

BATTERY PARK CITY AUTHORITY

REQUEST FOR PROPOSALS

FOR

Site 23-24 Leak Remediation Construction Management Services

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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 construction management firms (each individually, a “Proposer” or collectively, the “Proposers”) to provide construction management services in connection with the leak remediation and waterproofing project being conducted at the community center facility (“CC Facility”) located in Battery Park City (the “Project”). The selected Proposer shall provide full construction management services throughout all phases of the Project, including pre-construction, construction and post-construction/close-out (the “Work”). The services required are specifically described in the Scope of Work attached hereto as Exhibit A.

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 to: 1) accept or reject any and all Proposals; 2) request additional information from any or all Proposers that might assist BPCA in its evaluation process; 3) 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.

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 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 open 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.bpca.ny.gov . 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.bpcparks.org.

III. SERVICES REQUIRED

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

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: **August 10, 2015**
- Pre-proposal meeting: 2:00 pm. August 17, 2015, Meeting Location: BPCA Offices, 200 Liberty Street, 24th Floor, New York, NY 10281 (attendance is highly recommended).
- Deadline to submit questions to BPCA: **August 20, 2015 by 5:00 p.m.** (by email only).

All questions regarding this RFP should be submitted in writing via email to the "Designated Contact": Michael LaMancusa, Battery Park City Authority, at michael.lamancusa@bpca.ny.gov .

- Deadline for BPCA's response to substantive questions: August 24, 2015 (via BPCA Website).
- **DUE DATE FOR RESPONSES TO RFP: September 1, 2015 by 3:00 p.m. (the "Due Date").**
- Selection and notification of successful Proposer: To be determined.
- Anticipated contract start date: October 2015

B. Anticipated Contract Term

It is anticipated that the term of the contract awarded pursuant to this RFP (the "Contract") will be up to twelve (12) months, although it is expected that the total period of construction will be no more than six months and that the Project may be seasonally phased, with as much remedial work as possible being performed ahead of the onset of sustained freezing temperatures. 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 following are the Minimum Qualification Requirements for this RFP. **Proposals that fail to comply with these requirements will be rejected.**

- 1) The Proposer must have an office in New York State (a New York City office is preferred);

- 2) The Proposer and the Lead PM must have at least five (5) years' experience in providing construction management services in New York City, including projects involving the waterproofing of existing structures; and
- 3) The Proposer and the Lead PM must have substantial experience with the installation of Kemper System waterproofing.

V. GENERAL REQUIREMENTS

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

Please see Exhibit B (attached) 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 the Due Date.

Each Proposer must submit six (6) paper copies of their Proposal and one (1) electronic copy in a sealed package clearly marked "**Proposal Enclosed – Site 23-24 Leak Remediation CM Services**" to the Designated Contact by messenger, overnight courier or certified mail to the following address:

Michael LaMancusa
Battery Park City Authority
200 Liberty Street, 24th Floor
New York, NY 10281

BPCA is not responsible for any internal or external delivery delays that 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 – Site 23-24 Leak Remediation CM Services**" as long as the amended Proposal is submitted by the Due Date.

All information submitted in response to this RFP is subject to the Freedom of Information Law, Article 6 of the New York State Public Officers Law ("FOIL"), which requires public access to certain documents possessed by

BPCA, unless a specific exemption applies. Proposers are responsible for identifying any information in their respective Proposals considered to be confidential and exempt from FOIL.

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.bPCA.ny.gov/pdf_n/Mandatory_Forms_Packet.pdf.

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 Proposal documents. 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) Transmittal Letter, as follows:

The Proposal must include a signed Transmittal Letter from a person associated with the Proposer who is authorized to bind the firm, preferably the Lead PM. **The Transmittal Letter must be signed. Proposals with unsigned Transmittal Letters will be rejected.**

The Transmittal 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) Executive Summary.

3) Proposer’s discussion of its understanding of the Services Required (see Section III).

4) Proposer’s Responses to the RFP Questions and RFP Additional Information Request, set forth below.

5) Proposer's Cost Proposal, including the Technical Salary Form, as described below.

C. RFP Questions

1. Describe your firm's background, staff, and history as they may be relevant to the Services Required, with an emphasis on managing waterproofing and restoration projects in New York City.
2. Describe the relevant special services your firm provides, particularly those that may not be offered by other firms.
3. Describe your firm's experience managing waterproofing demolition, repair and restoration projects.
4. Within the past three years, have there been any significant developments in your firm, such as changes in ownership or restructuring? Do you anticipate any significant changes in the near future? If so, please describe.
5. Has your firm or any of the firm's partners/employees been disciplined or censured by any regulatory body within the last five years? If so, please describe the relevant facts.
6. Within the last five years, has your firm, or a partner or employee in your firm, been involved in litigation or other legal proceedings relating to the provision of engineering or design services? If so, please provide an explanation and the current status or disposition of the matter.
7. Has your firm filed for bankruptcy or reorganization, or had bankruptcy proceedings initiated against it, within the last 5 years? If so, please describe the relevant facts.
8. Are there any potential conflict of interest issues in representing BPCA?
9. If selected, will your firm assign any person to this Project who was previously an employee of BPCA? If so, please i) identify when (month and year) that person's employment at BPCA terminated, and ii) describe that person's involvement, if any, with matters related to the Project during his/her employment at BPCA.
10. List any professional or personal relationships your firm's employees may have with BPCA's Board and/or staff members of BPCA, a list of whom is attached hereto as Exhibit H.
11. Identify the Lead PM who will be the primary contact and lead person in providing services to BPCA, and identify who will be listed as a "key person" in any contract with BPCA.
12. 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, and Federal agencies and authorities. Include contract dates, the nature of the work performed, the contracting agency, the contract number (if known) and the supervisor for each.
13. Discuss your approach to the Project, briefly summarizing your conceptual step-by-step approach towards completion of the work and outlining the proposed procedures for executing the work.
14. 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 sub-consultants.
15. Provide a list of all proposed sub-consultants for the completion of the Project.
16. Describe your firm's "backup plan" in the event that a member of the Project's management team leaves your firm.
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. In the past five years, have any clients terminated their working relationship with your firm? If so, please provide a brief statement of the reasons. Provide the client's name and its in-house counsel's name, address and telephone number.
19. Please provide any additional information that would distinguish your firm from other firms, and which you believe may be relevant to this RFP and your capability to perform the Required Services.

D. RFP Additional Information Request

1) Insurance:

- 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 each occurrence and **\$2,000,000** in the aggregate;
 - Umbrella Liability limits shall not be less than **\$5,000,000**;
 - Automobile liability (Combined Single Injury, Bodily Injury and Property Damage) limits shall not be less than **\$1,000,000**;
 - Workman's Compensation shall not be less than statutory limits;
 - Disability Insurance as required by applicable provisions of law; and
 - Professional Liability shall not be less than **\$5,000,000**.

The costs of the insurance shall be included in the Proposal. BPCA, BPCPC and the State of New York shall be listed as Additional Insured on CG 2010 (11/85) or similar form and should be included as such on all subcontracts. Policies should contain no limitation/exclusions for Labor Law claims.

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 project manager.

3) Appendices:

- a. Include resumes for all key management personnel listed in your Proposal, including the staff that your firm is proposing to assign to this project.
- b. Provide a copy of each addenda to this RFP, if any, issued by BPCA before the Due Date, together with a signed acknowledgment of receipt of each addenda.

4) Financial Statements:

Provide a copy of your firm's most recent Audited Financial Statements (within the last year).

E. Cost Proposal

Proposer must submit two (2) copies of its Cost Proposal, which must include:

- 1) A not-to-exceed amount for performance of the Services Required and a not-to-exceed amount for all reimbursable costs associated with performance of the Services Required, in the form attached hereto as Exhibit D ("Form of Cost Proposal"); and
- 2) Technical Salary rates for all Project personnel Proposer proposes to employ for the Services Required in the form attached hereto as Exhibit E ("Form of Technical Salaries").

III. THE EVALUATION PROCESS

Evaluation

Each timely submitted Proposal will be reviewed for compliance with the form and content requirements of this RFP. A committee of BPCA employees selected by BPCA (the “Committee”) will then review and evaluate the Proposals in accordance with the evaluation criteria set forth below. While only Committee members will score the evaluation criteria, the Committee may utilize an outside expert to consult on evaluation of matters requiring technical expertise. Before final selection, BPCA must determine that the proposed selected Proposer is responsible, in accordance with applicable law and BPCA’s Procurement Guidelines, which may be viewed at: <http://bpca.ny.gov/public-information/Interviews>

BPCA reserves the right to decide whether to interview any or all of the Proposers. The Committee may conduct an interview(s) to further assess a Proposer’s ability to perform the Project, how it will furnish specific services, or to inquire into any other matter that will assist in evaluation of the Proposer. The proposed Lead PM, as well all other key personnel proposed to perform the Project, must be available to participate in the interview..

Evaluation Criteria for Selection

Selection will be based upon the following criteria:

- | | | |
|----|---|-----|
| 1) | Relevant construction management experience, in particular experience relating to waterproofing, leak remediation and restoration projects: | 45% |
| 2) | Staffing and approach to work: | 30% |
| 3) | Cost Proposal | 15% |
| 4) | Proposed MBE/WBE utilization plan (the “Utilization Plan”) and/or firm MBE/WBE status: | 10% |

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.

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.

IX. IRAN DIVESTMENT ACT

By submitting a Proposal or by assuming the responsibility of any Contract awarded hereunder, Proposers hereby certify that they are not on the “Entities Determined To Be Non-Responsive Bidders/Offerers Pursuant to The New York State Iran Divestment Act of 2012” list (“Prohibited Entities List”) posted on the New York State Office of General Services website at: <http://www.ogs.ny.gov/about/reg/docs/ListofEntities.pdf> and further certify that they will not utilize any sub consultant that is identified on the Prohibited Entities List on this Contract. The selected Proposer agrees that should it seek to renew or extend any Contract awarded hereunder, it must provide the same

certification at the time the Contract is renewed or extended. The selected Proposer also agrees that any proposed assignee of the Contract will be required to certify that it is not on the Prohibited Entities List before BPCA may approve a request for assignment of the Contract.

During the term of any Contract awarded hereunder, should BPCA receive information that a person (as defined in State Finance Law §165-a) is in violation of the above-referenced certifications, BPCA will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the New York State Iran Divestment Act of 2012 within 90 days after the determination of such violation, then BPCA shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, seeking compliance, recovering damages, or declaring the selected Proposer in default of the awarded Contract.

BPCA reserves the right to reject any request for renewal, extension, or assignment for an entity that appears on the Prohibited Entities List prior to the renewal, extension, or assignment of the Contract, and to pursue a responsibility review with the selected Proposer should it appear on the Prohibited Entities List hereafter.

X. ENCOURAGING USE OF NEW YORK STATE BUSINESSES IN CONTRACT PERFORMANCE

New York State businesses have a substantial presence in State contracts and strongly contribute to the economies of the state and the nation. In recognition of their economic activity and leadership in doing business in New York State, Proposers are strongly encouraged and expected to consider New York State businesses in the fulfillment of the requirements of the Contract. Such partnering may be as subcontractors, suppliers, protégés or other supporting roles.

Proposers need to be aware that all authorized users of this Contract will be strongly encouraged, to the maximum extent practical and consistent with legal requirements, to use responsible and responsive New York State businesses in purchasing commodities that are of equal quality and functionality and in utilizing services and technology. Furthermore, Proposers are reminded that they must continue to utilize small, minority and women owned businesses, consistent with current State law.

Utilizing New York State businesses in State contracts will help create more private sector jobs, rebuild New York's infrastructure, and maximize economic activity to the mutual benefit of the contractor and its New York State business partners. New York State businesses will promote the contractor's optimal performance under the Contract, thereby fully benefiting the public sector programs that are supported by associated procurements.

Public procurements can drive and improve the State's economic engine through promotion of the use of New York businesses by its contractors. The State therefore expects bidders/proposers to provide maximum assistance to New York businesses in their contracts. The potential participation by all kinds of New York businesses will deliver great value to the State and its taxpayers.

Proposers can demonstrate their commitment to the use of New York State businesses by responding to the question below:

Will New York State businesses be used in the performance of this contract? ____ Yes ____ No

If yes, identify New York State businesses that will be used and attach identifying information.

EXHIBIT A

Scope of Work

A. Background and Context

In an effort to enhance recreational resources and facilities and related public spaces in Battery Park City, BPCA has developed a community center (“CC Facility”), public ball fields (“Ball Fields”) and a public terrace (the “Terrace”) on the parcels known as Sites 23 and 24 in Battery Park City. A site plan reflecting the locations and configurations of the CC Facility, the Ball Fields and the Terrace is attached hereto as Exhibit F. BPCA developed these facilities in conjunction with the private development of the residential buildings located on that parcel (“Base Buildings”), now identified as 200 and 300 North End Avenue. The Ball Fields were completed in 2011, the Terrace, which is located to the west of the Ball Fields and between the Base Buildings, was completed in 2012, and the CC Facility, which is located within the first floor, cellar and sub-cellar levels of 200 North End Avenue, within the cellar and sub-cellar levels of 300 North End Avenue, and in the cellar and sub-cellar levels between the buildings and beneath the Terrace, was completed in 2013. Upon its completion, the CC Facility was turned over to the contracted operator, Asphalt Green.

The envelope of the CC Facility was constructed by the Milstein Corporation, the developer and owner of the Base Buildings. BPCA performed the construction of the Terrace, the construction of the Ball Fields and the fit-out construction of the CC Facility.

Beginning in 2011, the eastern cellar-level facade of the CC Facility was observed to be experiencing leaking and water infiltration. Following the opening of the CC Facility by Asphalt Green in 2013, additional points of water infiltration have been discovered within the building. In 2013, BPCA retained WJE Engineers & Architects, PC to investigate the cause of the infiltration and to recommend means of remediating the leak issues. WJE issued two reports in July 2013 and January 2014 documenting the results of its investigations and setting forth its recommendations. BPCA subsequently retained WASA Studio (the “Design Engineer”) to prepare drawings and specifications for the performance of the remedial excavation/demolition, waterproofing and restoration work necessary to remediate the leaks within the CC Facility. A copy of the Design Engineer’s drawings and specifications (“Construction Documents”) are annexed hereto as Exhibit G.

B. General Responsibilities

The responsibilities of the selected Proposer will generally include overseeing and managing work to be performed by the general contractor for the Project (the “General Contractor”), who will be retained under a separate contract with BPCA. The remediation work will be performed in accordance with the Construction Documents.

The selected Proposer shall provide full construction management services throughout all phases of the Project, including pre-construction, construction and post-construction/close-out. Those services shall include, but are not limited to constructability reviews, contracting assistance, overall management of the Project, office engineering and construction inspection services. Specifically, the selected Proposer shall, among other things:

1. Be responsible for monitoring Project performance and completion by the General Contractor and any Specialty Contractors (as defined below), with quality of workmanship and strict adherence to the Project schedule and budget being of critical importance. The selected Proposer shall work with WASA to facilitate the completion of all construction in accordance with these standards. Consideration must be given to logistics of the Project including but not limited to phasing, weather factors, workforce requirements and staging.
2. Be responsible for Project coordination, preparation of overall Project schedule and review/tracking of contractor Critical Path Method (“CPM”) schedule.

3. Be responsible for managing the overall Project schedule along with pre-construction and construction milestone dates.
4. Be responsible for overseeing all financial aspects of the Project, including, but not limited to, budgets, cost estimates, change orders, pay applications and financial reporting as specified herein.
5. Ensure that all work performed on the Project adheres to all relevant codes and all Local, City, State, and Federal regulations and guidelines.

C. Pre-Construction Responsibilities

1. The selected Proposer shall assist BPCA with questions or issues relating to the contract or scope of work of the General Contractor selected to perform the Project and any additional consultants or construction firms ("Specialty Contractors") necessary to complete the Project.
2. The selected Proposer shall, at BPCA's request, assist in all aspects of the selection and management of Specialty Contractors, if any, or any replacement of the General Contractor, if necessary, including but not limited to assisting in the preparation or refinement of work scopes and proposal requests, proposal review and comparison, attendance at related meetings, answering questions, evaluation of qualifications and reference review, and review and recommendation of proposals or quotes.
3. The selected Proposer shall familiarize itself with the access points and space constraints related to the Work Area in order to facilitate Project performance and completion with the fewest possible impacts to the surrounding areas, public convenience and the community in general. The selected Proposer shall review and approve the General Contractor's logistics plan before submitting it to BPCA for approval and shall monitor construction activities to verify conformance with the approved logistics plan.
4. Before construction commences, the selected Proposer is responsible for developing, implementing, and submitting for approval by BPCA, construction management procedures for managing the execution of the Project. This shall include, but not be limited to, general and special conditions, project directory, submittal processing procedures, tracking logs (for all Project costs, submittals, plan & specification changes, change orders, etc.), daily logs and field reports, Project management reports, Project summary reports, meeting minutes, change order requests, requisitions and site access procedures.
5. The selected Proposer will be responsible for monitoring all on-site work related to the Project during the pre-construction phase.

D. Responsibilities throughout Construction

1. The selected Proposer shall monitor and oversee the Project and the work of the General Contractor and ensure that the Project is completed in accordance with the Construction Documents, and in accordance with BPCA's objectives, budget, schedule and specified quality standards. The selected Proposer shall coordinate with the General Contractor in order to perform the work with **minimal disruption** to the adjacent areas (public and private) and **minimal impact** on the community and general public. The selected Proposer is responsible for monitoring on-site work related to the Project and for coordination of site access in accordance with BPCA's directives.
2. The selected Proposer will ensure that the General Contractor maintains adequate fencing, barricades, signage and safety precautions for the protection of the general public.
3. The selected Proposer shall be responsible for working with the Design Engineer and arranging meetings with Specialty Contractors, equipment manufacturers and industry specialists in order to assist in the selection of technically viable solutions, determine the availability of material, and develop and prepare associated cost estimates.
4. The selected Proposer shall provide cost estimating services to BPCA to verify the construction budget and evaluate contractors' prices, unit costs and change orders.
5. The selected Proposer shall review and track the disposition of all General Contractor submittals including general requirements (bonds, insurance, etc.) schedule, procedures, materials, shop drawings, subcontractor and supplier qualification submittals in accordance with the Drawings and Specifications.

6. The selected Proposer shall review and approve the General Contractor's payment applications before they are submitted to BPCA for approval and payment, and shall promptly advise BPCA whether those payment applications are complete and accurately reflect work satisfactorily completed and are consistent with the terms of the contracted work. If necessary, the selected Proposer shall coordinate with the General Contractor to revise payment applications before they are submitted to BPCA.
7. The selected Proposer shall review and track the General Contractor's CPM schedule for conformance with contractual milestones and shall promptly notify BPCA and the General Contractor of any actual or anticipated failure to adhere to the CPM schedule. If the General Contractor proposes changes to the schedule, the selected Proposer shall review the proposed changes, recommend approval or denial of the revised schedule and, if approved, track the revised schedule and adjust its inspection schedule and staffing accordingly. The selected Proposer shall be prepared to review the General Contractor's proposed schedule in detail at the construction kickoff meeting.
8. The selected Proposer shall review all requests for change orders and provide recommendations for acceptance or rejection to BPCA, negotiating revisions, as appropriate, to the change order proposals, prior to their submission to BPCA.
9. BPCA shall review and approve the General Contractor's trade payment breakdown.

E. Meetings and Reporting

1. The selected Proposer shall administer a construction kick-off meeting and shall be responsible for the prompt preparation and distribution of meeting minutes.
2. On a **daily basis**, the selected Proposer shall prepare reports reflecting daily activities, including but not limited to daily logs of the General Contractor's staffing and hours on-site, weather, deliveries, disposals, special occurrences, photo documentation of work, pre-construction conditions, job progress, contractor equipment, material testing and work performed and completed. The selected Proposer shall submit daily Project Management reports that reflect such information via email to BPCA's Senior Project Manager, who is responsible for managing the Project. Daily reports shall also be retained on site and be readily available to BPCA.
3. On a **weekly basis**, the selected Proposer shall schedule and conduct a weekly job progress meeting with BPCA and any other relevant parties (as identified by BPCA) in order to provide updates, address BPCA's concerns, describe logistics surrounding the Project and monitor the Project schedule. The selected Proposer shall be responsible for the prompt preparation and distribution of meeting minutes each week in advance of the following progress meeting.
4. On a **monthly basis**, the selected Proposer shall issue a Monthly Project Summary Report, which shall include a full description of the status of all aspects of the Project, including but not limited to a brief narrative of the work status and level of completion, an assessment of whether construction targets will be met, an update on any anticipated delays or issues, project financial status and cost estimates, and tracking reports. The selected Proposer shall also conduct a monthly review of the General Contractor's budget and expenditures and shall include such information in the Monthly Project Summary Report.

