures: Ground pole to a grounding electrode in addition to separate equipment grounding conductor run with supply branch circuit.

### 3.2 INSTALLATION

- A. General: Ground electrical systems and equipment according to NYCEC requirements, except where Drawings or Specifications exceed NEC requirements.
- B. Grounding Rods: Locate a minimum of 1-rod length from each other and at least the same distance from any other grounding electrode.
  1. Drive until tops are 2 inches (50 mm) below finished floor or final grade, except as otherwise indicated.
  2. Interconnect with grounding-electrode conductors. Use exothermic welds, except at test wells and as otherwise indicated. Make these connections without damaging copper coating or exposing steel.
- C. Grounding Conductors: Route along the shortest and straightest paths possible, except as otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- D. Underground Grounding Conductors: Use bare copper wire. Bury at least 24 inches (600 mm) below grade.
- E. Test Wells: One for each driven grounding electrode, except as otherwise indicated. Set top of well flush with finished grade or floor. Fill with 1-inch- (25-mm-) maximum-size crushed stone or gravel.

### 3.3 CONNECTIONS

- A. General: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
  1. Use electroplated or hot-tin-coated materials to assure high conductivity and to make contact points closer in order of galvanic series.
  2. Make connections with clean, bare metal at points of contact.
  3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
  4. Make aluminum-to-galvanized steel connections with tin-plated copper jumpers and mechanical clamps.
  5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

- B. Exothermic-Welded Connections: Use for connections to structural steel and for underground connections, except those at test wells. Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.
- C. Equipment Grounding-Wire Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.
- D. Noncontact Metal Raceway Terminations: Where metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically noncontinuous conduits at both entrances and exits with grounding bushings and bare grounding conductors, except as otherwise indicated.
- E. Connections at Test Wells: Use compression-type connectors on conductors and make bolted- and clamped-type connections between conductors and grounding rods.
- F. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. Where these requirements are not available, use those specified in UL 486A and UL 486B.
- G. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by manufacturer of connectors. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.
- H. Moisture Protection: Where insulated grounding conductors are connected to grounding rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

### 3.4 UNDERGROUND DISTRIBUTION SYSTEM GROUNDING

- A. Manholes and Handholes: Install a driven grounding rod close to wall and set rod depth so 4 inches (100 mm) will extend above finished floor. Where necessary, install grounding rod before manhole is placed and provide a No. 1/0 AWG bare, tinned-copper conductor from grounding rod into manhole through a waterproof sleeve in manhole wall. Protect grounding rods passing through concrete floor with a double wrapping of pressure-sensitive tape or heat-shrunk insulating sleeve from 2 inches (50 mm) above to 6 inches (150 mm) below concrete. Seal floor opening with waterproof, nonshrink grout.
- B. Connections to Manhole Components: Connect exposed metal parts, such as inserts, cable racks, pulling irons, ladders, and cable shields within each manhole or handhole, to grounding rod or grounding conductor. Make connections with minimum No. 4 AWG stranded, hard-drawn copper wire. Train conductors plumb or level around corners and fasten to manhole walls. Connect to cable armor and cable shields as recommended by manufacturer of splicing and termination kits.
- C. Grounding System: Ground pad-mounted equipment and noncurrent-carrying metal items associated with substations by connecting them to underground cable and grounding electrodes.

### 3.5 FIELD QUALITY CONTROL

- A. Independent Testing Agency: Engage an independent electrical testing organization to perform tests described below.
- B. Tests: Subject the completed grounding system to a megger test at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at ground test

wells. Measure ground resistance not less than 2 full days after the last trace of precipitation, and without the soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests by the 2-point method according to IEEE 81.

C. Maximum grounding to resistance values are as follows:

1. Equipment Rated 500 kVA and Less: 10 ohms.
2. Equipment Rated 500 to 1000 kVA: 5 ohms.
3. Equipment Rated More than 1000 kVA: 3 ohms.
4. Unfenced Substations and Pad-Mounted Equipment: 5 ohms.
5. Manhole Grounds: 10 ohms.

D. Excessive Ground Resistance: Where resistance to ground exceeds specified values, notify Owner promptly and include recommendations to reduce ground resistance and to accomplish recommended work.

E. Report: Prepare test reports, certified by the testing organization, of ground resistance at each test location. Include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.

### 3.6 ADJUSTING AND CLEANING

- A. Restore surface features, including vegetation, at areas disturbed by work of this Section. Reestablish original grades, except as otherwise indicated. Where sod has been removed, replace it as soon as possible after backfilling is completed. Restore areas disturbed by trenching, storing of dirt, cable laying, and other activities to their original condition. Include topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Comply with Division 2 Section "Landscaping." Maintain restored surfaces. Restore disturbed paving as indicated.

END OF SECTION 16452

## SECTION 16461 - DRY-TYPE TRANSFORMERS (1000 V AND LESS)

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes dry-type distribution and specialty transformers rated 1000 V and less.

## 1.3 SUBMITTALS

- A. Product Data: Include data on features, components, ratings, and performance for each type of transformer specified. Include dimensioned plans, sections, and elevation views. Show minimum clearances and installed devices and features.
- B. Wiring Diagrams: Detail wiring and identify terminals for tap changing and connecting field-installed wiring.
- C. Product Certificates: Signed by manufacturers of transformers certifying that the products furnished comply with requirements.
- D. Qualification Data: For firms and persons specified in "Quality Assurance" Article.
- E. Factory Test Reports: Certified copies of manufacturer's design and routine factory tests required by referenced standards.
- F. Sound-Level Test Reports: Certified copies of manufacturer's sound-level tests applicable to equipment for this Project.
- G. Field Test Reports: Indicate and interpret test results for tests specified in Part 3.
- H. Maintenance Data: For transformers to include in the maintenance manuals specified in Division 1.

## 1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: In addition to requirements specified in Division 1 Section "Quality Control," an independent testing agency shall meet OSHA criteria for accreditation of testing laboratories, Title 29, Part 1907; or shall be a full-member company of the InterNational Electrical Testing Association.
  - 1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies, to supervise on-site testing specified in Part 3.
- B. Listing and Labeling: Provide transformers specified in this Section that are listed and labeled.

1. The Terms "Listed" and "Labeled": As defined in NFPA 70, Article 100.
2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.

C. Comply with IEEE C2.

D. Comply with NFPA 70 (NYCEC 2011).

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Temporary Heating: Apply temporary heat according to manufacturer's written instructions within the enclosure of each ventilated-type unit throughout periods during which equipment is not energized and is not in a space that is continuously under normal control of temperature and humidity.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering transformers that may be incorporated into the Work include, but are not limited to, the following:

- B. Manufacturers: Subject to compliance with requirements, provide transformers by one the following:

1. Acme Electric Corp.; Transformer Division.
2. Bryant Electric.
3. Challenger Electrical Equipment Corp.
4. Computer Power Inc.
5. Controlled Power Co.
6. Cutler-Hammer/Eaton Corp.
7. Federal Pacific Co.; Line Power Mfg. Corp. Subsidiary.
8. GE Electrical Distribution & Control.
9. Hammond Co.; Matra Electric, Inc.
10. MagneTek Inc.
11. Micron Industries Corp.
12. Siemens Energy & Automation, Inc.
13. Sola/Hevi-Duty Electric.
14. Square D; Groupe Schneider.
15. Uptegraff: R.E. Uptegraff Mfg. Co.
16. Virginia Transformer Corp.

#### 2.2 TRANSFORMERS, GENERAL

- A. Description: Factory-assembled and -tested, air-cooled units of types specified, designed for 60-Hz service.
- B. Cores: Grain-oriented, nonaging silicon steel.
- C. Coils: Continuous windings without splices, except for taps.
- D. Internal Coil Connections: Brazed or pressure type.



- E. Enclosure: Class complies with NEMA 250 for the environment in which installed.
- F. Low-Sound-Level Units: Minimum of 3 dBA less than NEMA ST 20 standard sound levels when factory tested according to IEEE C57.12.91.

### 2.3 GENERAL-PURPOSE DISTRIBUTION AND POWER TRANSFORMERS

- A. Comply with NEMA ST 20 and list and label as complying with UL 1561.
- B. Cores: One leg per phase.
- C. Windings: One coil per phase in primary and secondary.
- D. Enclosure: Indoor, ventilated.
- E. Enclosure: Indoor, ventilated, dripproof.
- F. Enclosure: Outdoor, ventilated, raintight, NEMA 250, Type 3R.
- G. Enclosure: Totally enclosed, nonventilated.
- H. Enclosure: Totally enclosed, nonventilated, suitable for outdoor use.
- I. Insulation Class: 185 or 220 deg C class for transformers 15 kVA or smaller; 220 deg C class for transformers larger than 15 kVA.
  - 1. Rated Temperature Rise: 80 deg C maximum rise above 40 deg C.
  - 2. **Rated Temperature Rise: 115 deg C maximum rise above 40 deg C.**
  - 3. Rated Temperature Rise: 150 deg C maximum rise above 40 deg C, for 220 deg C class insulation; 115 deg C maximum rise for 185 deg C class insulation.
- J. Taps: For transformers 3 kVA and larger, full-capacity taps in high-voltage windings are as follows:
  - 1. Taps, 3 through 25 kVA: Two 5-percent taps below rated high voltage.
  - 2. Taps, 3 through 10 kVA: Two 5-percent taps below rated high voltage.
  - 3. Taps, 15 through 500 kVA: Six 2.5-percent taps, 2 above and 4 below rated high voltage.
  - 4. Taps, 750 kVA and Above: Four 2.5-percent taps, 2 above and 2 below rated high voltage.
- K. Electrostatic Shielding: Each winding is independently single shielded with a full-width copper electrostatic shield arranged to minimize interwinding capacitance.
  - 1. Coil leads and terminal strips are arranged to minimize capacitive coupling between input and output connections.
  - 2. Shield Terminal: Separate; marked "Shield" for grounding connection.
  - 3. Capacitance: Shield limits capacitance between primary and secondary to a maximum of 33 picofarads over a frequency range of 20 Hz to 1 MHz.
  - 4. Common-Mode Noise Attenuation: Minus 120 dB minimum, 0.5 to 1.5 kHz; minus 65 dB minimum, 1.5 to 100 kHz.
  - 5. Normal-Mode Noise Attenuation: Minus 52 dB minimum, 1.5 to 10 kHz.
- L. Fungus Proofing: Permanent fungicidal treatment for coil and core.

## 2.4 CONTROL AND SIGNAL TRANSFORMERS

- A. Units comply with NEMA ST 1 and are listed and labeled as complying with UL 506.
- B. Ratings: Continuous duty. If rating is not indicated, provide capacity exceeding peak load by 50 percent minimum.
- C. Description: Self-cooled, 2 windings.