F. Post- Construction & Close-out

1. The selected Proposer shall provide project close out services. The selected Proposer shall submit all project records, inspection reports, and a final project summary to BPCA at project completion.
2. The selected Proposer shall determine substantial completion of work required for the Project and coordinate a punchlist inspection.
3. The selected Proposer shall conduct final inspection and approval of the Project and issue work acceptance certificates

EXHIBIT B

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 and 5 NYCRR §§140-145, BPCA recognizes its obligation under the law to promote opportunities for maximum feasible participation of certified MBEs/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 MBEs/WBEs 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 MBEs/WBEs in state procurement contracting versus the number of MBEs/WBEs 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 MBEs/WBEs 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 MBEs/WBEs

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 MBEs/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 MBEs/WBEs can be viewed at: <https://ny.newnycontracts.com/FrontEnd/VendorSearchPublic.asp?TN=ny&XID=7562>. 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 MBEs/WBEs had 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 demonstrate its good faith efforts to achieve its goals for the utilization of MBEs/WBEs by submitting evidence thereof through the New York State Contract System (the “NYSCS”), which can be viewed at <https://ny.newnycontracts.com>, provided, however, that a Proposer may arrange to provide such evidence via a non-electronic method by contacting BPCA. Please note that the NYSCS is a one stop solution for all of your MBE/WBE and Article 15-A contract requirements. For additional information on the use of the NYSCS to meet the Proposer’s MBE/WBE requirements please see the attached MBE/WBE guidance from the New York State Division of Minority and Women’s Business Development, “Your MWBE Utilization and Reporting Responsibilities Under Article 15-A.”

- A. Additionally, a Proposer agrees to submit a Utilization Plan with their bid or Proposal as evidence of compliance with the foregoing. 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

By submission of a bid or Proposal in response to this RFP, the Proposer/Contractor agrees with all of the terms and conditions of the attached M/WBE – Equal Employment Opportunity Policy Statement. The Contractor is required to ensure that it shall 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, except where such work is for the beneficial use of the Contractor, 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.

The Proposer further agrees to submit a MBE/WBE and Equal Employment Opportunity Policy Statement, Form # 4, to BPCA with their Proposal.

To ensure compliance with Article 15-A, Proposer further agrees, where applicable, 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,

upon request, submit to BPCA a workforce utilization report identifying the workforce actually utilized on the Contract, if known, through the NYSCS; provided, however, that a Proposer may arrange to provide such report via a non-electronic method by contacting BPCA.

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.



Division of Minority and Women's Business Development

Your MBE/WBE Utilization and Reporting Responsibilities Under Article 15-A

The New York State Contract System ("NYSCS") is your one stop tool compliance with New York State's MBE/WBE Program. It is also the platform New York State uses to monitor state contracts and MBE/WBE participation.

GETTING STARTED

To access the system, please login or create a user name and password at <https://ny.newnycontracts.com/FrontEnd/VendorSearchPublic.asp?TN=ny&XID=7562>. If you are uncertain whether you already have an account set up or still need to register, please send an email to the customer service contact listed on the Contact Us & Support page, or reach out to your contract's project manager. For verification, in the email, include your business name and contact information.

VENDOR RESPONSIBILITIES

As a vendor conducting business with New York State, you have a responsibility to utilize minority- and/or women-owned businesses in the execution of your contracts, per the MBE/WBE percentage goals stated in your solicitation, incentive proposal or contract documents. NYSCS is the tool that New York State uses to monitor MBE/WBE participation in state contracting. Through the NYSCS you will submit utilization plans, request subcontractors, record payments to subcontractors, and communicate with your project manager throughout the life of your awarded contracts.

There are several reference materials available to assist you in this process, but to access them, you need to first be registered within the NYSCS. Once you log onto the website, click on the **Help & Support** >> link on the lower left hand corner of the Menu Bar to find recorded trainings and manuals on all features of the NYSCS. You may also click on the **Help & Tools** icon at the top right of your screen to find videos tailored to primes and subcontractors. There are also opportunities available to join live trainings, read up on the "Knowledge Base" through the Forum link, and submit feedback to help improve future enhancements to the system. Technical assistance is always available through the **Contact Us & Support** link on the NYSCS website (<https://ny.newnycontracts.com/FrontEnd/VendorSearchPublic.asp?TN=ny&XID=7562>).

For more information, contact your project manager.

MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISES – EQUAL EMPLOYMENT OPPORTUNITY POLICY STATEMENT

MBE/WBE AND EEO POLICY STATEMENT

I, _____ (the “Contractor”), agree to adopt the following policies with respect to the project being developed at, or services rendered to, the Battery Park City Authority (“BPCA”).

MBE/WBE

This organization will and will cause its contractors and subcontractors to take good faith actions to achieve the MBE/WBE contract participations goals set by the State for that area in which the State-funded project is located, by taking the following steps:

- (1) Actively and affirmatively soliciting bids for contracts and subcontracts from qualified State certified MBEs or WBEs, including solicitations to MBE/WBE contractor associations.
- (2) Requesting a list of State-certified MBEs/WBEs from BPCA and soliciting bids from these MBEs/WBEs directly.
- (3) Ensuring that plans, specifications, request for proposals and other documents used to secure bids will be made available in sufficient time for review by prospective MBEs/WBEs.
- (4) Where feasible, dividing the work into smaller portions to enhance participations by MBEs/WBEs and encourage the formation of joint venture and other partnerships among MBE/WBE contractors to enhance their participation.
- (5) Documenting and maintaining records of bid solicitation, including those to MBEs/WBEs and the results thereof. The Contractor will also maintain records of actions that its subcontractors have taken toward meeting MBE/WBE contract participation goals.
- (6) Ensuring that progress payments to MBEs/WBEs are made on a timely basis so that undue financial hardship is avoided, and that bonding and other credit requirements are waived or appropriate alternatives are developed to encourage MBE/WBE participation.

EEO

(a) This organization will not discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability or marital status, will undertake or continue existing diversity programs to ensure that minority group members are afforded equal employment opportunities without discrimination, and shall make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force on State contracts.

(b) This organization shall state in all solicitation or advertisements for employees that in the performance of the State contract all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex disability or marital status.

(c) At the request of BPCA, this organization shall request that each employment agency, labor union, or authorized 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 this organization’s obligations herein.

(d) The Contractor shall comply with the provisions of the Human Rights Law, all other State and Federal statutory and constitutional non-discrimination provisions. The 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.

(e) This organization will include the provisions of sections (a) through (d) of this agreement in every subcontract in such a manner that the requirements of the subdivisions will be binding upon each subcontractor as to work in connection with the State contract.

Agreed to this _____ day of _____, 2015

By _____

Print: _____ Title: _____

_____ is designated as the Contractor's Minority Business Enterprise Liaison responsible for administering the Minority and Women-Owned Business Enterprises - Equal Employment Opportunity (MBE/WBE - EEO) program.

MBE/WBE Contract Goals

30% Minority and Women's Business Enterprise Participation

15 % Minority Business Enterprise Participation

15 % Women's Business Enterprise Participation

EEO Contract Goals (if applicable)

____ % Minority Labor Force Participation

____ % Female Labor Force Participation

(Authorized Representative)

Title: _____

Date: _____

EXHIBIT C

BPCA'S STANDARD CONTRACT FORM

(attached)

CONSULTANT AGREEMENT

between

HUGH L. CAREY BATTERY PARK CITY AUTHORITY

and

[NAME OF COMPANY, INC. CORP, CO.]

Dated as of **[DATE]**

Contract No. **[ENTER CONTRACT NUMBER]**

([PROJECT NAME])

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EXHIBIT A - SCOPE OF WORK

EXHIBIT B - RATES [if applicable]

EXHIBIT C - FORM OF TIME SHEET [if applicable]

EXHIBIT D - HUGH L. CAREY BATTERY PARK CITY AUTHORITY PROMPT PAYMENT POLICY

EXHIBIT E - MONTHLY UTILIZATION COMPLIANCE REPORTS

CONSULTANT AGREEMENT

AGREEMENT (the “Agreement”) made as of [DATE] between BATTERY PARK CITY AUTHORITY, d/b/a HUGH L. CAREY BATTERY PARK CITY AUTHORITY, (the “Owner”), a body corporate and politic, constituting a public benefit corporation, having a place of business at One World Financial Center, 24th Floor, New York, New York 10281, and [NAME OF COMPANY], incorporated in the State of [STATE], having an office at [Street, City, State, zip code] (the “Consultant”).

W I T N E S S E T H:

WHEREAS, Owner has fee title to certain real property located in the City, County and State of New York, generally known as Battery Park City; and

WHEREAS, Owner has developed Battery Park City, in individual parcels, with the goal of 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, Owner intends to retain the services of Consultant to perform [describe services to be performed] (the “Project”), and Consultant desires to perform such services for Owner.

NOW, THEREFORE, in consideration of the mutual promises herein contained, the parties hereby agree as follows:

1. Scope of Work

Consultant shall perform the services described in the Scope of Work attached hereto as Exhibit A (the “Work”). All Work shall be completed in accordance with the requirements furnished to Consultant by Owner, and shall be completed to Owner’s satisfaction.

2. Time for Performance

Consultant shall perform the Work as expeditiously as is consistent with professional skill and the orderly progress of the Work, and in accordance with any schedule set forth in the attached Scope of Work. If a schedule approved by Owner is incorporated into this Agreement, said schedule shall not be exceeded by Consultant, except for reasonable cause. The term of this Agreement shall begin [DATE] (the “Commencement Date”) and shall terminate not later than [DATE] (the “Expiration Date”) (such period from the Commencement Date to the Expiration Date is referred to herein as the “Term”) unless this Agreement is otherwise terminated as hereinafter provided. Consultant shall complete the Scope of Work on or before [DATE], unless the time for performance of the Work is extended by written agreement of Consultant and Owner.

3. Compensation

(a) Owner shall pay, and Consultant agrees to accept as full compensation for all Work performed under this Agreement, the not-to-exceed amount of [\$\$\$\$\$] (the “Fee”), paid in

accordance with the rates (the “Rates”) attached hereto as Exhibit B. The Fee includes any and all reimbursable expenses, which shall not exceed [\$\$\$\$\$] (the “Reimbursable Amount”), incurred by Consultant in performing the Work.

(b) Any reimbursable expenses shall be paid in accordance with Owner’s standard policies for reasonable expenses actually incurred by Consultant in connection with the performance of the Work. Consultant shall submit copies of receipts or other supporting documentation for any qualifying expenses incurred.

(c) Consultant shall submit monthly requests for payment to Owner that shall:

(i) include the name, address, and telephone number of Consultant;

(ii) be accompanied by time sheets, in substantially the form provided in Exhibit C (“Form of Time Sheet”), attached hereto and made part hereof, containing a description of the work performed and indicating hours worked in each billing category; and

(iii) reference the project for which services were rendered.

(d) Owner shall pay Consultant no later than the 30th calendar day (excluding holidays) following Owner’s receipt of a Proper Invoice (pursuant to, and as such term is defined in Owner’s Prompt Payment Policy, a copy of which is attached hereto and made part hereof as Exhibit D). Any item(s) of Work indicated in any Exhibit hereto as attributable to a specific phase of the Work that is not performed during the specified phase shall not be compensated by Owner, but payment for any such items of Work shall remain available to Consultant if, with Owner’s advance approval, such Work is actually performed during a subsequent phase of the Work, subject to the provisions of this Article 3 and Owner’s approval of any request for payment. Owner may withhold from any payment an amount equal to any costs or damages incurred by Owner as a result of Consultant’s negligence or breach of this Agreement.

(e) All requests for payment should be addressed as follows:

Office of the Treasurer
Battery Park City Authority
d/b/a Hugh L. Carey Battery Park City Authority
One World Financial Center, 24th Floor
New York, NY 10281-1097
Attn.: Accounts Payable

A duplicate copy is to be sent to the attention of [PROJECT MANAGER, TITLE].

4. Increase and Decrease in the Scope of Consultant’s Work

Owner shall have the right to make changes to, increase or reduce the scope of Work, or extend the Term or any date set forth in the schedule referenced in Section 2 *supra*, at any time and for any reason, upon written notice to Consultant specifying the nature and extent of such changes. If Consultant believes that any work it has been directed to perform by Owner is beyond

the scope of Work set forth in this Agreement and constitutes extra work, Consultant shall so notify Owner within ten (10) business days. Owner shall determine whether or not such work is in fact beyond the scope of the Work and is considered extra work. If Owner determines that such work constitutes extra work to Consultant or any Subconsultant (as defined in Section 25 of this Agreement), Owner will pay Consultant any additional reimbursable expenses approved pursuant to Owner's policy for reimbursable expenses, and such additional compensation only as mutually agreed in writing by Owner and Consultant at the time of such change.

5. Consultant Cooperation

(a) Consultant shall work with such firms or individuals as Owner shall designate from time to time in connection with the Work, and agrees to meet with such firms or individuals at such times as Owner may require in order to maintain an ongoing review process so as to expedite determinations and approvals required to be made in connection with the Work.

(b) Consultant shall render any assistance that Owner may require with respect to any claim or action arising from or in any way relating to Consultant's services during or subsequent to the Term of this Agreement, including, but not limited to, review of claims, preparation of technical reports and participation in negotiations, both before and after Consultant has completed performance of the Work under this Agreement and without any additional compensation therefor.

6. Termination

(a) *Termination for Convenience.* Owner, at any time, may terminate this Agreement in whole or in part. Any such termination shall be effected by mailing or delivering to Consultant a written notice of termination specifying the extent to which performance of the Work under this Agreement is terminated and the date upon which such termination becomes effective. Upon receipt of the notice of termination, Consultant shall act promptly to minimize any expenses resulting from said termination. Owner shall pay Consultant the costs actually incurred by Consultant, including any Fee for Work actually and satisfactorily performed up to the effective date of the termination, but in no event shall Consultant be entitled to compensation in excess of the total consideration of this Agreement. In the event of such a termination, Owner may take over the Work and prosecute same to completion by contract or otherwise, and may take possession of and utilize such work product, materials, appliances, and plant as may be on the site and necessary or useful to complete the Work. Except as otherwise provided herein, all of Owner's liability hereunder shall cease and terminate as of the effective date specified in such notice of termination.

(b) *Termination for Cause.* Owner may terminate this Agreement for cause if:

(i) Consultant shall fail to diligently, timely and expeditiously perform any of its obligations as set forth in the Agreement;

(ii) Any representation or warranty made or deemed to have been made under this Agreement by Consultant shall prove to be untrue in any material respect;

(iii) Consultant shall make a general assignment for the benefit of its creditors, or a receiver or trustee shall have been appointed on account of Consultant's insolvency, or Consultant

otherwise shall be or become insolvent, or an order for relief shall have been entered against Consultant under Chapter 7 or Chapter 11 of Title 11 of the United States Code;

(iv) a breach of any covenant or agreement contained in Section 16 of this Agreement or any other section of this Agreement shall occur; or

(v) Consultant otherwise shall be in default hereunder;

by serving written notice upon Consultant of Owner's intention to terminate this Agreement. Such notice shall state: (1) the reason(s) for Owner's intention to terminate the Agreement, and (2) the effective date of termination, to be not less than three (3) calendar days after the date of the notice of termination. If Consultant shall fail to cure the reason(s) for termination or make arrangements satisfactory to Owner on or before the effective date of termination, this Agreement shall terminate on the date specified by Owner in the notice of termination. In the event of any such termination, Owner may take over the Work and prosecute same to completion by contract or otherwise, for the account and at the expense of Consultant, and Consultant shall be liable to Owner for all costs incurred by Owner by reason of said termination. In the event of such termination, Owner may take possession of and utilize such work product, materials, appliances, and plant as may be on the site and necessary or useful to complete the Work. Upon Owner's completion of the Work following a termination for cause, Consultant shall be entitled to such amount of the Fee that has not theretofore been paid to Consultant and that shall compensate Consultant for all Work actually and satisfactorily performed by it up to the date of termination, provided, however, that Owner shall deduct from any amount all additional costs and expenses that Owner may incur over those which Owner would have incurred in connection with the Work if Owner had not so terminated this Agreement for cause. Nothing contained in this Agreement shall limit in any manner any and all rights or remedies otherwise available to Owner by reason of a default by Consultant under this Agreement, including, without limitation, the right to seek full reimbursement from Consultant for all costs and expenses incurred by Owner by reasons of Consultant's default hereunder and which Owner would not have otherwise incurred if Consultant had not defaulted hereunder.

(c) Upon any termination of this Agreement in accordance with the provisions of this Section 6, Consultant shall, with respect to the Work which is the subject of such termination:

(i) discontinue all its services from and after the date of the notice of termination, except to attempt to cure any reason(s) for termination or as may be required to complete any item or portion or services to a point where discontinuance will not cause unnecessary waste of duplicative work or cost;

(ii) cancel, or if so directed by Owner, transfer to Owner all commitments and agreements made by Consultant relating to the Work, to the extent same are cancelable or transferable by Consultant;

(iii) transfer to Owner in the manner, to the extent, and at the time directed by Owner, all work product, supplies, materials and other property produced as a part of, or acquired in the performance of the Work; and

(iv) take other actions as Owner may reasonably direct.

(d) In the event that Consultant, having been terminated, thereafter obtains a determination, in a judicial or other action or proceeding, that such termination was unwarranted, without basis, or invalid for any reason, then the termination shall be deemed to have been one for the convenience of Owner and Consultant shall be entitled to be reimbursed and paid as provided in Subsection 6(b) but to no other payments or damages.

7. Suspension

Owner may, at any time and for any reason, order Consultant in writing to suspend, delay or interrupt performance of all or any part of the Work for a reasonable period of time as the Owner may determine. Upon receipt of a suspension order, Consultant shall, as soon as practicable, cease performance of the Work as ordered and take immediate affirmative measures to protect such Work from loss or damage. Consultant specifically agrees that such suspension, delay or interruption of the performance of Work pursuant to this Section 7 shall not increase the cost of performance of the Work of this Agreement. Owner may extend the Term or any date set forth in schedule referenced in Section 2 *supra*, to compensate Consultant for lost time due to suspension, delay or interruption, and such time extension shall be Consultant's sole compensation for same. Consultant shall resume performance of such Work upon the date ordered by Owner.

8. Assignment

Consultant shall not assign the Agreement in whole or in part without Owner's prior written consent; however, Owner may assign the Agreement in whole or in part without Consultant's prior written consent.

9. Ownership of Documents

(a) All material specifically prepared for the Project and excluding any intellectual property already owned by Consultant that is furnished by Consultant or any Subconsultants (including but not limited to all film, video, or digital assets, Hypertext Markup Language ("HTML") files, JavaScript files, flash files, etc.) in connection with the Work shall be deemed Works Made for Hire and become the sole property of Owner. Consultant shall provide a tangible copy of the Work to Owner in any form(s) to be specified by Owner. Such materials may be used by Owner, in whole or in part, or in modified form, for any and all purposes Owner may deem desirable without further employment of, or payment of any additional compensation to Consultant. Consultant hereby acknowledges that whatever participation Consultant has, or will have, in connection with any copyrightable subject matter that is the subject of the Work is and shall be deemed Work Made for Hire on behalf of the Owner and that the Owner shall be the sole owner of the Work, and all underlying rights therein, worldwide and in perpetuity. In the event that the Work, or any portion thereof, does not qualify or is deemed not to be Work Made for Hire, Consultant hereby irrevocably transfers and assigns to the Owner all of Consultant's right, title and interest, throughout the world, in and to the Work, including, without limitation, all of Consultant's right, title and interest in the copyrights to the Work, including the unrestricted right to make modifications, adaptations and revisions to the Work and hereby waives any so-called "moral rights" with respect to the Work. Consultant grants to Owner a royalty free, worldwide perpetual, irrevocable, nonexclusive license

to reproduce, modify, and publicly display the Work.