## 2.5 FINISHES

- A. Indoor Units: Manufacturer's standard paint over corrosion-resistant pretreatment and primer.
- B. Outdoor Units: Comply with ANSI C57.12.28.

## 2.6 SOURCE QUALITY CONTROL

- A. Factory Tests: Design and routine tests comply with referenced standards.
- B. Factory Sound-Level Tests: Conduct sound-level tests on equipment for this Project if specified sound levels are below standard ratings.

# PART 3 - EXECUTION

## 3.1 INSTALLATION

- A. Comply with safety requirements of IEEE C2.
- B. Arrange equipment to provide adequate spacing for access and for circulation of cooling air.
- C. Identify transformers and install warning signs according to Division 16 Section "Electrical Identification."
- D. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

## 3.2 GROUNDING

- A. Separately Derived Systems: Comply with NFPA 70 (NYCEC 2011) requirements for connecting to grounding electrodes and for bonding to metallic piping near the transformer.
- B. Separately Derived Systems: Make grounding connections to grounding electrodes and bonding connections to metallic piping as indicated and to comply with NFPA 70 (NYCEC 2011).

- C. Comply with Division 16 Section "Grounding" for materials and installation requirements.

### 3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to supervise the field assembly and connection of components, and the testing and adjusting of transformer components and accessories.
- B. Testing Agency: Owner will engage a qualified independent testing agency to perform field quality-control testing.
- C. Testing Agency: Engage a qualified independent testing agency to perform field quality-control testing.
- D. Test Objectives: To ensure transformer is operational within industry and manufacturer's tolerances, is installed according to the Contract Documents, and is suitable for energizing.
- E. Test Labeling: On satisfactory completion of tests for each transformer, attach a dated and signed "Satisfactory Test" label to tested component.
- F. Schedule tests and provide notification at least 7 days in advance of test commencement.
- G. Report: Submit a written report of observations and tests. Report defective materials and installation.
- H. Tests: Include the following minimum inspections and tests according to manufacturer's written instructions. Comply with IEEE C57.12.91 for test methods and data correction factors.
  - 1. Inspect accessible components for cleanliness, mechanical and electrical integrity, and damage or deterioration. Verify that temporary shipping bracing has been removed. Include internal inspection through access panels and covers.
  - 2. Inspect bolted electrical connections for tightness according to manufacturer's published torque values or, if not available, those specified in UL 486A and UL 486B.
  - 3. Insulation Resistance: Perform megohmmeter tests of primary and secondary winding to winding and winding to ground.
    - a. Minimum Test Voltage: 1000 V, dc.
    - b. Minimum Insulation Resistance: 500 megohms.
    - c. Duration of Each Test: 10 minutes.
    - d. Temperature Correction: Correct results for test temperature deviation from 20 deg C standard.
- I. Test Failures: Compare test results with specified performance or manufacturer's data. Correct deficiencies identified by tests and retest. Verify that transformers meet specified requirements.

### 3.4 CLEANING

- A. On completion of installation, inspect components. Remove paint splatters and other spots, dirt, and debris. Repair scratches and mars on finish to match original finish. Clean components internally using methods and materials recommended by manufacturer.

### 3.5 ADJUSTING

- A. After installing and cleaning, touch up scratches and mars on finish to match original finish.
- B. Adjust transformer taps to provide optimum voltage conditions at utilization equipment throughout normal operating cycle of facility. Record primary and secondary voltages and tap settings and submit with test results.
- C. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in readjusting transformer tap settings to suit actual occupied conditions. Provide up to 2 visits to Project site for this purpose without additional cost.
  - 1. Voltage Recordings: Contractor performed. Provide up to 48 hours of recording on the low-voltage system of each medium-voltage transformer.
  - 2. Point of Measurement: Make voltage recordings at load outlets selected by Owner.

END OF SECTION 16461

**SECTION 16470**  
**PANELBOARDS**

**PART 1 - GENERAL****1.01 DESCRIPTION OF WORK**

Provide panelboards.

**1.02 SUPPLEMENTAL SUBMITTALS****A. Submittal Packages**

Submit the Shop Drawings, and the product data specified below at the same time as a package.

**B. Shop Drawings; include the following for each panelboard:**

1. Dimensioned plans, elevations, sections, and details. Show tabulations of installed devices equipment features, and ratings.
2. Cabinet and gutter size.
3. Bus configuration, voltage and current rating.
4. Unless otherwise noted, Panelboard short circuit rating shall conform to U.L. Standards for fully rated systems only.
5. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.

**D. Field Test Reports: Submit written test reports and include the following:**

1. Test Procedures used
2. Test results

**E. Panelboard Schedules: For installation in panelboard. Submit final versions after load balancing.****1.03 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to the authorities having jurisdiction, and marked for intended use.
- B. Comply with NEMA PB1.
- C. Comply with NFPA 70 (NYCEC 2011).
- D. **Comply with UL 67.**

**1.04 COORDINATION**

- A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, and encumbrances to workspace clearance requirements.

**PART 2 - MATERIAL - PRODUCTS****2.01 PANELBOARDS - CIRCUIT BREAKER TYPE**

- A. Equipment manufactured by General Electric Co., Siemens, Square D Co., Eaton/Cutler-Hammer, **All-City Switchboard Corp**, having:
1. Bus bars and lugs shall not be less than 98% conductivity, hard drawn copper. All copper bus connections shall be bolted with lock washers and joints shall be silver plated.
  2. Full capacity copper neutral bus in panelboards where neutrals are required.
  3. Copper equipment grounding bus in panelboards where equipment grounding conductors are required.
  4. Section designated "space" or "provision for future breaker" equipped to accept future circuit breakers.
  5. Molded-Case Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Circuit breakers shall be bolt on. Plug-in type breakers are not acceptable.
- B. GFCI (**30mA Type**) circuit breakers shall be provided for designated circuits.
- C. Panelboard Cabinets
1. Flush and surface mounted cabinets. NEMA PB 1, Type 1, to meet environmental conditions at installed location.
  2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
  3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
  4. Finish: Manufacturer's standard enamel finish over corrosion-resistant treatment or primer coat.
- D. Locks
- Provide locks for panelboard cabinets located outside electrical rooms/closets. Locks shall be of approved cylinder, paracentric type, Yale No. 511S, Key change No. 47. Two keys shall be supplied with each lock.
- E. Directories
- A directory consisting of a steel or aluminum frame with a non-breakable, non-inflammable plastic face and cardboard or heavy white paper shall be installed on the inside of the door of cabinets for all panelboards. Frame shall be welded to door or fastened by approved screws to a mat in such a manner as not to leave anything projecting on the outside of the door. The cardboard or heavy paper shall have typewritten directory thereon stating the following: The number of each circuit together with the name of circuits, load controlled, size of circuit feeder and subfeeder conductors. Directory frames shall be not less than 8" x 8".

**2.02 PANELBOARD - SWITCH FUSE TYPE**

- A. Provide a dead front, handle operated, fusible switch panelboard where indicated. The assembled panelboard shall have a label indicating approval by Underwriters Laboratories, Inc. and shall meet the requirements of NEMA Standards. In general, panelboard construction shall be identical to that specified for circuit breaker panelboards.

All necessary devices and connections shall be complete and in accordance with the following Specifications.

1. Fusible Switch Units shall consist of twin or single type units of ampere (and corresponding horsepower) rating indicated. Units shall be quick make, quick break, heavy duty switch and fuse mechanism, individually enclosed by a hinged steel cover and external operating handle indicating "ON" and "OFF" position to switch. Switches shall be of design to minimize arcing and pitting when rupturing current and shall be equipped with arc quenchers. Wiring terminals shall be solderless pressure type lugs. Cover of unit shall be interlocked so that door cannot be opened except when switch is in "OFF" position. Unit shall have provision for padlocking. The individual units shall bear Underwriter's Laboratories, Inc. label of approval. Operating handles shall not exceed 6'-7" above finished floor and not less than 18" above floor.

**2.03 NAMEPLATES**

- A. Each unit of equipment shall be provided with a riveted phenolic nameplate, identifying the equipment and its rating.
- B. On each circuit breaker and fused switch: ampere rating, fuses size and fuses type (or circuit breaker type and setting) and circuit designation.
- C. On panelboard: ampere rating, nominal voltage, phases and panelboard designation.

**PART 3 - EXECUTION****3.01 INSTALLATION**

- A. Install panelboards in accordance with NEMA Publication No. PB1.1 "General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or less".
- B. Cabinet Supports
1. Panelboards set in chases shall be supported to chase structural members.
  2. Panelboards set in walls where a chase is not provided by others, shall be provided with Kindorf channels on both sides of the panel with these channels running from floor slab to ceiling slab and secured to both.
  3. Surface mounted panels shall be fastened to walls by expansion shields, or the equivalent. Heavy panelboards shall be supported from the floor by means of approved angle iron framework.
  4. Steel angle or channel supporting members shall be provided to adequately support distribution equipment for floor mounting with all necessary bracing.

## C. Setting of Cabinets

Panelboards set above wainscot shall be set so that bottom of trim shall be 1/2" above wainscot. Where wainscot is approximately 7'-0" above floor, top of panel shall line up with it unless otherwise detailed or directed.

Elsewhere in the building, panelboards shall be set so that top of cabinet is approximately 6 feet 6 inches above floor.

## D. Flush Cabinets

Where building construction does not permit cabinets being set flush or where cabinet is extra deep, the front shall project out from the wall and the sides of the cabinet shall be trimmed and finished with a metal return molding of approved design, fastened to cabinet so as to conceal the intersection between the wall and the cabinet.

## E. Cleaning

On completion of installation, inspect interior and exterior of panelboards. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

**3.02 TESTS**

## A. Prepare for acceptance tests as follows:

1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder and control circuit.

2. Test continuity of each circuit.

## B. Testing: After installing panelboards and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.

## C. Balancing Loads: After Substantial Completion, but not more than 60 days after Final Acceptance measure load balancing. Difference exceeding 20% between phase load is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

**END OF SECTION**



**LIST OF SUBMITTALS**

<b><u>SUBMITTAL</u></b>	<b><u>DATE SUBMITTED</u></b>	<b><u>DATE APPROVED</u></b>
Shop Drawings	_____	_____
Product Data	_____	_____
Field Test Reports	_____	_____
Panelboard Schedules	_____	_____

\* \* \*

## SECTION 16475 - FUSES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Fuses.
  - 2. Spare fuse cabinet.

## 1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for each fuse type specified.
- C. Product Data for each fuse type specified. Include the following:
  - 1. Descriptive data and time-current curves.
  - 2. Let-through current curves for fuses with current-limiting characteristics.
  - 3. Coordination charts and tables and related data.
- D. Field test reports indicating and interpreting test results.
- E. Maintenance data for tripping devices to include in the operation and maintenance manual specified in Division 1.