(b) Any plans, drawings, or specifications prepared by or on behalf of Consultant for the Project shall become property of Owner, and Consultant may not use same for any purpose not relating to the Project without Owner's prior written consent. Consultant may retain such reproductions of plans, drawings or specifications as Consultant may reasonably require. Upon completion of the Work or the termination of this Agreement, Consultant shall promptly furnish Owner with a complete set of original record prints. All such original materials shall become property of Owner who may use them, without Consultant's permission, for any proper purpose including but not limited to additions or completion of the Project.

10. Insurance [as applicable]

(a) Consultant shall carry the following insurance:

(i) Workers' Compensation and New York State Disability Benefit Insurance covering all persons employed or retained by Consultant in connection with the Work, as required by New York State Law.

(ii) Professional Liability Insurance with limits of liability in amounts not less than [\$\$\$\$], insuring Consultant and any of its respective officers, directors, stockholders, partners and employees for liability arising out of the carrying out of Consultant's professional responsibilities for the Work. All such professional liability policies shall include coverage for contractual liability, including the matters set forth in Section 17 of this Agreement. All policies shall be subject to a deductible of not more than [\$\$\$\$] per claim. The maximum permitted self-insured retention shall be [\$\$\$\$], or an amount approved by Owner in writing.

(iii) Commercial General Liability Insurance with contractual, products and completed operations coverages issued to and covering the liability of Consultant for all the Work and operations relating thereto and all obligations assumed by Consultant under this Agreement, with a combined single limit for Bodily Injury, Personal Injury and Property Damage of at least [\$\$\$\$] per occurrence and [\$\$\$\$] in the aggregate. Said insurance shall, where applicable, be written on an occurrence basis. The limit may be provided through a combination of primary and umbrella/excess liability policies. The coverage shall provide and encompass at least the following:

(A) An endorsement naming Owner, Battery Park City Parks Conservancy Corporation, the State of New York, and such other entities as identified by Owner, as additional insureds ("Additional Insureds").

(B) The policy or policies must be endorsed to be primary as respects the coverage afforded the Additional Insureds and such policy or policies shall be primary to any other insurance maintained by Owner. Any other insurance maintained by Owner shall be excess of and shall not contribute with Consultant's insurance, regardless of the existence of any "other insurance" clause contained in Owner's own policy or policies of insurance.

(iv) Automobile Liability and Property Damage Insurance covering the use in connection with the Work of all owned, leased, hired, and non-owned vehicles bearing, or under the circumstances under which such vehicles are used are required to bear license plates by the Motor Vehicle Laws of the State of New York, with a combined single limit for Bodily Injury and Property Damage of at least [\$\$\$\$\$] per occurrence.

(v) Employer's Liability Insurance, 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 [\$\$\$\$\$] for each consecutive 12-month period.

(vi) Valuable Papers Insurance covering, for the benefit of Consultant and BPCA all documents used under this Agreement by Consultant or any Subconsultant in a total amount of not less than [\$\$\$\$\$]. Consultant may furnish full coverage using one policy or may submit separate policies from the Subconsultants for their proportionate shares of such coverage.

(vii) Comprehensive Crime/Employee Dishonesty Insurance in a reasonable amount or an amount which is customary in the applicable industry, trade or profession.

(viii) If the Work involves the removal, repair, installation or testing of underground petroleum storage tanks, or petroleum remediation operations, or the performance of work or services related to excavation, loading, transporting or unloading of hazardous or contaminated materials, Contractor shall provide Contractors Professional Liability Insurance with a limit of [\$\$\$\$\$]. Coverage shall provide and encompass the following:

(A) Contractor's negligent acts, errors or omissions in rendering or failing to render services of an engineering or consulting nature arising out of their environmental engineering or consulting.

(B) Maximum self-insured retention of [\$\$\$\$\$], or an amount acceptable to Owner.

(ix) Excess Liability Insurance with an aggregate limit of not less than [\$\$\$\$\$].

(b) All required insurance shall be maintained with responsible insurance carriers authorized to do business in the State of New York and rated at least B+ by A.M. Best and Company, or meet such other requirements as are acceptable to Owner, and shall be approved by Owner. Upon execution of this Agreement and before commencing any performance hereunder, Consultant shall deposit with Owner the original policies of insurance, or certificates therefor, bearing notations or accompanied by other evidence satisfactory to Owner of the payment of all premium payments thereunder. **Such policies or certificates shall be delivered to [insert name], Executive Assistant, at Owner's place of business, immediately upon signing this Agreement.** Thereafter, certification of all premium payments shall be deposited with Owner not less than ten (10) days before the expiration dates of the policies. Submission of a policy or certificate of insurance with Owner shall constitute a warranty by Consultant that the insurance coverage described is in effect for the policy term shown.

(c) Riders providing substantially as follows shall be made a part of the insurance policies described in Subsection 10(a) hereof, as applicable:

(i) the policy shall not be canceled or terminated, or the coverage thereof materially reduced, until thirty (30) days after receipt of written notice thereof by certified or registered mail, return receipt requested addressed to Owner; and

(ii) violation of any of the terms of the policy, or any other policy issued by the Company, shall not by itself invalidate such policy.

(d) The insurance policies required by this Section 10 shall be kept in full force and effect for the periods specified hereunder:

(i) Workers' Compensation Insurance and New York State Disability Benefits Insurance shall be kept in force until receipt of final payment by Consultant hereunder. This Agreement shall be void and of no force or effect unless, in compliance with the Workers' Compensation Law, Consultant shall secure Workers' Compensation Insurance for such of their respective employees engaged in the performance of the Work as are required to be insured under said law.

(ii) Professional Liability Insurance shall be kept in force for the earlier of three (3) years after the completion of the performance of the Work hereunder or termination of this Agreement. If the insurance policy provided pursuant to Section 10(a)(ii) above shall be canceled or not renewed, Consultant shall purchase at its sole expense an extended discovery clause covering the period of three years after Work under this Agreement is completed.

(e) Should Consultant engage any Subconsultant(s), the same conditions as are applicable to Consultant under this Section 10 shall apply to each Subconsultant of every tier. However, Consultant shall keep Subconsultant's certificates of insurance on file, and shall produce same upon demand by Owner.

(f) Should Consultant fail to provide or maintain any insurance required by this Agreement, Owner may, at its sole discretion, after providing verbal notice to Consultant, purchase any insurance required under this Agreement and charge back such purchase to Consultant.

(g) At any time that the coverage provisions and limits on the insurance policies required under this Agreement do not meet the provisions and limits set forth above, Consultant shall immediately cease work on the Project. Consultant shall not resume work on the Project until authorized to do so by Owner. Any delay or time lost as a result of Consultant not having the insurance required under this Section 10 shall not entitle Consultant to receive additional compensation or a time extension.

(h) Notwithstanding any other provisions in this Section 10, Owner may require Consultant to provide, at Owner's expense, any other form or limit of insurance necessary to secure Owner's interests.

(i) Consultant shall secure, pay for, and maintain Property Insurance necessary for protection against the loss of owned, borrowed or rented equipment, tools and materials used in Consultant's performance of the Work. The requirement to secure and maintain such insurance is solely for the benefit of Consultant. Consultant's failure to secure such insurance or to maintain adequate levels of coverage shall not render Owner or any other Additional Insureds, or their agents and employees, responsible for any such losses, and Owner, the other Additional Insureds, and their agents and employees shall have no such liability.

(j) Neither the procurement nor the maintenance of any type of insurance by Owner and Consultant shall in any way be construed or deemed to limit, discharge, waive or release Consultant from any of the obligations and risks accepted by Consultant, or be a limitation on the nature or extent of said obligations and risks.

(k) Consultant shall not violate, or permit to be violated, any term or condition of its insurance policies, and shall at all times satisfy Owner's safety requirements and any requirements of the insurance companies issuing such policies. Consultant shall take every reasonable precaution against injuries to persons or damage to property, and for the safety of persons engaged in performing the Work or doing any work in connection with the Project. Consultant shall establish and maintain safety procedures in connection with the Work as required by the New York labor law and regulations of the Occupational Safety and Health Act, as applicable.

11. Authority of Owner

The Work shall be subject to the general supervision, direction, control and approval of Owner or its authorized representative(s), whose decision shall be final and binding upon Consultant as to all matters arising in connection with or relating to this Agreement. Owner shall determine all matters relative to the fulfillment of this Agreement on the part of Consultant and such determination shall be final and binding on Consultant.

12. Entire Agreement

This Agreement, including all Exhibits hereto, constitutes the entire Agreement between Owner and Consultant, and any prior agreements or understandings between Owner and Consultant with respect to any portion of the Work are hereby merged into and with this Agreement.

13. Consultant as Independent Contractor

Notwithstanding any other provision of this Agreement, Consultant's status shall be that of an independent contractor and not that of a servant, agent or employee of Owner. Accordingly, Consultant shall not hold itself out as, nor claim to be acting in the capacity of, an officer, agent, employee or servant of Owner.

14. Maintenance, Audit and Examination of Accounts

Consultant shall, until the earlier of six (6) years after completion of the performance of

the Work or six (6) years after termination of this Agreement, maintain, and require all Subconsultants to maintain, complete and correct books and records relating to all aspects of Consultant's obligations hereunder, including without limitation, accurate cost and accounting records specifically identifying the costs incurred in performing their respective obligations, and shall make such books and records available to Owner or its authorized representatives for review and audit at all such reasonable times as Owner may request. In the event that Consultant and/or any Subconsultants shall fail to comply with the provisions of this Section 14, and as a result thereof shall be unable to provide reasonable evidence of such compliance, Owner shall not be required to pay any portion of the Fee and Reimbursable Expenses then due or next becoming due, as the case may be, with respect to such items, and if such compensation has already been paid, Owner may require Consultant to refund any such payment made. Any excessive audit costs incurred by Owner due to Consultant's or any Subconsultant's failure to maintain adequate records shall be borne by Consultant.

15. Acceptance of Final Payment; Release and Discharge

Final payment shall be made to Consultant upon satisfactory completion and acceptance by Owner of the Work required under this Agreement, or all Work performed prior to the termination of this Agreement if terminated pursuant to Section 6 hereof, and upon submission of a certification that all Subconsultants have been paid their full and agreed compensation. The acceptance by Consultant of the final payment under this Agreement, or any final payment due upon termination of this Agreement under Section 6 hereof, shall constitute a full and complete waiver and release of Owner from any and all claims, demands and causes of action whatsoever that Consultant, and/or its successors and assigns have, or may have, against Owner under the provisions of this Agreement, unless a detailed and verified statement of claim is served upon Owner prior to the date final payment is tendered by Owner. It is expressly understood and agreed that Owner's or Consultant's termination of this Agreement pursuant to Section 6 hereof shall not give rise to any claim against Owner for damages, compensation or otherwise as a result of such termination, and that under such circumstances Owner's liability to make payments to Consultant on account of any and all Work shall be limited to the payments set forth in Section 6 hereof.

16. Covenants, Representations and Warranties

(a) Consultant represents and warrants to Owner that:

(i) no public official is directly or indirectly interested in this Agreement, or in the supplies, materials, equipment, work, labor or services to which it relates or in any of the profits thereof;

(ii) except as set forth in this Agreement, Consultant has, and shall have, no interest, direct or indirect, in the Project to which the Work relates; and

(iii) to the best of its knowledge, upon due inquiry, no officer, member, partner or employee of Consultant has, prior to the date of this Agreement, been called before a grand jury, head of a state agency, head of a city department or other city agency to testify in an investigation concerning any transaction or contract had with the State of New York, any political subdivision thereof, a public authority, or with any public department, agency or official of the State of New

York of or any political subdivision thereof, and refused to sign a waiver of immunity against subsequent criminal prosecution or to answer any relevant question concerning such transaction or contract.

(b) Consultant covenants and agrees that:

(i) recognizing that time for completion of the Work is of the essence, Consultant shall perform all of its obligations hereunder in a prompt and workmanlike manner and in accordance with the time periods for the Work set forth herein;

(ii) the personnel assigned and any Subconsultant(s) used by Consultant in the performance of the Work hereunder shall be qualified in all respects for such assignment, employment and use;

(iii) Consultant, in the performance of the Work, shall utilize the most efficient available methodology and technology for the purpose of reducing the cost and time of such performance;

(iv) Consultant shall comply with the provisions of all Federal, State and local statutes, laws, rules, ordinances and regulations that are applicable to the performance of this Agreement;

(v) should any claim be made or any action be brought against the Owner that is in any way related to the Work, Consultant shall diligently render to Owner any and all assistance specified in Section 5 of this Agreement that may be required by Owner as a result thereof; and

(vi) Consultant shall not commit its personnel to, nor engage in, any other projects during the term of this Agreement to the extent that such projects may adversely affect the quality or efficiency of the Work or would otherwise be detrimental to the conduct and completion of the Work, and Consultant shall provide sufficient numbers of qualified personnel as shall be required to perform the Work in the time requested by Owner. Consultant shall comply with any reasonable request by Owner to remove and/or replace any of Consultant's personnel from the Project.

(c) The parties make mutual representations that to the best of their knowledge that any materials provided by either party for inclusion in the Work shall not infringe upon the copyright or trademark of any third party.

17. Indemnity

(a) Consultant shall be liable to, and shall indemnify Owner, each Member, officer, agent and employee of Owner for, and shall hold each of the foregoing harmless from and against, any and all claims, losses, damages, expense, penalties, costs or other liabilities, including, without limitation, attorneys' fees, costs, disbursements and interest, arising out of the performance of the Work or Consultant's breach of this Agreement, including but not limited to any of the provisions set forth in Section 16 hereof, and Consultant agrees that it shall defend any suit or action brought against Owner or any Member, officer, agent or employees of Owner that is based on any loss or liability or alleged loss or liability indemnified herein.

(b) Consultant shall be liable to, and shall indemnify Owner and each of the Members, officers, agents and employees of Owner for, and shall hold each of the foregoing harmless from and against, any and all claims made against any of the foregoing for infringement of any copyright, trademark or patent arising out of the use of any plans, designs and specifications furnished by Consultant in the performance of this Agreement.

18. Confidentiality

Consultant hereby agrees that data, recommendations, reports and other materials developed in the course of the Work are strictly confidential between Consultant and Owner and except as specifically provided herein, Consultant may not at any time reveal or disclose such data, recommendations or reports in whole or in part to any third party without first obtaining written approval from Owner.

19. Modification

No modification, amendment, change, termination or attempted waiver of any of the provisions of this Agreement shall be binding unless in writing and signed by the party to be bound.

20. Waiver

Except as otherwise provided in Section 15 of this Agreement, the parties may waive any of their rights hereunder without invalidating this Agreement or waiving any other rights hereunder, provided, however, that no waiver of, or failure to enforce or exercise any provision of this Agreement shall affect the right of any party thereafter to enforce such provisions or to exercise any right or remedy in the event of any other breach or default, whether or not similar.

21. Severability

If any term or provision of this Agreement or the application thereof to any person or entity, or circumstance shall, to any extent, be determined to be invalid or unenforceable, the remaining provisions of this Agreement, or the application of such terms or provisions to persons, entities or circumstances other than those as to which it is held to be invalid or unenforceable, shall in no way be affected thereby and each term or provision of this Agreement shall be valid and binding upon the parties, and enforced to the fullest extent permitted by law.

22. New York Law/Forum Selection/Jurisdiction

This Agreement shall be construed under, and 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. Consultant, any guarantor of the performance of its obligations hereunder (“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 Consultant and any successor at Consultant’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 two days after such process is so mailed.

23. Provisions Required by Law

Each and every provision of law and clause required by law to be included in this Agreement shall be deemed to be included herein, and this Agreement shall read and shall be enforced as though such provision(s) and/or clause(s) were so included.

24. Notices

Any notice, approval, consent, acceptance, request, bill, demand or statement required or permitted to be given hereunder (a "Notice") from either party to the other shall be in writing and shall be deemed given when received by overnight mail or when deposited with the United States Postal Service in a postage prepaid envelope, certified or registered mail, addressed to the other party at the addresses set forth above. If to Owner, Notices shall be sent to the attention of **[HEAD OF DEPARTMENT]**, with copies to the **[President & Chief Operating Officer and the General Counsel]** **[EITHER OR BOTH, AS APPLICABLE]**, and if to Consultant, Notices shall be sent to the attention of **[NAME]**, **[TITLE]**. Either party may at any time change such address or add additional parties to receive a Notice by mailing, as aforesaid, to the other party a Notice thereof.

25. Approval and Use of Subconsultants

(a) Except as specifically provided herein, Consultant shall not employ, contract with or use the services of any consultants, contractors or other third parties (collectively, "Subconsultants") in connection with the performance of its obligations hereunder without the prior written consent of Owner to the use of each such Subconsultant, and to the agreement to be entered into between Consultant and any such Subconsultant. Consultant shall inform Owner in writing of any interest it may have in a proposed Subconsultant. No such consent by Owner, or employment, contract, or use by Consultant, shall relieve Consultant of any of its obligations hereunder.

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

(c) The fees of any Subconsultant retained by Consultant to perform any part of the Work required under this Agreement shall be deemed covered by the compensation stipulated in Section 3 above. Consultant shall pay its Subconsultants in full the amount due them from the proportionate share of each requisition for payment submitted by Consultant and paid by Owner. Consultant shall make payment to its Subconsultants no later than seven (7) calendar days after receipt of payment from Owner. Consultant shall indemnify, defend and hold Owner harmless with respect to any claims against Owner based upon Consultant's alleged failure to make

payments to Subconsultants for Work under this Agreement.

(d) Upon the request of Owner, Consultant shall cause any Subconsultant employed by the Consultant in connection with this Agreement to execute a copy of this Agreement, wherein such Subconsultant 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 Subconsultants.

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 Consultant’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 consultants 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 that the Consultant 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 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 York and is independently owned and operated.

(i) “Subcontract.” An agreement providing for a total expenditure in excess of \$25,000 for the performance of any portion of the Work between 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.

(j) “Utilization Plan.” A plan previously submitted by Consultant to Owner that sets forth the proposed percentages of employees who are either Minority Group Members or women and who will be used by Consultant 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 that is independently owned and operated.

26.2. Equal Employment Opportunities for Minority Group Members and Women

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

(1) Consultant 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 of diversity to ensure that Minority Group Members and women are afforded equal employment opportunities without discrimination; 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, Consultant 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 Consultant's obligations herein.

(3) Consultant 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) Consultant and any Subconsultant 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) Consultant shall submit an EEO policy statement to Owner within seventy-two hours of notice from Owner of the awarding of this contract to Consultant. If Consultant does not have an existing EEO policy statement, Owner may provide to Consultant a model statement.

(6) For purposes of providing meaningful participation by MBE/WBE's for the Work and achieving the goals established herein, Consultant and its Subconsultants should reference the directory of New York State Certified MBE/WBE's found at the following internet address: <http://www.esd.ny.gov/mwbe.html>.

Additionally, Consultant and its Subconsultants are encouraged to contact the Division of Minority and Woman Business Development at (518) 292-5250, (212) 803-2414, or (716) 846-8200, to discuss additional methods of maximizing participation by MBE/WBE's on the Work.

(7) Where MBE/WBE goals have been established herein, Consultant must document "good faith efforts," pursuant to 5 NYCRR §142.8, to provide

meaningful participation by MBE/WBE's as Subconsultants or suppliers in the performance of the Work.

(b) Consultant shall include the provisions of subdivision (a) of this section in every Subcontract in such a manner that the provisions will be binding upon each Subconsultant as to the Work in connection with this Agreement's execution.

(c) Miscellaneous provisions:

(1) The provisions of this section shall not be binding upon Consultant or its Subconsultants in the performance of any other 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.

(d) 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 pursuant thereunder.

26.3. Workforce Participation

(a) Consultant is required to make good faith efforts to achieve the participation of [PERCENTAGE] percent ([##]%) Minority Group Members and [PERCENTAGE] percent ([##]%) women in the personnel utilized by Consultant in the Work as set forth in the Utilization Plan.

(b) To ensure compliance with this Section, Consultant 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. Consultant 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) Consultant 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, Consultant is required to make good faith efforts to find and employ qualified Minority Group Members and women supervisory personnel and staff.