## 1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain fuses from one source and by a single manufacturer.
- B. Comply with NYCEC 2011 for components and installation.
- C. Listing and Labeling: Provide fuses specified in this Section that are listed and labeled.
  - 1. The Terms "Listed" and "Labeled": As defined in the National Electrical Code, Article 100.
  - 2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.

## 1.5 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.
  - 1. Spare Fuses: Furnish quantity equal to 20 percent of each fuse type and size installed, but not less than 1 set of 3 of each type and size.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering fuses that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide fuses by one of the following:
  - 1. Cooper Industries, Inc.; Bussmann Div.
  - 2. Eagle Electric Mfg. Co., Inc.
  - 3. MERSEN (Ferraz Shawmut Corp.)
  - 4. General Electric Co.; Wiring Devices Div.
  - 5. Tracor, Inc.; Littelfuse, Inc. Subsidiary.

### 2.2 CARTRIDGE FUSES

- A. Characteristics: NEMA FU 1, nonrenewable cartridge fuse; class as specified or indicated; current rating as indicated; voltage rating consistent with circuit voltage.

### 2.3 SPARE FUSE CABINET

- A. Cabinet: Wall-mounted, 0.05-inch- (1.27-mm-) thick steel unit with full-length, recessed piano-hinged door with key-coded cam lock and pull.
  - 1. Size: Adequate for orderly storage of spare fuses specified with 15 percent spare capacity minimum.
  - 2. Finish: Gray, baked enamel.
  - 3. Identification: Stencil legend "SPARE FUSES" in 1-1/2-inch (40-mm) letters on door.
  - 4. Fuse Pullers: For each size fuse.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine utilization equipment nameplates and installation instructions to verify proper fuse locations, sizes, and characteristics.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 FUSE APPLICATIONS

- A. Main Service: Class T, fast acting, Class J, time-delay.
- B. Main Feeders: Class J, time delay.
- C. Other Branch Circuits: Class RK1.

### 3.3 INSTALLATION

- A. Install fuses in fusible devices as indicated. Arrange fuses so fuse ratings are readable without removing fuse.
- B. Install spare fuse cabinet where indicated.

### 3.4 IDENTIFICATION

- A. Install typewritten labels on inside door of each fused switch to indicate fuse replacement information.

END OF SECTION 16475

**SECTION 16480**  
**MOTORS, MOTOR CONTROL CENTERS,**  
**STARTERS AND CONTROL EQUIPMENT**

**PART 1 - GENERAL**

**1.01 DESCRIPTION OF WORK**



- A. Provide and make final connections to all motors, motor control centers, starters and accessories, connect equipment furnished under other Sections of the Specifications.

Obtain all wiring diagrams and other information furnished by the manufacturer of the equipment. Coordinate and supplement the wiring diagrams and schedules with any additional function of operational requirements specified in other Sections of the Specifications. Provide control equipment to execute the sequence of operation.

The Contractor is specifically directed to Division 15 for motors, starters, control equipments and devices furnished by the P&D and HVAC trades.

**1.02 REFERENCES**

- A. NEMA MG-1 - Motors and Generators
- B. NEMA ICS - General Standards for Industrial Control and Systems

**1.03 SUPPLEMENTAL SUBMITTALS**

- A. Submittal Package

Submit product data for motors and starters as a package.

- B. Product Data:

1. For each type of controller and each type of motor-control center. Include dimensions and manufacturer's technical data on features, performance, electrical characteristics, ratings, and finishes.

- C. Shop Drawings: For each starter and motor-control center.

Dimensioned plans, elevations, sections, and details, including required clearances and service

space around equipment. Show tabulations of installed devices, equipment features, and ratings. Include the following:

- a. Each installed unit's type and details.
  - b. Nameplate legends.
  - c. Short-circuit current ratings of buses and installed units.
  - d. Vertical and horizontal bus capacities.
  - e. UL listing for series rating of overcurrent protective devices in combination controllers. Feature, characteristics, ratings, and factory settings of each motor-control center unit.
- Wiring Diagrams: Power, signal, and control wiring for class and type of motor-control center. Differentiate between manufacturer-installed and field-installed wiring. Provide schematic wiring diagram for each type of controller.
- D. Coordination Drawings: Floor plans showing dimensioned layout, required working clearances, and required area above and around motor-control centers where pipe and ducts are prohibited.
  - E. Field Test Reports: Written reports specified in Part 3.
  - F. Manufacturer's field service report.
  - G. Maintenance Data: For starters and motor-control centers, all installed devices, and components to include in maintenance manuals specified in Division 1. In addition to requirements specified in Division 1 Section "Closeout Procedures," include the following:
    1. Routine maintenance requirements for motor-control centers and all installed components.
    2. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
  - H. Load-Current and Overload-Relay Heater List: Compile after motors have been installed and arrange to demonstrate that selection of heaters suits actual motor nameplate full-load currents.
  - I. Load-Current and List of Settings of Adjustable Overload Relays: Compile after motors have been installed and arrange to demonstrate that dip switch settings for motor running overload protection suit actual motor to be protected.

**1.04 QUALITY ASSURANCE**

- A. Source Limitations: Obtain LonWorks compatible controllers of a single type through one source from a single manufacturer. Where LonWorks compatible controllers are not available from the unit manufacturer, provide "gateway" to translate the unit manufacturer's protocol to the LonTalk protocol.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NFPA 70.