(f) Consultant 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, Consultant shall report on the names of its Subconsultants then engaged on the Project to which the Work relates or which within 60 days are scheduled to be engaged on such Project, on the nature of the work and anticipated schedule of Consultant and Subconsultants, on the anticipated hiring needs of Consultant and Subconsultants, on the names of the responsible supervisors directly employed by Consultant, and such information requested by Owner that will then promote the employment of Minority Group Members and women. Consultant shall use its best efforts to obtain the above information and shall, upon Owner's request, cause its Subconsultants 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 Consultant submit Utilization Compliance Reports for the duration of this contract to Owner regarding Consultant'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 Subconsultant involved in the performance of the contract with regard to the Subconsultant'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 Subconsultants by ethnic background, gender or such other categories as may be required by Owner;

(ii) the actions the Consultant and Subconsultants have taken to meet the components of the Diversity Program;

(iii) how Consultant and Subconsultants 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 Subconsultant's compliance, may be deemed a breach of contract with respect to this agreement.

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

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

Enterprise (WBE) Participation

(a) Consultant shall make good faith efforts to attain the participation of [PERCENTAGE] percent ([##]%) MBEs and/or [PERCENTAGE] percentage ([##]%) WBEs 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 Consultant -- the dollar value of the Work subcontracted to MBEs and WBEs; provided, however, that where materials are purchased from an MBE and WBE that 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 that will accrue as profit to the MBE or WBE and/or the Fee received by the MBE and WBE shall be included;

(2) if Consultant 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) that are to accrue to the MBE and WBE joint venturer(s) under the joint venture agreement; and

(3) if an MBE and WBE is Consultant or where Consultant 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 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. Consultant 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 that shall be submitted to the Diversity Department on the 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 that Consultant 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 Consultant by each certified MBE and WBE and the scheduled dates for performance;

(iii) a statement of whether Consultant has a written agreement with each certified MBE and WBE that Consultant 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 Consultant to each certified MBE and WBE as of the date the MBE/WBE Compliance Report was submitted.

(d) Consultant shall provide Owner with MBE/WBE and/or Workforce Monthly Utilization Reports, by the last calendar day of each month, in the form of Exhibit E hereto. Failure to provide such reports shall be an event of default of contractor's obligations pursuant to this Section.

(e) Consultant 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 this Section.

26.5 Failure to Comply

(a) In accordance with 5 NYCRR §142.13, Consultant acknowledges that if it is found to have willfully and intentionally failed to comply with the MBE/WBE participation goals set forth herein or any other requirements set forth in this Article 27, such finding constitutes a breach of contract and Owner may withhold payment from the Consultant 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 MBE/WBE programmatic goals and Diversity and Equal Opportunity compliance.

27. Responsibility

(a) Consultant shall at all times during the Term of this Agreement remain responsible. Consultant agrees, if requested by Owner or Owner's designee, to present evidence of its continuing legal authority to do business in New York State, integrity, experience, ability, prior performance, and organizational and financial capacity.

(b) Owner or Owner's designee, in its sole discretion, reserves the right to suspend any or all activities under this Agreement, at any time, when it discovers information that calls into question Consultant's responsibility. In the event of such suspension, Consultant will be given written notice outlining the particulars of such suspension. Upon issuance of such notice, Consultant must comply with the terms of the suspension order. Activity under the Agreement may resume at such time as Owner or its designee issues a written notice authorizing a resumption of performance under the Agreement.

(c) Upon written notice to Consultant, and a reasonable opportunity to be heard with appropriate officials or staff of Owner, this Agreement may be terminated by Owner or Owner's designee at Consultant's expense where Consultant is determined by Owner or its designee to be non-responsible. In such event, Owner or its designee may complete the contractual requirements in any manner it deems advisable, and pursue available legal or equitable remedies for breach.

28. Interest of Others

Nothing in this Agreement shall be construed to give any person other than Owner and Consultant any legal or equitable right, remedy or claim. This Agreement shall be held to be for the sole and exclusive benefit of Owner and Consultant.

29. Executory Contract

It is understood by and between the parties hereto that this Agreement shall be deemed executory to the extent of the monies available to Owner and no liability on account thereof shall be incurred by Owner beyond monies available for the purpose thereof. In no event shall any claim be asserted under this Agreement by Consultant or any Subconsultant against any member,

officer, employee, lessee, consultant or agent of Owner or the State of New York. By execution of this Agreement, Consultant agrees to look solely to Owner with respect to any claim that may arise.

30. Participation in International Boycott Prohibited

Consultant agrees, as a material condition of this Agreement, that neither Consultant 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 forfeited 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.

31. MacBride Fair Employment Principles

If the amount payable to Consultant under this Agreement is greater than \$15,000, Consultant 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 interest 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 the New York State Finance Law, and shall permit independent monitoring of their compliance with such Principles.

32. Limitation Periods

Any legal action or proceeding against Owner must be commenced no later than one (1) year after the earlier of: (a) the termination of this Agreement, or (b) the last day Consultant performed work physically at the site of the Work.

33. Iran Divestment Act

By signing this Agreement, each person and each person signing on behalf of any other party certifies, and in the case of a joint bid or partnership each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each person is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law.

34. Termination for Failure to Disclose Under NYS Finance Law §139k

Owner reserves the right to terminate this Agreement in the event it is found that the certification filed by Consultant pursuant to New York State Finance Law §139-k was intentionally false or intentionally incomplete. Upon such finding, Owner may exercise its termination right by providing written notification to the Consultant in accordance with the written notification terms of this contract.

35. Comptroller's Approval

If this Agreement is considered an eligible contract as defined by Title 2 of NYCRR Part 206, 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 "eligible" as defined by Title 2 of NYCRR Part 206, 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 (1) awarded on a single-source basis, sole-source basis or pursuant to any other method of procurement that is not a competitive procurement OR (2) supported in whole or part with funds appropriated from the Community Projects Fund (007).

36. Binding Contract

A binding contract between the parties shall exist only if and at such time as both parties have executed this document.

37. Counterparts

This Agreement may be executed in any number of counterparts, all of which taken together shall constitute one instrument, but the Agreement shall not be deemed effective unless signed by all parties.

38. Section Headings

Section headings contained in this Agreement are for convenience only and shall not be considered for any purpose in governing, limiting, modifying, construing or affecting the provisions of this Agreement and shall not otherwise be given legal effect.

39. Subordination of Terms in the Exhibits

In the event of a conflict of terms, the terms stated in Sections 1-39 herein, shall take precedence over and shall prevail over any printed, typed, or handwritten terms located in the Exhibits.

EXHIBIT D

COST PROPOSAL

(Proposer to submit executed Cost Proposal on its letterhead)

Date:

Battery Park City Authority
200 Liberty Street- 24th Floor
New York, New York 10281

Attention: Mr. Michael LaMancusa
Contract Administrator

Dear Mr. LaMancusa:

The undersigned (the "Proposer") hereby proposes to provide all specified work necessary to perform the work for the Site **23-24 Leak Remediation Construction Management Services**. The Proposer agrees to commence the Work immediately upon receipt of the Initial Letter of Intent or executed contract, in accordance with the terms stipulated in the following pages, for the sum written below.

A. Base Proposal

A total not-to-exceed amount of \$_____ (_____ Dollars and _____ Cents) to perform all work as described in, and associated with, Exhibit A ("Scope of Work").

B. Reimbursable

A total not to Exceed amount of \$_____ (_____ Dollars and _____ Cents) for any reimbursable costs to be incurred in performing the work as described in Exhibit A of the RFP.

B. Itemized Proposal and Labor Rates

1. Enclosed with its Cost Proposal, Proposer has submitted a completed Form of Technical Salaries, showing labor rates for all trades, including all costs except overhead and profit. Prices shown include base hourly rates, overtime rates, insurance and benefits.

Name of Proposer:

By: _____

Title: _____

EXHIBIT E
Form of Technical Salaries
(attached)

TECHNICAL SALARY RATES

Proposers shall provide all appropriate persons necessary to ensure the highest quality work. Proposers must furnish the names and resumes of all Project personnel. The rates listed below represent contract unit rates for the personnel as listed within the assigned categories. Invoicing will be based on actual hours worked multiplied by the unit rate. The unit rate is the actual salary times an auditable multiplier indicated below. The auditable multiplier shall be limited to the direct payroll burden itemized below, overhead (allowances as defined in list below) and a reasonable profit percentage as indicated below.

Itemization of Direct Payroll Burden

- | | | |
|---|--|--|
| 1. F.I.C.A | 11. Major Medical Insurance | 19. Employee Bonuses- non-principals and non- shareholders |
| 2. Federal Unemployment Insurance | 12. Pension and Profit Sharing Plan | 20. Travel and Meal Allowances – overtime work only |
| 3. State Unemployment Insurance | 13. 401K Program (company contribution) | 21. Premium for Staff Overtime- support or clerical work |
| 4. Worker's Compensation | 14. Medicare | 22. Sick Time and Personal Days for employees |
| 5. Life Insurance | 15. Long Term Disability Insurance | |
| 6. Accidental death and Disbursement | 16. Company Automobile Expenses | |
| 7. NYS Disability Insurance | 17. Tuition and Seminar Reimbursement | |
| 8. PL and PD Insurance | 18. Company Training Program | |
| 9. Group Hospitalization | | |
| 10. Vacation time attributable to the Project | | |

(Attach table(s) to the Proposal Form)

NAME	Title/Function	RATE Day / Hr (without Profit & Multiplier)	# OF DAYS / Hrs	TOTAL

SUBTOTAL TECHNICAL SALARIES (w/o Profit & multiplier) \$ _____

PROJECT MULTIPLIER = _____

PROFIT MARGIN = _____%

TOTAL FEE = \$ _____

ser: _____ <Name of Company>

_____ <Printed Name of Executing Officer>

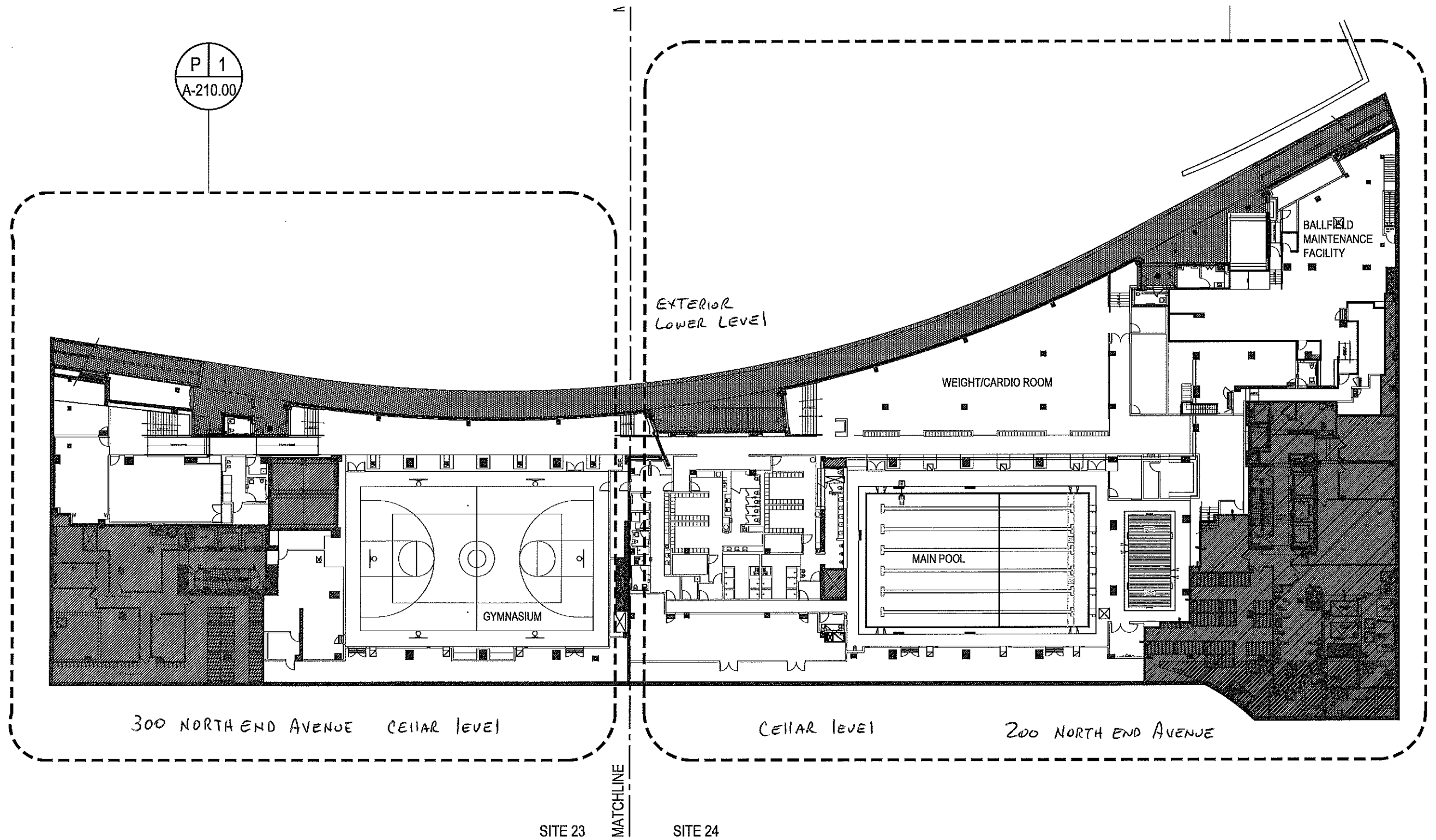
Title:

ure: _____ Date _____

EXHIBIT F

SITE PLAN

(Attached)



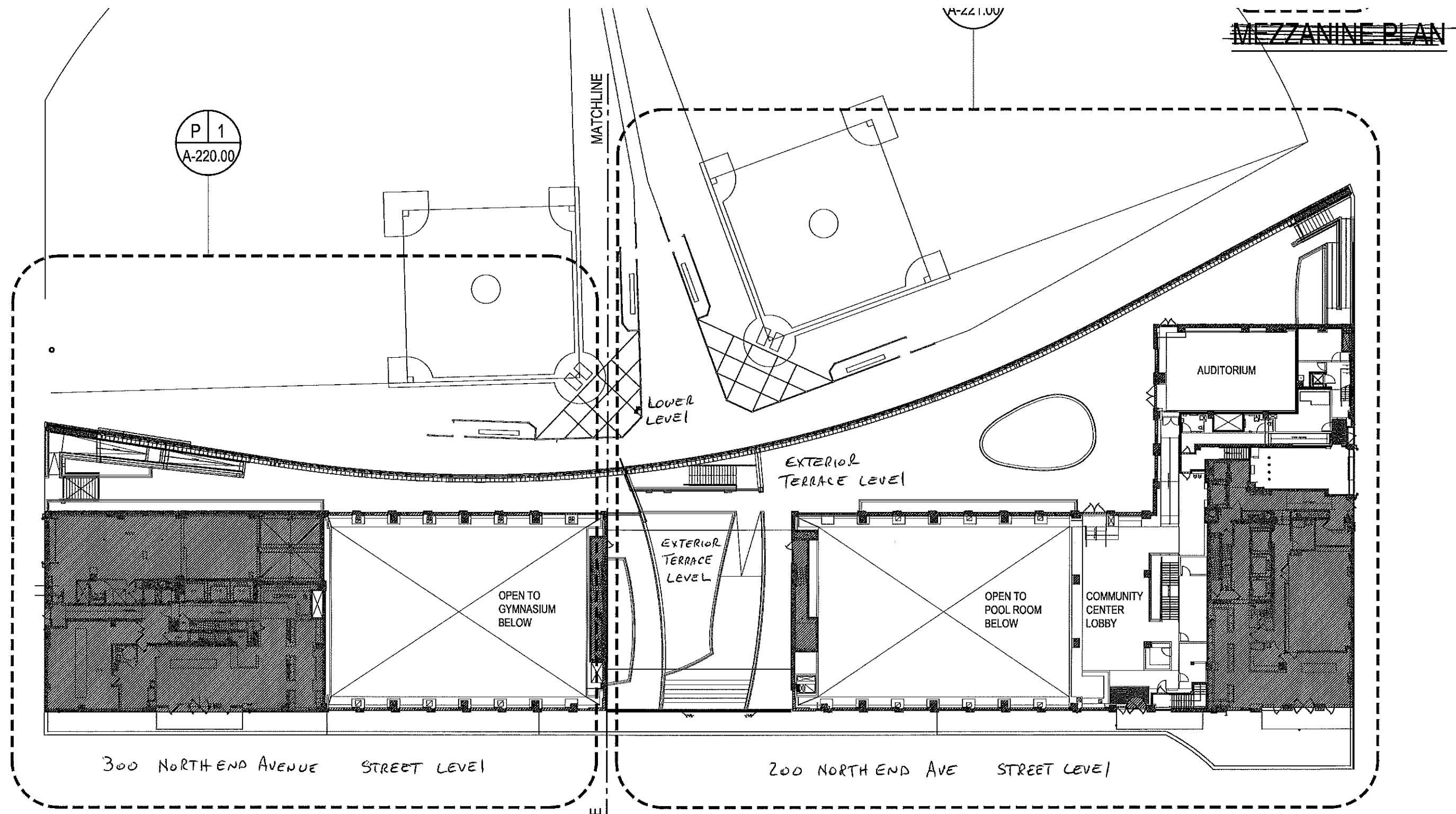


EXHIBIT G
Construction Documents
(attached)



PROJECT MANUAL

200-300 NORTH END AVENUE LEAK REMEDIATION DESIGN



OWNER:

BATTERY PARK CITY AUTHORITY

200 Liberty Street,
New York, NY 10281
Office (212) 417-4337
Cell (347)-865-7052

ARCHITECT:

WASA STUDIO

740 BROADWAY
NEW YORK, NY 10003
T: 212.420.1160
F: 212.529.9079

SUBMISSION:

BID REVIEW PACKAGE

ISSUED:

2015-07-15

PROJECT NO.:

65016

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**BATTERY PARK CITY AUTHORITY
LEAK REMEDIATION DESIGN**

200-300 NORTH END AVENUE, NEW YORK, NY 10282

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END OF SECTION 00 01 10

**BATTERY PARK CITY AUTHORITY
LEAK REMEDIATION DESIGN**

200-300 NORTH END AVENUE, NEW YORK, NY 10282

SECTION 00 01 12 - PROJECT DIRECTORY

OWNER:

Battery Park City Authority

Anthony Buquicchio, Senior Project Manager
Battery Park City Authority
200 Liberty Street, New York, New York 10281
Anthony.Buquicchio@bpca.ny.gov

Gwen Dawson
Vice President of Real Property
Battery Park City Authority
200 Liberty Street, New York, New York 10281
gwen.dawson@bpca.ny.gov

ARCHITECT AND LEAK REMEDIATION DESIGN CONSULTANT

WASA Studio

Pamela Jerome, AIA, LEED™ AP, FAPT, Partner-in-charge
WASA Studio
740 Broadway, Floor 4
New York, NY 10003
212.477.7976 Ext 239 Tel
jeromep@wasallp.com

Sandeep Sikka, Assoc. AIA, LEED AP, Project Manager
WASA Studio
740 Broadway, Floor 4
New York, NY 10003
212.477.7976 Ext 221 Tel
sikkas@wasallp.com

Bala Balasubramaniam, Project Architect
WASA Studio
740 Broadway, Floor 4
New York, NY 10003
212.477.7976 Ext 223 Tel
balab@wasallp.com

ENVIRONMENTAL SUB-CONSULTANT

Jennifer Carey, CEO
JLC Environmental Consultants, Inc.
243 West 30th Street - 7th floor
New York, NY 10001
jcarey@jlcenvironmental.com

EXPEDITOR SUB-CONSULTANT

Lois Rosenberg Consultants, Inc.
303 Greenwich Street, #2D
New York, NY 10013-3962
Tel: (212) 349-7488
LRC@nyc77.com

END OF SECTION 00 01 12

**BATTERY PARK CITY AUTHORITY
LEAK REMEDIATION DESIGN**

200-300 NORTH END AVENUE, NEW YORK, NY 10282

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T-001.00	Title Sheet	2015-06-18	2015-07-15
T-002.00	Scope of work, Notes and Allowances	2015-06-18	2015-07-15
T-003.00	FEMA notes & 2013 FEMA Flood Zone Map	2015-06-18	2015-07-15
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A-101.00	Site plan	2015-06-18	2015-07-15
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A-901.00	Door Details	2015-06-18	2015-07-15
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END OF SECTION 00 01 15

**BATTERY PARK CITY AUTHORITY
LEAK REMEDIATION DESIGN**

200-300 NORTH END AVENUE, NEW YORK, NY 10282

SECTION 00 11 00 - INVITATION TO BID

1. The Battery Park City Authority is soliciting proposals from qualified Contractors for the Leak Remediation at 200-300 North End Avenue, New York, NY10282.
2. Electronic copies (PDF format) of the Bid Documents may be obtained from the office of the Architect between 9:00 AM and 5:00 PM.
3. A pre-bid meeting will be scheduled with Contractors. The purpose of the pre-bid meeting is to assist Contractors in understanding the intent of the Bid Documents, and to provide an opportunity for a visual examination of the existing structure. The Contractor shall examine the structure to determine the extent of work and the quantities of materials required, and request at that time interpretations of any ambiguities, inconsistencies, errors, or omissions found in the Contract Documents. No proposals will be accepted from any Contractor who does not attend the mandatory pre-bid conference. The proposal will be returned unopened to the Contractor.
4. The mandatory pre-bid conference will be held at the site at _____ AM EST _____, 2015. Please e-mail confirmation of your attendance to sikkas@wasallp.com.
5. All Requests for Information (RFI's) during the bidding period must be received in writing by the office of the Architect no later than _____ AM EST _____, 2015. Please send them to sikkas@wasallp.com.