**1.05 COORDINATION**

- A. Coordinate layout and installation of starters and motor-control centers with other construction including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- B. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases.
- C. Coordinate installation of roof curbs, equipment supports, and roof penetrations.
- D. Coordinate features of motor-control centers, installed units, and accessory devices with pilot devices and control circuits to which they connect.
- E. Coordinate features, accessories, and functions of each motor-control center, each controller, and each installed unit with ratings and characteristics of supply circuit, motor, required control sequence, and duty cycle of motor and load.

**PART 2 - PRODUCTS****2.01 MOTORS**

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- A. Motor (Nameplate) Voltage
  - 1. 120/208 Volt, Three Phase, 4 Wire Incoming Service

- a. Motors less than 1/2 HP: NEMA standard motor voltage 115V single phase, 60 Hz.
  - b. Motors 1/2 HP and larger: NEMA standard motor voltage 200V, three phase, 60 Hz.
- B. Single phase motor shall be capacitor start, open drip-proof unless otherwise noted.
  - C. Three-phase motors shall be squirrel-cage, open drip-proof unless otherwise noted.
  - D. Motors in general shall have cast iron frame, full voltage starting.
  - E. Drawings shall indicate horsepower, voltage and RPM.
  - F. Temperature rise and insulation system class shall conform to NEMA standards.
  - G. Motors shall be of the highest grade manufactured by: Allis Chalmers Mfg. Co., Baldor Electric Co., Century Electric Co., Continental Electrical Motors Co., General Dynamics Corps., Howell Electric Motors Co., Imperial Electric Co., Peerless Electric Co., Reliance Electric & Engineering Co., Wagner Electric Corp., or Westinghouse Electric & Mfg. Co.
  - H. Motor nameplate data shall be in accordance with NEMA Standards.

## 2.02 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Starters and Motor-Control Centers
    - a. Eaton Corp.; Cutler-Hammer Products.
    - b. General Electrical Distribution & Control.
    - c. Rockwell Automation Allen-Bradley Co.; Industrial Control Group.
    - d. Siemens/Furnas Controls.
    - e. Square D Co.

## 2.03 MAGNETIC MOTOR STARTERS



- A. Description: NEMA ICS 2, Class A, full voltage, nonreversing, across the line, unless otherwise indicated.
- B. Control Circuit: 120 V
- C. Combination Starter: Factory-assembled combination starter and disconnect switch.
  - 1. Fusible Disconnecting Means: NEMA KS 1, fusible switch with rejection-type fuse clips rated for fuses. Select and size fuses to provide Type 2 protection according to IEC 947-4-1, as certified by a nationally recognized testing laboratory.
  - 2. Nonfusible Disconnecting Means: NEMA KS 1, nonfusible switch.
  - 3. Circuit-Breaker Disconnecting Means: NEMA AB 1, motor-circuit protector with field adjustable, short-circuit trip coordinated with motor locked-rotor amperes.
- D. Overload Relay: Ambient-compensated type with inverse-time-current characteristic. Provide with heaters or sensors in each phase matched to nameplate full-load current of specific motor to which they connect and with appropriate adjustment for duty cycle.
- E. Star-Delta Controller: NEMA ICS 2, closed transition with adjustable time delay.

#### **2.04 FEEDER OVERCURRENT PROTECTION**

- A. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
- B. Fusible Switch: NEMA KS 1, Type HD, clips to accommodate specified fuses with lockable handle.

#### **2.05 MOTOR-CONTROL CENTER ACCESSORIES**

- A. Devices shall be factory installed in controller enclosure, unless otherwise indicated.
- B. Push-Button Stations, Pilot Lights, and Selector Switches: NEMA ICS 2.

- C. Stop and Lockout Push-Button Station: Momentary-break, push-button station with a factory-applied hasp arranged so padlock can be used to lock push button in depressed position with control circuit open.
- D. Control Relays: Auxiliary and adjustable time-delay relays.

## **2.06 FACTORY FINISHES**

- A. Finish: Manufacturer's standard paint applied to factory-assembled and tested controllers before shipping.

## **2.07 MANUAL ENCLOSED STARTERS**

- A. Description: NEMA ICS 2, general purpose, Class A, with toggle action and overload element.

## **2.08 MAGNETIC ENCLOSED STARTERS**

- A. Description: NEMA ICA 2, Class A, full voltage, nonreversing, across the line, unless otherwise indicated.
- B. Control Circuit: 120 V
- C. Combination starter: Factory-assembled combination starter and disconnect switch.
  - 1. Fusible Disconnecting Means: NEMA KS 1, fusible switch with rejection-type fuse clips rated for fuses.
  - 2. Nonfusible Disconnecting Means: NEMA KS 1, nonfusible switch.
  - 3. Circuit-Breaker Disconnecting Means: NEMA AB 1, motor-circuit protector with field adjustable, short-circuit trip coordinated with motor locked-rotor amperes.
- D. Overload Relay: Ambient-compensated type with inverse-time-current characteristic. Provide with heaters or sensors in each phase matched to nameplate full-load current of specific motor to which they connect and with appropriate adjustment for duty cycle.
- E. Motor Control Push Button Stations and H-O-A Switches

Provide push button stations of the momentary contact type with pilot light, installed with a common faceplate.

Provide "Hand-Off-Automatic" (H-O-A) switches for all starters controlling equipment with automatic actuating apparatus.

## **2.09 PUSHBUTTON STATIONS**

### **A. Normal Duty**

Momentary Start-Stop with pilot light in NEMA 1 enclosure.

## **2.10 KEY-OPERATED CONTROL STATION**

- A. Key-operated control station shall be pushbutton stop, key-operated reset type. Control station (DC) (Gas Valve Control) shall be ASCO cat. # 216B89 in conjunction with pushbutton control stations ASCO 173A19 (flush mounting) or ASCO 173A20 (surface mounting), or approved equal of Square D.
- B. Key-operated control station shall enable shutting down power panels in case of emergency and shall reset the power "on" by means of a key.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

- A. Anchor each motor-control center assembly to steel-channel sills arranged and sized according to manufacturer's written instructions. Attach by bolting. Level and grout sills flush with motor-control center mounting surface.
- B. Install motor-control center on concrete basis.
- C. Comply with mounting and anchoring requirements specified in Division 16 Section "Seismic Controls for Electrical Work".
- D. Controller Fuses: Install fuses in each fusible switch.
- E. For control equipment at walls, bolt units to wall or mount on lightweight structural-steel channels bolted to

wall. For controllers not at walls, provide freestanding racks.

- F. Install freestanding equipment on concrete bases.

The arrangement and mounting of all control equipment shall be such, that the handle of the safety switch will be easily operable from the floor, at approximately 5'-0" mounting height.

Manually operated control equipment shall have handles or push buttons 4-feet from floor, unless otherwise noted on Drawings.

Provide a white core phenolic nameplate on all motor control equipment.

- G. In general, roof fan motor circuit wiring is run to starters in grouped locations. Starters shall be mounted on steel framework where shown on Drawings.

Pilot light assemblies shall be installed in the covers of respective starters

- H. Connect hand-off-automatic switch and other automatic-control devices where available.
1. Connect selector switches to bypass only manual-and automatic-control devices that have no safety functions when switch is in hand position.
  2. Connect selector switches with motor-control circuit in both hand and automatic positions for safety-type control devices such as low-and high-pressure cutouts, high-temperature cutouts, and motor overload protectors.
  3. [For each motor automatically and/or manually controlled or monitored by the fire alarm system, include control wiring extensions as specified as part of the fire alarm system to an adjacent FPA addressable module.]
  4. Control wiring for single phase HVAC motors with manual controllers shall be provided as part of the electrical work. For each such motor, provide wiring and connect to all outlying control devices as directed. Refer to GHAC drawings and specifications for quantities and locations.
- I. Control wiring for plumbing motors will be provided as part of the work of Division 15 as applicable.

J. Control wiring shall be accomplished utilizing #14 AWG copper conductor with THWN installation.

K. Nameplates

Identify starters, motor-control center, motor-control center components, and control apparatus wiring. Identify each pushbutton station and motor starter. Identify each interlock switch, indicating purpose of switch.

1. NEMA 1 Enclosures: Rivet or bolt nameplate to the cover

2. NEMA 3R, 4, 4X, 7, or 9 Enclosures: Attach nameplates to the cover using adhesive specifically designed for the purpose.

### **3.02 FIELD TESTS**

A. Perform tests, in the presence of the Authority's Representative to demonstrate:

1. That each control device and its related motor starter operate properly.

2. That each overload and undervoltage protection safety device functions properly.

3. That each safety shut-off valve and device operates properly.

B. Tests shall be performed in accordance with the equipment manufacturers' start-up and field test instructions and made jointly with all relevant trades.

C. Should the tests reveal any defects, promptly correct such defects and rerun the tests until the entire installation is satisfactory in all respects.

D. Tests shall be coordinated by the Contractor who shall provide (48) hrs. min. notice to the Authority's Representative for approval of schedule.

### **3.03 TRAINING**

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate,

and maintain motor-control centers [and variable-frequency drives].

1. Train Owner's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining equipment and schedules.
2. Review data in maintenance manuals.

**END OF SECTION**

**\* \* \***

LIST OF SUBMITTALS

<u>SUBMITTAL</u>	<u>DATE SUBMITTED</u>	<u>DATE APPROVED</u>
Product Data	_____	_____
Shop Drawings	_____	_____
Wiring Diagrams	_____	_____
Coordination Drawings	_____	_____
Maintenance Data	_____	_____
Load-Current and Overload-Relay Heater List	_____	_____
Load-Current and List of Settings of Adjustable Overload Relays	_____	_____
Certificate of compliance with the Quality Assurance requirements	_____	_____
Field Test Reports	_____	_____
Videotape of personnel Training	_____	_____

\* \* \*

**SECTION 16521****EXTERIOR LIGHTING****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes the following:
  - 1. Exterior luminaires with lamps and ballasts, but not mounted on exterior surfaces of buildings.
- B. Related Sections include the following: 16452-Grounding, 16010-General Provisions For Electrical Work.

**1.3 SUBMITTALS**

- A. Product Data: For each luminaire, arranged in the order of lighting unit designation. Include data on features, accessories, finishes, and the following:
  - 1. High-intensity-discharge ballasts.
  - 2. High-intensity-discharge lamps.
  - 3. Electrical and energy-efficiency data for ballasts.
- B. Wiring Diagrams: Power and control wiring.
- C. Coordination Drawings: Mounting and connection details, drawn to scale, for exterior luminaires.
- D. Samples for Verification: For exterior luminaires designated for sample submission in the Exterior Luminaire Schedule.
  - 1. Lamps: Specified units installed.
  - 2. Ballast: 120-V models of specified ballast types.
  - 3. Finishes: For each finished metal used in support components.
- E. Source quality-control test reports.
- F. Field quality-control test reports.
- G. Operation and Maintenance Data: For luminaires to include in maintenance manuals.
- H. Warranties: Special warranties specified in this Section.