Sealed Proposals shall be delivery to the office of Battery Park City Authority
Anthony Buquicchio, Senior Project Manager
Battery Park City Authority
200 Liberty Street, New York, New York 10281
Anthony.Buquicchio@bpca.ny.gov.

6. All proposals must be clearly labeled with "200-300 North End Avenue Leak Remediation." The Contractor Qualification Statement, Non-Collusion Statement, bid bond, and any additional relevant marketing materials must be included with the sealed Form of Proposal. Proposals sent via facsimile or via email will not be accepted.
7. Proposals from Contractors will be received until _____ AM EST _____ 2015.
8. The Owner will accept the lowest responsible bid. Additionally, the Owner reserves the right to reject any or all bids, or to waive any informalities in the bidding. The Owner may hold all bids for technical review and to further investigate bidder(s) qualifications.

END OF SECTION 00 11 00

**BATTERY PARK CITY AUTHORITY
LEAK REMEDIATION DESIGN**

200-300 NORTH END AVENUE, NEW YORK, NY 10282

SECTION 00 21 13 – INSTRUCTIONS TO BIDDERS

1. All Contractors shall provide a bid deposit in the amount of five percent (5%) of their total bid price. Bid bonds and cashier's checks are acceptable forms of bid security. Bid Bonds and/or cashier's checks shall be included with the sealed bid. Bid Bonds must be presented on a AIA Document A310-2010.
2. Prior to signing the Contract, the Owner will require the selected Contractor to secure and post a Performance Bond and Labor and Material Payment Bond in the amount of 100% of the Contract Price, in a form approved by the Owner. All such bonds shall be issued by a surety acceptable to the Owner. Include the costs of all such bonds as a separate item in the Form of Proposal.
3. The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of its power-of-attorney.
4. Contractor shall supply and maintain insurance which defends, indemnifies and holds harmless the Battery Park City Authority, its officers, employees, and agents from and against any and all liability, damage claims, demands, costs, judgments, fees, attorney's fees or loss arising directly from acts or omissions hereunder by the Contractor or third party under the direction or control of the Contractor.
5. The Contractor will be required to furnish the Certificate of Insurance naming:

Battery Park City Authority, 200 Liberty Street, New York, New York 10281, as the certificate holder, and naming WASA Studio, 740 Broadway, Suite 1001, New York, NY as additional insureds in amounts not less than the following:

General Liability:	\$1,000,000 per occurrence, \$5,000,000 Aggregate
Workers Compensation	Statutory Requirements
NY State Disability:	Statutory Requirements
Automotive Liability	\$1,000,000

"Contractual Liability" must be printed on the Certificate
6. The Owner will provide the selected Contractor with a NYS Form ST-124 Certificate of Capital Improvement. As such, sales tax shall not be included in the Form of Proposal.

END OF SECTION 00 21 13

**BATTERY PARK CITY AUTHORITY
LEAK REMEDIATION DESIGN**

200-300 NORTH END AVENUE, NEW YORK, NY 10282

SECTION 00 42 13 - FORM OF PROPOSAL

Date: _____

To: _____

From: _____
(Name of Bidder)

A _____
(Type of Firm, State of Incorporation, if applicable)

Of _____
(Address)

Having carefully examined the drawings, the Scope of Work and associated bid documents dated 15 July 2015 as prepared by WASA Studio, 740 Broadway, Floor 4, New York, New York 10003, as well as the premise and conditions affecting the work, propose to furnish all labor, material, coordination, equipment, machinery, tools, supplies, services, applicable taxes, insurance, bonds, overhead and profit necessary to perform the full extent of the work as described in Section 01 11 00 Summary of Work, the Technical Specifications and in the Drawings.

The Owner reserves the right to reduce or increase the Scope of Work of the project throughout the course of work using the Base Bids, Allowances, and Unit Prices provided by the Contractor to reduce or increase the Total Contract Sum. The Contractor shall be notified in writing of any reduction or increase in the Scope of Work at least four weeks before the planned start of that work according to the Progress Schedule submitted by the Contractor at the beginning of the project.

BID BREAKDOWN

1.0 Total Bid Sum for all work Drawings and Technical Specifications.

TOTAL BID PRICE WRITTEN IN WORDS	TOTAL BID PRICE IN FIGURES
	DOLLARS / CENTS
For _____ / Dollars And _____ / Cents	

2.0 This Total Bid Sum in Section 1.0 above consists of the work required to completely undertake the leak Remediation Design at 200-300 North End Ave. Category sub-totals below shall equal the bid price for that portion of work. The sum of all category sub-totals must equal the Total Bid Sum above. Additional lines are available for Contractor in each section.

- 2.01 Mobilization, work permits and general administrative requirements (including pipe scaffolding). \$ _____
- 2.02 Installation and cost of sidewalk shed including shed permits. Include protection of existing plaza, planter and other site elements not in scope of work. \$ _____
- 2.03 Coping re-setting at parapets: remove existing granite copings. Provide new through-wall metal flashing and reinstall the coping stone with new anchors. Remove and re-anchor existing railings at the parapet (per LF) \$ _____
- 2.04 Coping re-setting at planters: remove existing granite copings and associated masonry cladding at planters on both sides. Provide new through-wall metal flashing and reinstall the coping stones with new anchors. Provide and install new liquid applied membrane water proofing over the planter curb. Reinstall the granite masonry on both sides. (per SF) \$ _____
- 2.05 Remove existing pavers, setting mortar, topping slab concrete, insulation, drainage mat, filter fabric and liquid applied membrane to the deck. Repair deck (assume 15% of the area in scope) with modified repair concrete. Prepare and prime deck to receive new waterproofing membrane, drainage mat and filter fabric followed by insulation, topping slab, setting bed. (per SF) \$ _____
- 2.06 Reset the existing pavers at the plaza and replace new soil per BPCA specification at the planters. (per SF) \$ _____
- 2.07 Replace drains and drain bodies at the plaza and flash around the existing drains inside the planters. (Per EA) \$ _____
- 2.08 Provide and weld new metal fascia at the steel staircase per drawings. (per LF) \$ _____
- 2.09 Remove and relocate electrical conduits. (Lum Sum) \$ _____

- | | | |
|------|---|----------|
| 2.10 | Reinstall metal panels at the curved curtain wall, beam and columns. (per SF) | \$ _____ |
| 2.11 | Waterproofing at storefront lintel level: remove existing masonry and waterproofing membrane over the store-front window/door lintels and adjacent areas shown on elevations (A201) to expose concealed steel lintel. Provide new continuous waterproofing (through-wall metal flashing and liquid membrane flashing) with weeps and rebuild masonry to match existing. (per LF) | \$ _____ |
| 2.12 | Remove granite masonry block at inboard side of parapet (facing upper plaza) to waterproof and terminate liquid-applied membrane base flashing and rebuild the granite veneer to match existing. (Assume /SF) | \$ _____ |
| 2.13 | Provide and install new inverted angle (weld to existing), provide and install new stainless steel plate, welded to existing landing plate. Waterproof plate and new shelf angle at the gap with new stainless steel thru-wall flashing. (Lum Sum) | \$ _____ |
| 2.14 | Re-anchor staircase railings over the landing at the upper plaza level. Waterproof around the railing attachment. (per SF) | \$ _____ |
| 2.15 | Remove existing granite masonry. Provide and install new sheet metal stainless steel through-wall flashing, weld to the steel landing, along the parapet wall. Overlap liquid-applied membrane over the sheet metal flashing, and flexible membrane. (per SF) | \$ _____ |
| 2.16 | Provide new expansion joint: remove existing joint sealer(s). Prepare joint cavity and provide new unified binary (pre-compressed) sealant system with factory-applied low-modulus silicone. (per LF) | \$ _____ |
| 2.17 | Temporary remove aluminum exit door with associated hardware. Remove door frame, fixed glazing next to the door for installation of waterproofing and door saddle at the expansion joint. Provide and install new door frame and fixed glazing with new anchors and reinstall the door with hardware to match existing. Repair all interior finishes associated with this work. (Lum Sum) | \$ _____ |
| 2.18 | Remove granite block masonry along the store front jambs and install flexible membrane flashing and rebuild granite block masonry to match existing. Provide backer rod and sealant at the joint between jamb and masonry. (per LF) | \$ _____ |
| 2.19 | Remove at least 3'-0" strip of existing pavers, setting bed, concrete topping slab, soil, drainage mat and filter fabric down to the structural deck along the building line at lower plaza. Provide and install new fluid applied membrane flashing on the vertical face of the foundation wall and terminate at the store front window sills. (per LF) | \$ _____ |
| 2.20 | Remove existing pavers, concrete topping slab, soil and aggregate down to the deck around the two drains at the lower plaza. | |

	Remove and replace drains, associated clogged plumbing in kind. Flash around the drains and plumbing penetrations. Replace new soil and aggregates. Provide and install new concrete topping slab, setting bed and pavers. (per SF)	\$ _____
2.21	Remove parge coat and inject chemical resin grout at the interior wall and sills below the store front windows. Replace parge coat to match existing in finish. Repair concrete wall. (per SF)	\$ _____
2.22	Provide and install Crystalline waterproofing at the interior wall and sills below the store front windows. (per SF)	\$ _____
2.23	Bonds	\$ _____
2.24	Overhead and profit	\$ _____
BASE BID SUB-TOTAL		\$ _____

3.0 ALLOWANCES

The following items are to be included in the bid. The quantities provided are in addition to those indicated elsewhere in the documents. Include the cost of all means (scaffolding, lifts, etc.) to install the work at various locations throughout the building. Any quantity, more or less, will be an extra/credit to the owner. Provide shop drawings for approval of intended area of work after inspection from the scaffolding or as directed by the engineer/architect of record prior to proceeding with work.

DESCRIPTION	LUM SUM
3.01 Provide and install new granite block masonry. (200 SF).	\$ _____
3.02 New granite copings at planters (150 LF).	\$ _____
3.03 Prime and paint interior plaster (3000 SF).	\$ _____
3.04 Sealant replacement (250 LF).	\$ _____
3.05 Roof deck repair (100 SF).	\$ _____
3.06 Expansion joint replacement (100 LF)	\$ _____
3.07 Provide new pavers (500 SF)	\$ _____
3.08 Remove and replace aluminum exit door and associated hardware in kind at the lower plaza (1 EA)	\$ _____
3.09 Repair interior plaster (100 SF)	\$ _____
3.10 New Granite copings at parapets (10 LF)	\$ _____
3.11 Replace plumbing pipes and connection to drains at lower plaza in kind (20 LF)	\$ _____

3.12 Liquid applied waterproofing at the penetration on the deck (10 EA) \$ _____

3.13 Remove existing pavers, setting bed, concrete topping slab, soil, drainage mat and filter fabric down to the structural deck at courtyard. Provide and install new fluid applied membrane flashing on the vertical face of the foundation wall and terminated at the store front window sills. (100 SF) \$ _____

ALLOWANCES SUB-TOTAL \$ _____

GRAND TOTAL (BASE BID AND ALLOWANCES 2.0+3.0)..... \$ _____

4.0 ADD/DEDUCT ALTERNATES

4.01 Add replacement of aluminum door to match existing with hardware in kind \$ _____

4.02 Remove and replace drain bodies inside the planters \$ _____

5.0 UNIT PRICES

If approved in writing by the Owner and Architect, the following additional items of work shall be performed on a unit price basis. All unit price work shall be performed in accordance with contract requirements. No Unit Price work shall be performed before Contractor is in possession of an approved Change Order, which specifically requests the performance of that work. Unit prices shall include all labor, materials, equipment, overhead, insurance, profit and taxes. The Owner reserves the right to increase or reduce the Scope of Work using the unit prices provided by the Contractor in the Bid Form.

DESCRIPTION	UNIT PRICE	UNIT
5.01 Pipe Scaffolding	\$ _____	/SF
5.02 Sidewalk shed.....	\$ _____	/LF
5.03 Masonry probe; 2' x 2'; include patching.....	\$ _____	/EA
5.04 Plaza assembly/planter probe (2'X2') including patching	\$ _____	/EA
5.05 Single-Wythe Granite Block Masonry Replacement.....	\$ _____	/SF
5.06 Removal and Reinstallation of existing Copings with through-wall..	\$ _____	/LF
5.07 Removal and Replacement of copings at Parapet w/ thru-wall	\$ _____	/LF
5.08 Replacement of copings at planters with through-wall	\$ _____	/LF
5.09 Liquid applied base flashing	\$ _____	/SF
5.10 Repair of existing concrete deck	\$ _____	/SF
5.11 Replacement of saddle and associated anchorage and flashing	\$ _____	/LF
5.12 Sealant and Backer Rod Installation	\$ _____	/LF

5.13	Removal and replacement of plaza assembly (see below)	\$ _____	/SF
	(Remove existing pavers, setting mortar, topping slab concrete, insulation, drainage matt, filter fabric and liquid applied membrane to the deck. Prepare and prime deck to receive new waterproofing membrane, drainage matt and filter fabric followed by insulation, topping slab, setting bed)		
5.14	Expansion joint in the masonry	\$ _____	/LF
5.15	Horizontal to vertical expansion joint with reinforced terapro	\$ _____	/LF
5.16	Removal and replacement of pavers on new setting bed.....	\$ _____	/SF
5.17	Removal and reinstallation of pavers on new setting bed	\$ _____	/SF
5.18	Concrete topping slab (6" thick)	\$ _____	/SF
5.19	3" thick polystyrene insulation (removal and replacement).....	\$ _____	/SF
5.20	IRMA Plaza Drain removal and replacement with waterproofing	\$ _____	/EA
5.21	Planter drain removal and replacement.....	\$ _____	/EF
5.22	Liquid applied membrane flashing at railing penetrations	\$ _____	/EA
5.23	Replacement of aluminum door and door frames 3'-8" X 7'-3"	\$ _____	/EA
	(With hardware to match existing in kind)		
5.24	Reconstruction of Interior Cement Board Partition (5 to 10 SF)	\$ _____	/SF
5.25	Reconstruction of Interior Cement Board Partition (1 to 5 SF)	\$ _____	/SF
5.26	Interior gypsum Plaster.....	\$ _____	/SF
5.27	Interior painting	\$ _____	/SF
5.28	Waterproofing at storefront lintel level	\$ _____	/SF
5.29	Installation of flexible membrane (Bituthene 3000 WB Grace)	\$ _____	/SF
5.30	Replacement of stainless steel sheet metal cladding at the curtain wall Match the gauge and finish. Include cost for shop drawings	\$ _____	/SF
5.31	Remove and replace planter soil filter fabric and drainage matt	\$ _____	/SF
5.32	Chemical Injection Grouting.....	\$ _____	/SF
5.33	Crystalline Waterproofing Application.....	\$ _____	/SF

6.0 TIME AND MATERIALS RATES

The Contractor agrees to perform additional work, not described in the Base Bids or Unit Prices, on a Time and Material Basis, at the hourly rates for workers provided by the Contractor below. Materials shall be marked-up according to the percentage provided by the Contractor below. Profit and overhead mark-ups shall be based

upon a percentage (provided by Contractor below) of the total labor and materials cost. No Time and Materials work shall be performed before Contractor is in possession of an approved Change Order, which specifically requests the performance of that work. Contractor shall include original itemized receipts for materials used in work with invoices for Time and Material work. Contractor will not be reimbursed by Owner for materials if the purchase of the materials is not documented by receipts.

6.01	Project Manager - per day	\$ _____
6.02	Superintendent - per day	\$ _____
6.03	Roofer - per day	\$ _____
6.04	Mason - per day	\$ _____
6.05	Welder - per day	\$ _____
6.06	Carpenter - per day	\$ _____
6.07	Laborer - per day	\$ _____
6.08	Plumber - per day	\$ _____
6.09	Electrician - per day	\$ _____
6.10	Materials Mark-Up	*% _____
6.11	Profit & Insurance, Overhead Mark-Up	**% _____
*	Percentage of total materials cost	
**	Percentage of total materials and labor cost	

7.0 PRINCIPAL SUB-DIVISIONS OR ELEMENTS OF THE WORK TO BE PERFORMED BY CONTRACTOR'S FORCES

If awarded a Contract, we will perform the following portions of the work with forces directly employed by the undersigned:

8.0 PRINCIPAL SUB-CONTRACTORS

If awarded a Contract, we will employ the following subcontractors for portions of work not performed directly by the undersigned:

9.0 SUPERVISION

If awarded a Contract, we will employ the following foreman to supervise the work:

_____	_____
Project Manager	Superintendent

10.0 SCHEDULE

Estimated starting date in the late summer of 2015 if awarded the project; assume four (4) weeks for award of contract

_____ 2015

If awarded a Contract, we estimate the completion time in work days for the entire project to be:

_____ Work Days

11.0 SCHEDULE OF VALUES

The undersigned agrees, prior to the award of a construction contract and upon the request of the Architect or Owner, to submit a complete, itemized and detailed "Schedule of Values," showing the amount allocated to the various trades and sub-divisions of the work, aggregating the total Contract Sum.

12.0 ADDENDUM RECEIPT

Receipt of the following addenda to the Terms and Conditions, Drawings or Specifications is acknowledged:

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Company Name

By _____

Title _____

Signed _____

Dated _____

Notary Public:

Subscribed and sworn before me this _____ day _____ 2015

Notary Public:

My Commission Expires:

END OF SECTION 00 42 13

**BATTERY PARK CITY AUTHORITY
LEAK REMEDIATION DESIGN**

200-300 NORTH END AVENUE, NEW YORK, NY 10282

SECTION 00 45 13 - CONTRACTOR QUALIFICATION STATEMENT

1. Company Name: _____
2. Principal Office: _____
3. Mailing Address: _____
4. Telephone: _____
5. Facsimile: _____

6. Organizational Information, please check the appropriate box:

☐ Corporation ☐ Joint Venture ☐ Individual
☐ Partnership ☐ Other _____

- A. If a corporation, the corporation is organized under the laws of the State _____. Provide the name and address of the President and date of incorporation:

Name of President: _____

Address: _____

Date of Incorporation: _____

- B. If a partnership, please list the names and addresses of the general partners, type of partnership, and date of organization:

Names of Partners

Address:

(i.) _____

(ii.) _____

(iii.) _____

Type of Partnership:

(iv.) _____

Date of Organization:

(v.) _____

7. How many years has your organization been in business under its present business name?

8. Under what other or former names has your organization operated and associated years:

9. Will you subcontract any part of the work? ☐ Yes (If yes, list subcontractors, and their trade below.)

☐ No

A. Name: _____ Address: _____ Telephone: _____
()

Trade: _____

B. Name: _____ Address: _____ Telephone: _____
()

Trade: _____

C. Name: _____ Address: _____ Telephone: _____
()

Trade: _____

D. Name: _____ Address: _____ Telephone: _____
()

Trade: _____

10. List comparable exterior restoration projects that your firm has executed in the past five (5) years:

A. Project Name: _____ Project Address: _____ Contract Amount: \$_____.00

 Contact Name: _____ Contact's Address: _____ Telephone: (____)_____

 Architect's Name: _____ Architect's Address: _____ Telephone: (____)_____

 Date of Completion: _____ Percentage of Work Completed with Your Own Forces: % _____

 Briefly Description of Your Work: _____

B. Project Name: _____ Project Address: _____ Contract Amount: \$_____.00

 Contact Name: _____ Contact's Address: _____ Telephone: (____)_____

 Architect's Name: _____ Architect's Address: _____ Telephone: (____)_____

 Date of Completion: _____ Percentage of Work Completed with Your Own Forces: % _____

 Briefly Description of Your Work: _____

C.	Project Name:	Project Address:	Contract Amount:
	_____	_____	\$ _____ .00
	Contact Name:	Contact's Address:	Telephone:
	_____	_____	(____) _____
	Architect's Name:	Architect's Address:	Telephone:
	_____	_____	(____) _____
	Date of Completion:	Percentage of Work Completed with Your Own Forces:	
	_____	% _____	
	Briefly Description of Your Work:		

D. Project Name: _____ Project Address: _____ Contract Amount: \$ _____ .00

Contact Name: _____ Contact's Address: _____ Telephone: (____) _____

Architect's Name: _____ Architect's Address: _____ Telephone: (____) _____

Date of Completion: _____ Percentage of Work Completed with Your Own Forces: % _____

Briefly Description of Your Work: _____

11. List any additional projects that your firm has executed in the past five (5) years:

A. Project Name: _____ Project Address: _____ Contract Amount: \$_____.00

Contact Name: _____ Contact's Address: _____ Telephone: (____) _____

Architect's Name: _____ Architect's Address: _____ Telephone: (____) _____

Date of Completion: _____ Percentage of Work Completed with Your Own Forces: % _____

Briefly Description of Your Work: _____

B. Project Name: _____ Project Address: _____ Contract Amount: \$_____.00

Contact Name: _____ Contact's Address: _____ Telephone: (____) _____

Architect's Name: _____ Architect's Address: _____ Telephone: (____) _____

Date of Completion: _____ Percentage of Work Completed with Your Own Forces: % _____

Briefly Description of Your Work: _____

C.	Project Name:	Project Address:	Contract Amount:
	_____	_____	\$_____ .00
	Contact Name:	Contact's Address:	Telephone:
	_____	_____	(____)_____
	Architect's Name:	Architect's Address:	Telephone:
	_____	_____	(____)_____
	Date of Completion:	Percentage of Work Completed with Your Own Forces:	
	_____	%_____	
	Briefly Description of Your Work:		

D.	Project Name:	Project Address:	Contract Amount:
	_____	_____	\$_____ .00
	Contact Name:	Contact's Address:	Telephone:
	_____	_____	(____)_____
	Architect's Name:	Architect's Address:	Telephone:
	_____	_____	(____)_____
	Date of Completion:	Percentage of Work Completed with Your Own Forces:	
	_____	% _____	
	Briefly Description of Your Work:		

12. State the annual dollar amount of construction work performed during the last five years:

- A. 2014 \$ _____ .00
- B. 2013 \$ _____ .00
- C. 2012 \$ _____ .00
- D. 2011 \$ _____ .00
- E. 2010 \$ _____ .00

13. Names of key people who will be working on this project. If necessary please attach separate sheets.

	Name:	Capacity:	Jobs Worked On:
A.	_____	_____	_____
B.	_____	_____	_____
C.	_____	_____	_____
D.	_____	_____	_____
E.	_____	_____	_____
F.	_____	_____	_____

14. Claims and Suits:

- A. Has your organization even failed to complete any work awarded to it?

- B. Are there any judgment, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?

- C. Have any judgment, claims, arbitration proceedings or suits been filed against your organization or its officers for failure to complete a construction contract within the last five years?

- D. Has your organization filed any law suit or requested arbitration with regard to construction contracts within the last five years?

E. Within the last five years, has any officer or principal of your organization even been an officer or principal of another organization when it failed to complete a construction contract?

- ☐ Yes (If yes please attach details.)
☐ No

15. References:

A. Trade References:

	Name:	Company:	Address:	Telephone:
(i.)	_____	_____	_____	() _____
(ii.)	_____	_____	_____	() _____
(iii.)	_____	_____	_____	() _____

B. Bank References:

	Name:	Company:	Address:	Telephone:
(i.)	_____	_____	_____	() _____
(ii.)	_____	_____	_____	() _____
(iii.)	_____	_____	_____	() _____

16. Surety:

- A. Name of Bonding Company: _____
- B. Name and Address of Agent: _____

17. Financing:

A. Attach a financial Statement, preferably audited, including your organization's latest balance sheet and income statement showing the following items:

- (i.) Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses)
- (ii.) Net Fixed Assets
- (iii.) Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries, and accrued payroll taxes)
- (iv.) Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares per values, earned surplus, and retained earnings)
- (v.) Name and Address of firm preparing attached financial statement, and date thereof:

- (vi.) Is the attached financial statement for the identical organization named on page one?
- (vii.) If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsidary)

18. The undersigned certifies under oath that the information provided herein is true and sufficiently complete so as not to be misleading.

Dated this _____ day of _____ 2015

Name of Organization: _____

By: _____

Title: _____

Signature: _____

Notary Public:

Subscribed and sworn before me this _____ day of _____ 2015

Notary Public:

My Commission Expires:

END OF SECTION 00 45 13

**BATTERY PARK CITY AUTHORITY
LEAK REMEDIATION DESIGN**

200-300 NORTH END AVENUE, NEW YORK, NY 10282

SECTION 00 45 19 – NON-COLLUSIVE AFFIDAVIT

By submission of this Form of Proposal, the Contractor certifies that:

- A) This bid or proposal has been independently arrived at without collusion with any other bidder or with any competitor or potential competitor;
- B) This bid or proposal has not been knowingly disclosed and will not be knowingly disclosed, prior to the opening of bids or proposals for this project, to any other bidder, competitor, or potential competitor;
- C) No attempt has been or will be made to induce any other person, partnership, or corporation to submit or not to submit a bid or proposal or to fix overhead, profit, or cost element of said bid price, or that of any other or to secure any advantage against the Battery Park City Authority;
- D) The person, signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf;

Dated this _____ day of _____ 2015

Name of Organization: _____

By: _____

Title: _____

Signature: _____

Notary Public:

Subscribed and sworn before me this _____ day of _____ 2015

Notary Public:

My Commission Expires:

END OF SECTION 00 45 19

**BATTERY PARK CITY AUTHORITY
LEAK REMEDIATION DESIGN**

200-300 NORTH END AVENUE, NEW YORK, NY 10282

SECTION 00 52 00 – SAMPLE FORM OF AGREEMENT

DRAFT AIA® Document A101™ - 2007

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the « » day of « » in the year « »
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

« »
« »
« »
« »

and the Contractor:
(Name, legal status, address and other information)

« »
« »
« »
« »

for the following Project:
(Name, location and detailed description)

«Test»
« »
« »

The Architect:
(Name, legal status, address and other information)

« »
« »
« »
« »

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

AIA Document A201™-2007, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
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- 8 MISCELLANEOUS PROVISIONS
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ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.

(Insert the date of commencement if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)

« »

If, prior to the commencement of the Work, the Owner requires time to file mortgages and other security interests, the Owner's time requirement shall be as follows:

« »

§ 3.2 The Contract Time shall be measured from the date of commencement.

§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than « » (« ») days from the date of commencement, or as follows:

(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work.)

« »

Portion of Work

Substantial Completion Date

, subject to adjustments of this Contract Time as provided in the Contract Documents.

(Insert provisions, if any, for liquidated damages relating to failure to achieve Substantial Completion on time or for bonus payments for early completion of the Work.)

« »

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be « » (\$ « »), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

« »

§ 4.3 Unit prices, if any:

(Identify and state the unit price; state quantity limitations, if any, to which the unit price will be applicable.)

Item

Units and Limitations

Price Per Unit (\$0.00)

§ 4.4 Allowances included in the Contract Sum, if any:

(Identify allowance and state exclusions, if any, from the allowance price.)

Item

Price

ARTICLE 5 PAYMENTS

§ 5.1 PROGRESS PAYMENTS

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the « » day of a month, the Owner shall make payment of the certified amount to the Contractor not later than the « » day of the « » month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than « » (« ») days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form and supported

by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

- .1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of « » percent (« » %). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.9 of AIA Document A201™-2007, General Conditions of the Contract for Construction;
- .2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of « » percent (« » %);
- .3 Subtract the aggregate of previous payments made by the Owner; and
- .4 Subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A201-2007.

§ 5.1.7 The progress payment amount determined in accordance with Section 5.1.6 shall be further modified under the following circumstances:

- .1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and
(Section 9.8.5 of AIA Document A201-2007 requires release of applicable retainage upon Substantial Completion of Work with consent of surety, if any.)
- .2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of AIA Document A201-2007.

§ 5.1.8 Reduction or limitation of retainage, if any, shall be as follows:

(If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Sections 5.1.6.1 and 5.1.6.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.)

« »

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 FINAL PAYMENT

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Section 12.2.2 of AIA Document A201-2007, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

« »

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 INITIAL DECISION MAKER

The Architect will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A201-2007, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

« »
« »
« »
« »

§ 6.2 BINDING DISPUTE RESOLUTION

For any Claim subject to, but not resolved by, mediation pursuant to Section 15.3 of AIA Document A201-2007, the method of binding dispute resolution shall be as follows:

(Check the appropriate box. If the Owner and Contractor do not select a method of binding dispute resolution below, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.)

☐ Arbitration pursuant to Section 15.4 of AIA Document A201-2007

☐ Litigation in a court of competent jurisdiction

☐ Other *(Specify)*

« »

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201-2007.

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201-2007.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201-2007 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

« » % « »

§ 8.3 The Owner's representative:

(Name, address and other information)

« »
« »
« »
« »
« »
« »

§ 8.4 The Contractor's representative:

(Name, address and other information)

« »
« »
« »
« »
« »
« »

§ 8.5 Neither the Owner's nor the Contractor's representative shall be changed without ten days written notice to the other party.

§ 8.6 Other provisions:

« »

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 9.1.1 The Agreement is this executed AIA Document A101–2007, Standard Form of Agreement Between Owner and Contractor.

§ 9.1.2 The General Conditions are AIA Document A201–2007, General Conditions of the Contract for Construction.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
----------	-------	------	-------

§ 9.1.4 The Specifications:

(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

« »

Section	Title	Date	Pages
---------	-------	------	-------

§ 9.1.5 The Drawings:

(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

« »

Number	Title	Date
--------	-------	------

§ 9.1.6 The Addenda, if any:

Number	Date	Pages
--------	------	-------

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 9.

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents:

- 1 AIA Document E201™–2007, Digital Data Protocol Exhibit, if completed by the parties, or the following:

« »

.2 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201-2007 provides that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

« »

ARTICLE 10 INSURANCE AND BONDS

The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201-2007.

(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A201-2007.)

Type of insurance or bond

Limit of liability or bond amount (\$0.00)

This Agreement entered into as of the day and year first written above.

OWNER (Signature)

« »« »

(Printed name and title)

CONTRACTOR (Signature)

« »« »

(Printed name and title)

Contractor's Qualification Statement

1986 EDITION

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES: CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS COMPLETION OR MODIFICATION. AUTHENTICATION OF THIS ELECTRONICALLY DRAFTED AIA DOCUMENT MAY BE MADE BY USING AIA DOCUMENT D401.

This form is approved and recommended by The American Institute of Architects (AIA) and The Associated General Contractors of American (AGC) for use in evaluating the qualifications of contractors. No endorsement of the submitting party or verification of the information is made by AIA or AGC.

Copyright 1964, 1969, 1979, © 1986 by The American Institute of Architects, 1735 New York Avenue N.W., Washington D.C. 20006-5292. Reproduction of the material herein or substantial quotation of its provisions without written permission of the AIA violates the copyright laws of the United States and will be subject to legal prosecution.

The Undersigned certifies under oath that the information provided herein is true and sufficiently complete so as not to be misleading.

SUBMITTED TO:

ADDRESS:

SUBMITTED BY:

Corporation

☐

NAME:

Partnership

☐

ADDRESS:

Individual

☐

PRINCIPAL OFFICE:

Joint Venture

☐

Other

☐

NAME OF PROJECT (if applicable):

TYPE OF WORK (file separate form for each Classification of Work):

_____ General Construction

_____ HVAC

_____ Plumbing

_____ Electrical

_____ Other (please specify)

1. ORGANIZATION

1.1 How many years has your organization been in business as a Contractor?

1.2 How many years has your organization been in business under its present business name?

1.2.1 Under what other or former names has your organization operated?

1.3 If your organization is a corporation, answer the following:

1.3.1 Date of incorporation:

1.3.2 State of incorporation:

1.3.3 President's name:

1.3.4 Vice-president's name(s)

1.3.5 Secretary's name:

1.3.6 Treasurer's name:

1.4 If your organization is a partnership, answer the following:

1.4.1 Date of organization:

1.4.2 Type of partnership (if applicable):

1.4.3 Name(s) of general partner(s)

1.5 If your organization is individually owned, answer the following:

1.5.1 Date of organization:

1.5.2 Name of owner:

1.6 If the form of your organization is other than those listed above, describe it and name the principals:

2. LICENSING

2.1 List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable.

2.2 List jurisdictions in which your organization's partnership or trade name is filed.

3. EXPERIENCE

3.1 List the categories of work that your organization normally performs with its own forces.

3.2 Claims and Suits. (If the answer to any of the questions below is yes, please attach details.)

3.2.1 Has your organization ever failed to complete any work awarded to it?

3.2.2 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?

3.2.3 Has your organization filed any law suits or requested arbitration with regard to construction contracts within the last five years?

3.3 Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is yes, please attach details.)

3.4 On a separate sheet, list major construction projects your organization has in progress, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date.

3.4.1 State total worth of work in progress and under contract:

3.5 On a separate sheet, list the major projects your organization has completed in the past five years, giving the name of project, owner, architect, contract amount, date of completion and percentage of the cost of the work performed with your own forces.

3.5.1 State average annual amount of construction work performed during the past five years:

3.6 On a separate sheet, list the construction experience and present commitments of the key individuals of your organization.

4. REFERENCES

4.1 Trade References:

4.2 Bank References:

4.3 Surety:

4.3.1 Name of bonding company:

4.3.2 Name and address of agent:

5. FINANCING

5.1 Financial Statement.

5.1.1 Attach a financial statement, preferably audited, including your organization's latest balance sheet and income statement showing the following items:

Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses);

Net Fixed Assets;

Other Assets;

Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes);

Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

5.1.2 Name and address of firm preparing attached financial statement, and date thereof:

5.1.3 Is the attached financial statement for the identical organization named on page one?

5.1.4 If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsidiary).

5.2 Will the organization whose financial statement is attached act as guarantor of the contract for construction?

6. SIGNATURE

6.1 Dated at this day of .

Name of Organization:

By:

Title:

6.2

M being duly sworn deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading.

Subscribed and sworn before me this day of 20

Notary Public:

My Commission Expires:

D R A F T

CHANGE ORDER

AIA DOCUMENT G701

OWNER ☐
ARCHITECT ☐
CONTRACTOR ☐
FIELD ☐
OTHER ☐

PROJECT:
(name, address)

TO CONTRACTOR:
(name, address)

CHANGE ORDER NUMBER:

DATE:

ARCHITECT'S PROJECT NO:

CONTRACT DATE:

CONTRACT FOR:

The Contract is changed as follows:

Not valid until signed by the Owner, Architect and Contractor.

The original (Contract Sum) (Guaranteed Maximum Price) was\$
Net change by previously authorized Change Orders\$
The (Contract Sum) (Guaranteed Maximum Price) prior to this Change Order was\$
The (Contract Sum) (Guaranteed Maximum Price) will be (increased) (decreased)
(unchanged) by this Change Order in the amount of\$
The new (Contract Sum) (Guaranteed Maximum Price) including this Change Order will be ...\$

The Contract Time will be (increased) (decreased) (unchanged) by () days.
The date of Substantial Completion as of the date of this Change Order therefore is

NOTE: This summary does not reflect changes in the Contract Sum, Contract Time or Guaranteed Maximum Price which have been authorized by Construction Change Directive.

ARCHITECT

CONTRACTOR

OWNER

Address

Address

Address

BY _____

BY _____

BY _____

DATE _____

DATE _____

DATE _____

TO (OWNER): PROJECT: APPLICATION NO: Distribution to:
 FROM (CONTRACTOR): VIA (ARCHITECT): ARCHITECT'S PROJECT NO: ☐ OWNER
 CONTRACT FOR: CONTRACT DATE: ☐ ARCHITECT
☐ CONTRACTOR
☐

CONTRACTOR'S APPLICATION FOR PAYMENT

CHANGE ORDER SUMMARY		
Change Orders approved in previous months by Owner		ADDITIONS
TOTAL		DEDUCTIONS
Approved this Month		
Number	Date Approved	
TOTALS		
Net change by Change Orders		

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:
 By: _____ Date: _____

Application is made for Payment, as shown below, in connection with the Contract. Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM \$ _____
2. Net change by Change Orders \$ _____
3. CONTRACT SUM TO DATE (Line 1 ± 2) \$ _____
4. TOTAL COMPLETED & STORED TO DATE \$ _____
 (Column G on G703)
5. RETAINAGE:
 - a. ____ % of Completed Work \$ _____
 (Column D + E on G703)
 - b. ____ % of Stored Material \$ _____
 (Column F on G703)
 Total Retainage (Line 5a + 5b or
 Total in Column I of G703) \$ _____
6. TOTAL EARNED LESS RETAINAGE \$ _____
 (Line 4 less Line 5 Total)
7. LESS PREVIOUS CERTIFICATES FOR
 PAYMENT (Line 6 from prior Certificate) \$ _____
8. CURRENT PAYMENT DUE \$ _____
9. BALANCE TO FINISH, PLUS RETAINAGE \$ _____
 (Line 3 less Line 6)

State of: _____ County of: _____
 Subscribed and sworn to before me this _____ day of _____, 19____
 Notary Public:
 My Commission expires: _____

AMOUNT CERTIFIED \$ _____
 (Attach explanation if amount certified differs from the amount applied for.)
 ARCHITECT:

By: _____ Date: _____
 This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

ARCHITECT'S PROJECT NO:

[illegible]

Users may obtain validation of this document by requesting of the license a completed AIA Document D401 - Certification of Document's Authenticity

CERTIFICATE OF SUBSTANTIAL COMPLETION

AIA DOCUMENT G704

Distribution to:

OWNER ☐
ARCHITECT ☐
CONTRACTOR ☐
FIELD ☐
OTHER ☐

PROJECT:
(name, address)

ARCHITECT:

ARCHITECT'S PROJECT NUMBER:

TO (Owner):

┌

CONTRACTOR:

└

CONTRACT FOR:

└

└

CONTRACT DATE:

DATE OF ISSUANCE:

PROJECT OR DESIGNATED PORTION SHALL INCLUDE:

The Work performed under this Contract has been reviewed and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby established as

which is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

DEFINITION OF DATE OF SUBSTANTIAL COMPLETION

The Date of Substantial Completion of the Work or designated portion thereof is the Date certified by the Architect when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner can occupy or utilize the Work or designated portion thereof for the use for which it is intended, as expressed in the Contract Documents.

A list of items to be completed or corrected, prepared by the Contractor and verified and amended by the Architect, is attached hereto. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. The date of commencement of warranties for items on the attached list will be the date of final payment unless otherwise agreed to in writing.

ARCHITECT

BY

DATE

The Contractor will complete or correct the Work on the list of items attached hereto within
from the above Date of Substantial Completion.

days

CONTRACTOR

BY

DATE

The Owner accepts the Work or designated portion thereof as substantially complete and will assume full possession thereof
at (time) on (date).

OWNER

BY

DATE

The responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work and insurance shall be as follows:

(Note—Owner's and Contractor's legal and insurance counsel should determine and review insurance requirements and coverage; Contractor shall secure consent of surety company, if any.)

CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS

AIA DOCUMENT G706 - ELECTRONIC FORMAT

OWNER
ARCHITECT
CONTRACTOR
SURETY
OTHER

☐
☐
☐
☐
☐

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS COMPLETION OR MODIFICATION. AUTHENTICATION OF THIS ELECTRONICALLY DRAFTED AIA DOCUMENT MAY BE MADE BY USING AIA DOCUMENT D401.

TO OWNER:
(Name and address)

ARCHITECT'S PROJECT NO.:

PROJECT:
(Name and address)

CONTRACT FOR:

CONTRACT DATED:

STATE OF:
COUNTY OF:

The undersigned hereby certifies that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or Owner's property might in any way be held responsible or encumbered.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Consent of Surety to Final Payment. Whenever Surety is involved, Consent of Surety is required. AIA Document G707, Consent of Surety, may be used for this purpose.

Indicate attachment: ☒ yes ☐ no

CONTRACTOR:
(Name and address)

BY:

(Signature of authorized representative)

The following supporting documents should be attached hereto if required by the Owner:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.
3. Contractor's Affidavit of Release of Liens (AIA Document G706A).

(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:

My Commission Expires:

CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS

AIA DOCUMENT G706A

OWNER
ARCHITECT
CONTRACTOR
SURETY
OTHER

☐
☐
☐
☐

TO (Owner)

☐

ARCHITECT'S PROJECT NO:

☐

CONTRACT FOR:

PROJECT:

(name, address)

☐

☐

CONTRACT DATE:

State of:

County of:

The undersigned, pursuant to Article 9 of the General Conditions of the Contract for Construction, AIA Document A201, hereby certifies that to the best of his knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS: (If none, write "None". If required by the Owner, the Contractor shall furnish bond satisfactory to the Owner for each exception.)

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR:

Address:

BY:

Subscribed and sworn to before me this
day of

19

Notary Public:

My Commission Expires:

CONSENT OF SURETY TO FINAL PAYMENT

AIA DOCUMENT G707 - ELECTRONIC FORMAT

OWNER
ARCHITECT
CONTRACTOR
SURETY
OTHER

☐
☐
☐
☐
☐

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS COMPLETION OR MODIFICATION. AUTHENTICATION OF THIS ELECTRONICALLY DRAFTED AIA DOCUMENT MAY BE MADE BY USING AIA DOCUMENT D401.

TO OWNER:
(Name and address)

ARCHITECT'S PROJECT NO.:

PROJECT:
(Name and address)

CONTRACT FOR:

CONTRACT DATED:

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

on bond of
(Insert name and address of Contractor)

, SURETY,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety of
any of its obligations to
(Insert name and address of Owner)

, CONTRACTOR,

as set forth in said Surety's bond.

, OWNER,

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:
(Insert in writing the month followed by the numeric date and year.)

(Surety)

Attest:

(Signature of authorized representative)

(Seal):

(Printed name and title)

**PROPOSAL
REQUEST**
AIA DOCUMENT G709

OWNER
ARCHITECT
CONTRACTOR
FIELD
OTHER

☐
☐
☐
☐
☐

PROJECT:
(name, address)

PROPOSAL REQUEST NO:

OWNER:

DATE:

TO: (Contractor)

ARCHITECT'S PROJECT NO:

CONTRACT FOR:

CONTRACT DATED:

Please submit an itemized quotation for changes in the Contract Sum and/or Time incidental to proposed modifications to the Contract Documents described herein.

THIS IS NOT A CHANGE ORDER NOR A DIRECTION TO PROCEED WITH THE WORK DESCRIBED HEREIN.

Description: (Written description of the Work)

Attachments: (List attached documents that support description)

ARCHITECT:

BY:

ACORD CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY)

PRODUCER XYZ Insurance Co. 1 East 42nd Street New York, NY 212-338-2237	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW	
	COMPANIES AFFORDING COVERAGE	
	COMPANY A	ZURICH INSURANCE CO.
	COMPANY B	AIG
INSURED ABC Restoration Co. 100 Fifth Avenue New York, NY -	COMPANY C	STATE INSURANCE FUND
	COMPANY D	FEDERAL INSURANCE CO.
BSK		

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
A	GENERAL LIABILITY	*12345678	11/01/96	11/01/97	GENERAL AGGREGATE \$ 2,000,000
	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY				PRODUCTS - COMP/OP AGG \$ 2,000,000
	<input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> OCCUR				PERSONAL & ADV INJURY \$ 1,000,000
	OWNER'S & CONTRACTOR'S PROT				EACH OCCURRENCE \$ 1,000,000
					FIRE DAMAGE (Any one fire) \$ 100,000
					MED EXP (Any one person) \$ 10,000
A	AUTOMOBILE LIABILITY	123456	11/01/96	11/01/97	COMBINED SINGLE LIMIT \$
	<input checked="" type="checkbox"/> ANY AUTO				BODILY INJURY (Per person) \$
	<input type="checkbox"/> ALL OWNED AUTOS				BODILY INJURY (Per accident) \$
	<input type="checkbox"/> SCHEDULED AUTOS				PROPERTY DAMAGE \$
	<input checked="" type="checkbox"/> HIRED AUTOS				
	<input checked="" type="checkbox"/> NON-OWNED AUTOS				
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT \$
	<input type="checkbox"/> ANY AUTO				OTHER THAN AUTO ONLY: \$
					EACH ACCIDENT \$
					AGGREGATE \$
	EXCESS LIABILITY	*123456	11/01/96	11/01/97	EACH OCCURRENCE \$ 5,000,000
	<input checked="" type="checkbox"/> UMBRELLA FORM				AGGREGATE \$ 5,000,000
	OTHER THAN UMBRELLA FORM				\$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	STATE INS. FUND	11/01/96	11/01/97	WC STATUTORY LIMITS \$
	THE PROPRIETOR/PARTNERS/EXECUTIVE OFFICERS ARE: <input type="checkbox"/> INCL <input type="checkbox"/> EXCL				EL EACH ACCIDENT \$ UNLIMITED
					EL DISEASE - POLICY LIMIT \$ UNLIMITED
					EL DISEASE - EA EMPLOYEE \$ UNLIMITED
C	OTHER	123456	11/01/96	11/01/97	100,000
	3rd PARTY EMPLOYEE DISHONESTY BOND				

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

*GALLERIA CONDOS & GUMLEY-HAFT ARE INCLUDED AS ADDITIONAL INSURED.
SEE REVERSE SIDE FOR HOLD HARMLESS AGREEMENT.

CERTIFICATE HOLDER

GALLERIA CONDOMINIUMS AND
GUMLEY-HAFT INC. AS
MANAGING AGENTS
117 EAST 57th STREET
NEW YORK, NY 10022

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT. BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

ARTICLE 2 MAINTENANCE OF SITE AND ADJACENT AREAS

§ 27-1017(C26-1901.1) Construction equipment. (a) Machinery. All exposed, electrically charged, moving or otherwise dangerous parts of machines and construction equipment shall be located, guarded, shielded, or barricaded so as to prevent contact by the public.

(b) **Services* lines and conduits.** Hose lines, wires, ropes, pipes, chains, etc., shall be located so that they will not constitute a tripping hazard. Where it is necessary to carry such lines across sidewalks, or any public way, either they shall be suspended at least eight feet above the walks or suitable chamfered planks or a pedestrian bridge shall be provided.

**So in original. Probably should be "Service".*

(c) **Contractor's sheds.** Contractor's sheds and offices located within thirty-feet of new construction or existing buildings shall be made of metal or other noncombustible material. Fire retardant treated wood may be used when protected from the weather.

§ 27-1018(C26-1901.2) Housekeeping. (a) All areas used by the public shall be maintained free from ice, snow, grease, debris, equipment, materials, projections, tools, or other item, substance, or condition that may constitute a slipping, tripping, or other hazard.

(b) When not being used, materials, equipment, and tools that might fall from levels above areas used by the public shall be kept away from edges or openings. When exterior walls are not in place, material piles shall be kept at least ten feet back from the perimeter of the building.

(c) Material may be stored within two feet of the edge of a building provided, however, that such material is stored not more than two stories below the stripping operation on concrete structures or the uppermost concrete floor on steel frame structures. Such material shall be secured against accidental movement. Storage of material on all other floors shall conform to paragraph (b) of this section and shall be secured when not being used.

(d) Waste dumpsters, debris boxes and skip boxes shall be secured and those containing material or debris shall be covered at the end of each work day. Such waste dumpsters, debris,* boxes and skip boxes shall not be placed at the edge of the building at any time except when being moved from the floor or building.

**So in original. Probably the comma should be deleted.*

(e) Sufficient containers of metal or other material acceptable to the commissioner shall be available for the storage of all garbage and debris. The containers shall be of three-quarter cubic yard minimum capacity.

(Amended by Local Law 61/1987, eff. 11/3/87.)

§ 27-1019(C26-1901.3) Removal and storage of material. (a) Removal of waste material. Combustible waste material or combustible debris shall not be permitted to accumulate, and shall be removed from the site at reasonable intervals, in accordance with the requirements of the fire department. No material shall be dropped or thrown outside the exterior walls of a building. Precautions shall be taken to prevent concrete or mortar washings, sand, grit, or any other material that would cause clogging from entering a sewer or drain. Provisions of the air pollution control code concerning precautions to prevent particulate matter from becoming airborne shall apply.

(b) **Chutes.** When chutes are used for removal of material, they shall meet the following requirements:

(1) **ENCLOSURE.**

a. Material chutes that are at an angle of more than forty-five degrees with the horizontal shall be entirely enclosed on all sides, except for openings at the floor levels for the receiving of materials. Such openings shall not exceed forty-eight inches in height, measured along the wall of the chute, and all openings, except the top opening, shall be closed and secured when not in use.

b. Chutes at an angle of less than forty-five degrees with the horizontal may be open on the upper side.

(2) **CONSTRUCTION.**

a. Every chute used to convey waste material from a building shall be rigidly supported and braced throughout its height. Chutes less than twenty-four inches in maximum dimension shall be constructed of not less than one inch (nominal) wood or one-eighth inch thick steel. Chutes more than twenty-four inches in maximum dimensions shall be constructed of not less than two inch (nominal) wood or three-sixteenths inch thick steel.

b. Chutes shall be provided with a metal impact plate where material is forced to change direction while falling.

c. A gate shall be provided at the lower end of every chute to control the loading of material into trucks and to close the chute at all other times. Splashboards or baffles shall be erected to prevent materials from rebounding into the street or under the sidewalk shed.

d. A bumper or curb at least four inches by four inches in section shall be provided at each chute opening where such opening is level with, or below, the floor or platform. Every space between the chute and the edge of the opening in the floor or platform shall be solidly planked.

(3) **FIRE RETARDANT CONSTRUCTION.** All chutes, constructed of combustible material shall be covered on the exterior with corrugated steel sheeting having a minimum thickness of 24 gauge through their entire height or shall be constructed of non-combustible material when used in the following applications:

a. Chutes exceeding seventy-five feet in height.

b. Alteration, repair or partial demolition of buildings classified in occupancy groups H1 and H2.

(4) **SUPPORTS.** All structural supports of material chutes shall be of noncombustible material.

(c) **Storage of combustible material and equipment.** Storage of combustible material and other material and equipment that present a fire hazard shall meet the requirements of the fire department.

§ 27-1020(C26-1901.4) Obstruction of sidewalks and streets. The requirements of the department of transportation shall apply with regard to the closing of streets or to the obstruction of any part thereof, except as hereinafter provided. Building department personnel are authorized to consider failure to display a current department of transportation permit for any street or sidewalk closing or obstruction not authorized by this code as a violation of this section; and to direct removal thereof.

§ 27-1021(C26-1901.5) Protection of sidewalks. Unless the street is officially closed to the public during construction operations, the following minimum safeguards shall be provided for the protection of the public:

(a) **Types of safeguards and when required.**

(1) a. A sidewalk shed shall be erected when a structure higher than forty feet is to be constructed or a structure higher than twenty-five feet is to be demolished and the horizontal distance from the structure being built or demolished to the inside edge of the permanent or temporary walkway is equal to one-half or less of the height of the structure. No sidewalk shed shall be erected unless and until a special permit therefor has been issued by the department. Each applicant for a sidewalk shed permit shall state the reason the sidewalk shed is needed. The term of the sidewalk shed permit shall be one year, or the expiration of the contractor's insurance if such time period is less than one year. No renewals of shed permits, except for new buildings under construction, will be given unless an architect or engineer conducts a thorough examination of that part of the premises on which work is being conducted and submits a report acceptable to the commissioner, which clearly documents the condition of the applicable part of the premises and the scope of work that has been performed thereon, and estimates the time needed to complete the work. To renew a shed permit for a new building under construction, each applicant shall file an application with the commissioner. All renewal applications shall include the name and address of the owner of the premises. *(Amended by Local Law 93/1996, eff. 1/11/97.)*

b. Following the receipt of a permit to erect a sidewalk shed, the permit holder shall post a sign on the sidewalk shed. Such sign shall include the name, address, telephone number, and permit number of the permit holder. The sign shall also include the date that the permit expires. The sign shall measure twenty-five square feet.

(2) A sidewalk shed shall be erected regardless of the height of the structure or the horizontal distance between the structure and the sidewalk when material or debris is to be moved by a hoist, crane, derrick, or chute over a sidewalk or temporary sidewalk that is not closed to the public.

(3) A fence, in lieu of a sidewalk shed, may be constructed along the inside edge of the walkway or temporary walkway when a structure higher than forty feet is to be constructed or a structure higher than twenty-five feet is to be demolished and the horizontal distance from the structure being built or demolished to the inside edge of the permanent or temporary walkway is between one-half and three-quarters of the height of the structure. If permission to close the sidewalk has been obtained from the department of transportation, such fence may be erected along the curb or outside of the curb to such extent as may be approved by the department of transportation. The fence shall be returned at its ends to the extent necessary to effectively close off the site.

(4) For cases that do not fall within the circumstances described in paragraphs one through three of this subdivision, a standard guard rail (section 27-1050 of article eight of subchapter nineteen of this chapter), in lieu of a sidewalk shed or fence, may be constructed along the inside edge of such walkway or temporary walkway. If permission to close the sidewalk has been obtained from the department of transportation, the railing may be constructed along the curb or outside of the curb to such extent as may be approved by the department of transportation. The railing shall be returned at its ends to the extent necessary to effectively close off the site.

(5) A sidewalk shed shall be erected when a portion of a facade over forty feet above curb level is being altered or repaired and the horizontal distance from the portion of the structure being altered or repaired to the inside edge of the temporary or permanent walkway is less than one-half the height of the structure being altered or repaired. Applications for sidewalk shed permits shall meet the requirements listed in paragraph one of this subdivision. Where a sidewalk shed is erected in conjunction with the repair of an unsafe condition of a facade, or for the repair of any other violation issued by the department, and such repairs have not been made, and the sidewalk shed has not been removed within two years from the date of issuance of the original sidewalk shed permit, in addition to any of the penalties provided for in section 27-129 of this code, the owner of the building shall be liable for a civil penalty in the amount of two hundred fifty dollars per month for every month or part thereof during which such sidewalk shed is not removed, unless such owner has submitted a report in compliance with section 26-252 of this code and the commissioner determines that the unsafe condition could not be repaired within such two-year period. Provided, however, that nothing in this paragraph shall be construed to prevent the commissioner, prior to the end of such two-year period, from taking action against the owner of a building for failure to repair an unsafe condition pursuant to section 27-129 of this code or any rules and regulations promulgated thereunder.

(6) Horizontal safety netting shall be provided on the sides of a structure more than six stories or seventy-five feet in height above the adjoining ground or adjoining roof level, whichever is applicable, when, while under construction, the facade of such structure is not enclosed and there is exposure to the public or adjacent property as determined in rules and regulations promulgated by the commissioner. Vertical safety netting or screening shall be provided at the sides of a structure more than six stories or seventy-five feet in height above the adjoining ground or adjoining roof level, whichever is applicable, when, while under construction, the facade of such structure is not enclosed and is exposed to the public or adjacent property as determined by rules and regulations promulgated by the commissioner. In addition, safety netting shall be provided as required by section 27-1022. *(Added by Local Law 61/1987.)*

(Amended by Local Law 33/1991, eff. 8/21/91.)

(b) Sidewalk sheds.

(1) Every sidewalk shed deck shall be designed and constructed to carry a live load of at least three hundred psf. However, a live load of one hundred fifty psf may be permitted for buildings less than one hundred feet in height provided there is no storage thereon. The members of the sidewalk shed shall be adequately braced and connected to prevent displacement or distortion of the framework. Where posts supporting the shed deck are placed beyond the curb, such posts shall be protected against displacement by vehicles.

(2) The deck of the sidewalk shed shall consist of planking closely laid, and made tight.

(3) Steel, or other materials having equivalent strength and suitability may be used in lieu of wood to construct sidewalk sheds.

(4) Where deemed necessary by the commissioner, the deck shall cover the entire width of the sidewalk, except for reasonably small clearances at the building line and the curb.

(5) Except as authorized by paragraph seven, sidewalk sheds shall extend at least the entire length of the property line of the structure unless constructed solely to comply with paragraph two of subdivision (a) of this section, and may extend beyond the curb to such extent as may be approved by the department of transportation.

(6) The outer side and ends of the deck of the shed shall be provided with a substantial enclosure at least three feet six inches high. Such enclosure may be vertical or inclined outward at approximately forty-five degrees, and shall consist of boards laid close together and secured to braced uprights, of galvanized wire screen not less than no. 16 steel wire gage with a one-half inch mesh, of corrugated metal, or of solid plywood. Temporary removal of portions of the enclosure shall be permitted for handling material.

(7) a. For all buildings one hundred feet or more in height, the deck and protective guards of the sidewalk shed shall be extended parallel with the curb at least twenty feet beyond the ends of all faces of the structure [regardless of whether such extensions are in front of the property being developed or in front of adjacent] property. Extensions of sidewalk sheds complying with the foregoing shall be constructed so as not to unreasonably obstruct, either visually or physically, entrances, egress, driveways and show windows of adjacent properties. *(Matter in brackets apparently omitted from original. Probably should still be applicable.)*

b. All sidewalk sheds shall provide a protection for the full width of the shed extending upward at an angle of forty-five degrees from the ends of the deck and outward a horizontal distance of at least five feet beyond the ends of the shed. Such sloping end protection shall be constructed to meet the requirements of paragraph one of this subdivision with substantial outriggers bearing on and securely attached to, the deck.

(8) The passageway shall be wide enough to accommodate pedestrian traffic normal for that location without causing congestion; but in no case shall the width be less than four feet. The passageway shall have a minimum clear ceiling height of eight feet.

(9) Unless the top deck of the sidewalk shed is built solidly against the face of the structure in such a manner that no material can fall onto the sidewalk, the side of the shed toward the structure shall be solidly sealed with wood or other suitable material for the full height of the shed. Solid sliding or inswinging gates may be provided as necessary for the proper prosecution of the work.

(10) The underside of the sidewalk sheds shall be lighted at all times either by natural or artificial light. The level of illumination shall be the equivalent of that produced by two hundred watt, thirty-four hundred lumen minimum, standard incandescent lamps enclosed in vandal-proof fixtures and spaced fifteen feet apart and eight feet above the floor level. Artificial lighting units shall be inspected nightly; and burned out or inoperative units shall be replaced or repaired immediately. *(Amended by Local Law 33/1991, eff. 8/21/91.)*

(11) When a sidewalk shed is required for the erection of a structure, construction of the structure shall stop at a height of forty feet unless, and until, the sidewalk shed has been completed. Such shed shall remain in place until the structure is enclosed, all exterior work completed and the sash is glazed above the second story, exterior of the facade is cleaned down, and all outside handling of material, equipment and machinery, and all dismantling of a material hoist, or climber or tower crane or the use of a derrick in their removal, above the second story is completed.

(12) When a sidewalk shed is required for the demolition of a structure, the sidewalk shed shall be completed before any demolition work is performed. Such shed shall remain in place until the structure has been razed to the height of the shed and as long as necessary to meet the requirements of paragraph two of subdivision (a) of this section.

(c) **Fences.** Fences shall be at least eight feet high, and constructed of wood or other suitable material. They shall be built solid for their entire length, except for openings with solid sliding or inswinging gates as are required for the proper prosecution of the work, and for viewing panels, which shall be blocked with plexiglass or equivalent nonfrangible material.