## 1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NYCEC 2011, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. FMG Compliance: Fixtures for hazardous locations shall be listed and labeled for indicated class and division of hazard by FMG.
- C. Comply with IEEE C2, "National Electrical Safety Code."
- D. Comply with NYCEC 2011.

## 1.5 COORDINATION

## 1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace lamps that fail in materials or workmanship; corrode; or fade, stain, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.
  - 1. Warranty Period for Lamps: Replace lamps and fuses that fail within **12** months from date of Substantial Completion; furnish replacement lamps and fuses that fail within the second **12** months from date of Substantial Completion.

## 1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Lamps: **10 for every 100** of each type and rating installed. Furnish at least one of each type.
  - 2. Ballasts: **10 for every 100** of each type and rating installed. Furnish at least one of each type.
  - 3. Globes and Guards: **10 for every 20** of each type and rating installed. Furnish at least one of each type.

## PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
  - 2. Products: Subject to compliance with requirements, provide one of the products specified.

## 2.2 LUMINAIRES, GENERAL

- A. Complying with UL [1572] [1598] and listed for installation in wet locations.
- B. Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.
- C. Metal Parts: Free of burrs and sharp corners and edges.
- D. Sheet Metal Components: Corrosion-resistant aluminum, unless otherwise indicated. Form and support to prevent warping and sagging.
- E. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.
- F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.
- G. Exposed Hardware Material: Stainless steel.
- H. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
- I. Reflecting surfaces shall have minimum reflectance as follows, unless otherwise indicated:
  - 1. White Surfaces: 85 percent.
  - 2. Specular Surfaces: 83 percent.
  - 3. Diffusing Specular Surfaces: 75 percent.
- J. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.

## 2.3 HIGH-INTENSITY-DISCHARGE LAMP BALLASTS

- A. General: Comply with NEMA C82.4 and UL 1029. Shall include the following features, unless otherwise indicated:
  - 1. Type: Constant-wattage autotransformer or regulating high-power-factor type.
  - 2. Minimum Starting Temperature: Minus 22 deg F (Minus 30 deg C) for single-lamp ballasts.
  - 3. Normal Ambient Operating Temperature: 104 deg F (40 deg C).
  - 4. Open-circuit operation will not reduce average life.
  - 5. Ballast Fuses: One in each ungrounded power supply conductor. Voltage and current ratings as recommended by ballast manufacturer.
- B. Auxiliary, Instant-On, Quartz System: Automatically switches quartz lamp on when fixture is initially energized and when momentary power outages occur. Automatically turns quartz lamp off when high-intensity-discharge lamp reaches approximately 60 percent light output.
- C. High-Pressure-Sodium Ballasts: Solid-state igniter/starter with an average life in pulsing mode of 10,000 hours at an igniter/starter-case temperature of 90 deg C.
  - 1. Instant Restrike Device: Solid-state potted module, mounted inside high-pressure-sodium fixture and compatible with high-pressure-sodium lamps, ballasts, and sockets up to 150 W.

- a. Restrike Range: 105- to 130-V ac.
  - b. Maximum Voltage: 250-V peak or 150-V ac RMS.
- 2. Single-Lamp Ballasts: Minimum starting temperature of minus 40 deg C.
- 3. Open-circuit operation will not reduce average life.

#### 2.4 HIGH-INTENSITY-DISCHARGE LAMPS

- A. High-Pressure-Sodium Lamps: NEMA C78.42, wattage and burning position as scheduled, CRI 21 (minimum), color temperature [1900] <Insert value>, and average rated life of 24,000 hours.
- B. Low-Pressure-Sodium Lamps: NEMA C78.41.
- C. Metal-Halide Lamps: ANSI C78.1372, wattage and burning position as scheduled, CRI 65 (minimum), and color temperature 4000,

#### 2.5 FACTORY FINISHES

- A. Field Painting Finish: Manufacturer's standard prime-coat finish ready for field painting.
- B. Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match process and color of pole or support materials specified in Division 2 Section "Lighting Poles and Standards."

#### 2.6 SOURCE QUALITY CONTROL

- A. Provide services of a qualified, independent testing and inspecting agency to factory test luminaires with ballasts and lamps; certify results for isofootcandle curves, zonal lumen, average and minimum ratios, and electrical and energy-efficiency data for ballasts.
- B. Factory test fixtures with ballasts and lamps; certify results for isofootcandle curves, zonal lumen, average and minimum ratios, and electrical and energy-efficiency data for ballasts.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install lamps in each fixture.
- B. Luminaire Attachment: Fasten to indicated structural supports.
- C. Adjust luminaires that require field adjustment or aiming.

#### 3.2 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

**3.3 FIELD QUALITY CONTROL**

- A. Inspect each installed fixture for damage. Replace damaged fixtures and components.
- B. Tests and Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source. Measure light intensities at night. Use photometers with calibration referenced to NIST standards. Comply with the following IESNA testing guide(s):
  - 1. IESNA LM-5.
  - 2. IESNA LM-50.
  - 3. IESNA LM-52.
  - 4. IESNA LM-64.
  - 5. IESNA LM-72.
- C. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

END OF SECTION 16521