(d) **Openings in sidewalk sheds, fences, and railing.** Openings in sidewalk sheds, fences, and railings for loading purposes shall be kept closed at all times except during actual loading operations.

(e) **Temporary walkways.** Where permission has been granted by the department of transportation to locate a temporary walkway beyond the curb line, such temporary walkway shall be provided with a standard guard rail (section 27-1050 of article eight of subchapter nineteen of this chapter) on the traffic side. All temporary walkways shall be illuminated at all times as required in paragraph ten of subdivision (b) of this section.

(f) **Foot bridges.**

(1) When a temporary foot bridge is used as a sidewalk in front of a structure during construction work, the bridge shall be wide enough to accommodate normal traffic without congestion; but in no case shall it be less than four feet. The bridge, and steps or ramps, shall be designed and constructed to carry a live load of one hundred fifty psf. The walkway on such bridge shall be provided with standard guard rails for its entire length and shall be provided with steps at both ends or with inclined ramps at a maximum slope of one in four. Ramps shall have cleats to prevent slipping.

(2) Where planks are used to pave the walkway, they shall be laid close and securely fastened to prevent displacement. Planks shall be of uniform thickness, and all exposed ends on ramps shall be provided with beveled fillers to eliminate tripping hazards.

(3) Footbridges shall be illuminated at all times as required in paragraph ten of subdivision (b) of this section.

(g) **Safety netting.**

(1) When required to be installed horizontally, safety netting shall include a structural mesh lined with a fine mesh of a size and strength sufficient to catch falling tools and materials.

(2) When required to be installed vertically, safety netting or its equivalent shall include a fine mesh of a size and strength sufficient to contain falling tools and materials. Such netting shall be secured and kept closed at all times except during actual loading operations or perimeter construction operations.

(3) In addition to the requirements set forth in paragraphs one and two of this subdivision, required safety netting and its supports shall comply with reference standard RS 19-4 and all applicable rules and regulations promulgated by the commissioner. Scaffolding, screening or its equivalent shall comply with rules and regulations promulgated by the commissioner.

(Added by Local Law 61/1987, eff. 11/3/87.)

§ 27-1022(C26-1901.6) Safety netting and scaffolding. (a) When required.

(1) When demolishing the exterior walls or the roof of a structure more than six stories or seventy-five feet above the adjoining ground or adjoining roof level, whichever is applicable, horizontal safety netting shall be provided on the sides of a structure where there is exposure to the public or adjacent property as determined by rules and regulations promulgated by the commissioner unless an exterior built-up scaffold providing equivalent protection has been erected. The horizontal safety netting or scaffolding shall be required in addition to the sidewalk sheds, fences, or railing required under section 27-1021 of this article, and shall be constructed and maintained not more than two stories or thirty feet below the story from which the exterior walls and roof are being removed until such demolition has progressed to within six stories or seventy-five feet of the ground level.

(2) When exterior walls are being constructed more than six stories or seventy-five feet above the adjoining ground or adjoining roof level, whichever is applicable, horizontal safety netting shall be provided on the sides of the structure where the facade of the structure is not enclosed and is exposed to the public or adjacent property as determined by rules and regulations promulgated by the commissioner. Such safety netting shall be maintained at a level not more than two stories or thirty feet below the stripping operation on concrete structures or the uppermost concrete floor on steel frame structures and in addition, on such lower stories as required pursuant to rules and regulations promulgated by the commissioner.

(b) Debris shall be removed at least daily from safety netting provided in accordance with the requirements of this section.

(c) Storage of material. Safety netting shall not be used for storing materials.

(Amended by Local Law 61/1987, eff. 11/3/87.)

§ 27-1023(C26-1901.7) Warning signs and lights. (a) Obstructions and openings Where a material pile or other obstruction, or an excavation, opening, or other hazard is located in, or adjacent to, a way open for use by persons other than workmen, such hazard shall be indicated by red flags or signs during daylight hours, and by red lanterns, red lights, oil flares, flashing beacons, lighted signs, or equivalent devices from sunset to sunrise. Such warning devices shall be located no more than thirty feet apart.

(b) **Dangerous areas.** In areas where special danger to the public exists, such as at vehicle entrances and exits, hoisting areas, points of storage of explosives or highly flammable material, or discharge ends of chutes, descriptive warning signs shall be provided. Such warning signs shall contain the word "danger" in prominent letters and, where in, or adjacent to, a public way, shall be illuminated from sunset to sunrise. Barricades and/or designated personnel shall be provided to the extent necessary to keep the public away from such areas or to guide them around the areas.

(c) **Vehicular traffic.** Whenever any work is being performed over, on, or in close proximity to a highway, street, or similar public way, control and protection of traffic shall be provided by barricades, signals, signs, flagmen, or other devices, equipment, and personnel in accordance with the requirements and standards of the department of shall be provided by barricades, signals, signs, flagmen, or other devices, equipment, and personnel in accordance with the requirements and standards of the department of transportation.

§ 27-1024(C26-1901.8) Watchmen and flagmen. (a) Watchmen. Where a building being constructed or demolished occupies a ground area of more than five thousand square feet, and up to forty thousand square feet, a competent watchman shall be on duty at the site during all hours when operations are not in progress. Where the construction or demolition area occupies a ground area of more than forty thousand square feet at least one additional watchman shall be on duty for each additional forty thousand square feet of construction or demolition area, or fraction thereof. Watchmen shall be familiar with the location of street fire alarm boxes and the location and use of fire fighting equipment required to be on the job site.

(b) **Flagmen.** A flagman shall be provided whenever intermittent operations are conducted on, or across, areas open to use by persons other than workmen, or when dangerous operations, such as blasting, may affect such areas.

§ 27-1025(C26-1901.9) Escape hatches required. (a) Where salamanders or other heating equipment are used to provide temporary heating during the placing of concrete for a floor, an escape hatch shall be provided from the floor where the concrete is being placed, which shall extend through at least one story immediately below such floor. The escape hatch shall be located as near to the center of the building as shall be practical.

(b) The escape hatch shall be constructed with at least two ladders enclosed in a metal shield. The ladders shall extend from a distance of three feet above the floor under construction to at least two stories below unless such floor is less than two stories above the lowest

**BATTERY PARK CITY AUTHORITY
LEAK REMEDIATION DESIGN**

200-300 NORTH END AVENUE, NEW YORK, NY 10282

TECHNICAL SPECIFICATIONS

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 11 00 - SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General Contract Provisions and the General Requirements of Division 01 apply to the work of this Section.

1.02 WORK SUMMARY

- A. Work under this Contract shall consist, in general, of all furnish all labor, material, coordination, equipment, machinery, tools, supplies, services, applicable taxes, insurance, bonds, overhead and profit required to undertake and successfully complete the leak remediation design at 200-300 North End Avenue, all as drawn and specified in the Contract Documents. Work includes, but is not limited, to the following:
 - 1. The Contractor shall secure and maintain all required permits to undertake the work. If the sidewalk shed interfaces with existing street trees, the Contractor will need to secure all required permits from the NYC Department of Parks and Recreation.
 - 2. The Contractor shall coordinate all required inspections with the Owner-retained special inspection agency.
 - 3. Provide all required ladders, hoists, sidewalk sheds, fixed pipe scaffolding, and other support devices to undertake the work of this project. All installations shall be code compliant. The Contractor shall retain their own licensed structural engineer to design hoists, sheds, fixed and suspended scaffolding.
 - 4. As required by the code, the sidewalk shed shall extend 20 feet past the work area in either direction.
 - 5. The sidewalk sheds shall be equipped with an exterior security system and alarm. Coordinate the installation with the Owner's requirements.
 - 6. The Contractor shall provide all required temporary utilities including power, water, heat, and bathrooms. If the Owner allows the Contractor to use existing utilities, the Contractor shall make all required connections and undertake removals at the end of the project.
 - 7. Due to the limited storage area on the project site, the selected Contractor may choose to store construction materials and construction debris (dumpsters) on the street. If so, a street-closure permit shall be secured by the Contractor from the NYC Department of Transportation. Temporary fencing/barricades will be required to secure this area in the street. The Contractor shall verify if the streets around the site are considered a restricted access road by the Department of Transportation between the hours of 4:00 PM and 7:00 PM.
 - 8. Provide all required mock-ups, test panels, etc required by the Technical Specifications and the proper execution of the work. All shall be approved by the Architect and Owner prior to executing that section of work. If rejected, provide new mock-ups, test panels, etc until approved.
 - 9. Mobilizing and obtain work permits
 - 10. Installation and cost of sidewalk shed including shed permits. Include protection of existing plaza, planter and other site elements not in scope of work.
 - 11. The scope of work includes all labor materials, equipment, transportation, and supervision necessary for the successful completion of the project. The work includes but is not limited to the following:

12. All noise generating work shall be coordinated with the owner.
13. The contractor shall provide all required protection to the existing plaza pavers and membrane that are not to be removed in the current scope. Protection measures shall be approved by the architect.
14. Coping re-setting at parapets: remove existing granite copings. Provide new through-wall metal flashing and reinstall the coping stones with new anchors. Remove and re-anchor existing railings at the parapet.
15. Coping re-setting at planters: remove existing granite copings and associated masonry cladding at planters on both sides. Provide new through-wall metal flashing and reinstall the coping stones with new anchors. Provide and install new liquid applied membrane water proofing over the planter curb. Reinstall the granite masonry on both sides.
16. Remove existing pavers, setting mortar, topping slab concrete, insulation, drainage mat, filter fabric and liquid applied membrane to the deck. Repair deck (assume 15% of the area in scope) with modified repair concrete. Prepare and prime deck to receive new waterproofing membrane, drainage mat and filter fabric followed by insulation, topping slab, setting bed.
17. Reset the existing pavers at the plaza and provide new soil at the planters.
18. Remove and replace flashing at drains inside the planters.
19. Provide and weld new metal fascias at the steel staircase per drawings.
20. Remove and relocate electrical conduits.
21. Reinstall metal panels at the curved curtain wall, beam and columns.
22. Waterproofing at storefront lintel level: remove existing masonry and waterproofing membrane over the store-front window/door lintels and adjacent areas shown on elevations (a201) to expose concealed steel lintel. Provide new continuous waterproofing (through-wall metal flashing and liquid membrane flashing) with weeps and rebuild masonry to match existing.
23. Remove granite masonry block at inboard side of parapet (facing upper plaza) to waterproof and terminate liquid-applied membrane base flashing and rebuild the granite veneer to match existing.
24. Provide and install new inverted angle (weld to existing), provide and install new stainless steel plate, welded to existing landing plate. Waterproof plate and new shelf angle at the gap with new stainless steel thru-wall flashing.
25. Re-anchor staircase railings over the landing at the upper plaza level. Waterproof around the railing attachment.
26. Remove existing granite masonry. Provide and install new sheet metal stainless steel through-wall flashing, weld to the steel landing, along the parapet wall. Overlap liquid-applied membrane over the sheet metal flashing, and flexible membrane.
27. Provide new expansion joint: remove existing joint sealer(s). Prepare joint cavity and provide new unified binary (pre-compressed) sealant system with factory-applied low-modulus silicone.

28. Temporarily remove aluminum exit door with associated hardware. Remove door frame and fixed glazing next to the door for installation of waterproofing and door saddle at the expansion joint. Provide and install new door frame and fixed glazing with new anchors and reinstall the door with hardware to match existing. Repair all interior finishes associated with this work.
 29. Remove granite block masonry along the store front jambs and install flexible membrane flashing and rebuild granite block masonry to match existing. Provide backer rod and sealant at the joint between jamb and masonry.
 30. Remove at least 3'-0" strip of existing pavers, setting bed, concrete topping slab, soil, drainage mat and filter fabric down to the structural deck along the building line at lower plaza. Provide and install new fluid applied membrane flashing on the vertical face of the foundation wall and terminate at the store front window sills.
 31. Remove existing pavers, concrete topping slab, soil and aggregate down to the deck around the two drains at the lower plaza. Remove and replace drains, associated clogged plumbing in kind. Flash around the drains and plumbing penetrations. Provide new soil and aggregates. Provide and install new concrete topping slab, setting bed and pavers.
 32. Remove parge coat and inject chemical resin grout at the interior wall and sills below the store fronts. Replace parge coat to match existing in finish. Repair concrete wall.
 33. Provide and install Crystalline waterproofing at the interior wall and sills below the store front windows.
- B. Summary by Reference: Work of the Contract can be summarized by reference to the Contract, Specification Sections as listed in the "Contents", and Drawings as listed in the "Index to Drawings" bound herewith, Addenda and modifications to the Contract Documents issued subsequent to the initial printing of this project manual, and including but not necessarily limited to printed matter referenced by any of these.
- C. Sequencing
1. All work is to be performed in an orderly manner. Proceed in a logical sequence that prevents completed work from being damaged by continuing work.
 2. Coordinate sequencing with Owner's special requirements sequencing including but not limited to:
 - a. TBD

PART 2 - PRODUCTS

2.01 No materials are required by this Section.

PART 3 - EXECUTION

3.01 No execution is required by this Section.

END OF SECTION 01 11 00

SECTION 01 21 00 - ALLOWANCES

PART 1 - GENERAL

2.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

2.02 SUMMARY

- A. This Section includes administrative and procedural requirements governing allowances.
 - 1. Selected materials and equipment are specified in the Contract Documents by allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation
- B. Types of allowances include the following:
 - 1. Lump-sum allowances.

2.03 SELECTION AND PURCHASE

- A. Allowances are for use at the sole discretion of the Owner.
- B. At the earliest practical date after award of the Contract, advise the Architect of the date when the final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- C. At the Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- D. Purchase products and systems selected by the Architect from the designated supplier.
- E. Lump Sum Allowances: The amounts herein specified are the amounts available for purchase of the materials specified, including taxes (if any), and each change order amount shall be based thereon. All other costs associated with the performance of the work under the allowance, including but not limited to installation, insurance, storage, handling, overhead, profit, etc., are a part of the allowance, and shall be included in the allowance amount.
 - 1. In the event the actual purchase amount of the actual work exceeds the specified allowance, the Owner will pay the excess; should the actual amount of the work, be less than the specified allowance, the Contractor shall credit the Owner with the difference.

2.04 SUBMITTALS

- A. Submit invoices or delivery slips to show the actual quantities of materials delivered to the site for use in fulfillment of each allowance.

2.05 UNUSED MATERIALS

- A. Return unused materials to the manufacturer or supplier for credit to the Owner, after installation has been completed and accepted.
 - 1. When requested by the Architect, prepare unused material for storage by Owner where it is not economically practical to return the material for credit. When directed by the Architect, deliver unused material to the Owner's storage space. Otherwise, disposal of unused material is the Contractor's responsibility.

PART 2 - PRODUCTS

- 2.01 No materials are required by this Section.

PART 3 - EXECUTION

2.01 EXAMINATION

- A. Examine products covered by an allowance promptly upon delivery for damage or defects.

2.02 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

2.03 SCHEDULE OF ALLOWANCES

- A. Provide and install new granite block masonry. (200 SF).
- B. New granite copings with anchors at planters (150 LF).
- C. Prime and paint interior plaster (3000 SF).
- D. Sealant replacement (250 LF).
- E. Roof deck repair (500 SF).
- F. Unified binary (pre-compressed) sealant system with factory applied low-modulus silicone expansion joint replacement (100 LF)
- G. Expansion joint replacement (100 LF)

- H. Provide new pavers (500 SF)
- I. Remove and replace aluminum exit door and associated hardware in kind at the lower plaza (1 EA)

END OF SECTION 01 21 00

SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

2.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

2.02 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

2.03 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

2.04 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS

- 2.01 No materials are required by this Section.

PART 3 - EXECUTION

3.01 SCHEDULE OF ALTERNATES

- A. Alternate No. 1 – Remove and replace aluminum door and door frame with associated hardware all in kind to match existing.
- B. Alternate No. 2 – Remove and replace drains and drain bodies in planters.

END OF SECTION 012300

SECTION 01 26 00 – CONTRACT-MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General Contract Provisions and the General Requirements of Division 01 apply to the work of this Section.

1.02 CHANGE ORDERS

- A. All Change Orders shall originate with the Architect and be delivered to the Contractor for cost and time adjustments.
- B. The Contractor shall forward the Change Orders to the Architect for review and distribution to all parties.

1.03 SUBSTITUTIONS

- A. All Substitution requests shall be written, originate with the Contractor, and be delivered, in triplicate, to the Owner and Architect.
- B. Requests shall include all relevant material, such as specifications, photographs, drawings, diagrams, samples, price, and lead time information as applicable to allow the Architect to make an informed comparison.
- C. The Architect shall have five working days to review the material and issue a written decision to the Contractor and the Owner.

PART 2 - PRODUCTS

- 2.01 No materials are required for this Section.

PART 3 - EXECUTION

- 3.01 No execution is required for this Section.

END OF SECTION 01 26 00

SECTION 01 29 73 - SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General Contract Provisions and the General Requirements of Division 01 apply to the work of this Section.

1.02 DESCRIPTION

- A. This section pertains to the Contractor's preparation and submission of a Schedule of Values including the format, details, and content and the preparation and submittal of his periodic applications for payment.

1.03 SUBMISSION OF SCHEDULE OF VALUES

- A. Schedule of Values for the total work is to be a summary of all amounts and the General Conditions.
- B. At least ten (10) days prior to submission by the Contractor of his first Application for and Certificate for Payment, he shall submit a Schedule of Values for his work, which shall be subject to review and approval of the Contractor and the Architect and acceptance of the Owner.
- C. The first Schedule of Values shall be submitted with the first Application and Certificate for Payment for any work.
- D. Such Schedule of Values shall be amended each month to add the amounts of subcontracts closed in the previous month and/or to show adjustment in subcontract amounts by Change Order and/or back charges.
- E. Upon request of the Owner, the Contractor shall support all values presented with substantiating data and shall submit quantities for designated materials. Payment for materials stored either on or off the job site will be limited to those materials scheduled.
- F. The Schedule of Values shall be used only as a basis for the Applications for Payment.
- G. The Schedule of Values and all subsequent submissions and Applications for Payment shall be typewritten in a format acceptable to the Owner and the Architect.

1.04 REVIEW AND RESUBMITTAL

- A. Any submission of the Schedule of Values or a portion thereof which is not acceptable to the Owner will be returned. The Contractor shall revise, substantiate, and resubmit within five (5) days.
- B. No Application for Payment from the Contractor will be considered until all requirements for their Schedules of Values have been met and are acceptable to the Owner.

PART 2 - PRODUCTS

- 2.01 No materials are required by this Section.

PART 3 - EXECUTION

- 3.01 No execution is required by this Section.

END OF SECTION 01 29 73

SECTION 01 31 13 - PROJECT COORDINATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General Contract Provisions and the General Requirements of Division 01 apply to the work of this Section.

1.02 CONTRACT ADMINISTRATION

- A. The Contractor shall refer all communications and documents specifically regarding the Architectural Drawings and Specifications, Change Orders, Submittals, or any other issue related to the product of the Work, to the Architect. The Contractor shall also copy the Owner's designated project representative(s).
- B. The Contractor shall refer all communications and documents regarding all contractual or administrative issues not directly related to the product of the Work, to the Owner. The Contractor shall also copy the Architect.
- C. The Contractor shall keep and provide a complete set of Construction Drawings and Construction Specifications on site at all times during construction until the Project is complete. Absolutely no Bid Documents are permitted on site once construction begins.
- D. The Contractor shall be responsible for ensuring that all sub-contractors are performing their respective trade work as drawn and specified in the Construction Documents.

1.03 MATERIAL AND EQUIPMENT LEAD TIMES

- A. The Contractor shall determine lead-times for all materials and equipment required for the Work, and shall arrange for purchase and delivery of said items through a Sub-Contractor or on his own, so as not to adversely affect the schedule or sequencing of the Work.

PART 2 - PRODUCTS

- 2.01 No materials are required by this Section.

PART 3 - EXECUTION

- 3.01 No execution is required by this Section.

END OF SECTION 01 31 13

SECTION 01 32 13 – SCHEDULING OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General Contract Provisions and the General Requirements of Division 01 apply to the work of this Section.

1.02 WORK SUMMARY

- A. This Section includes all labor, materials, equipment, and services necessary to complete progress schedule as specified herein, including but not limited to the following:
 - 1. Format
 - 2. Content
 - 3. Revisions to schedules
 - 4. Submittals

1.03 WORK SPECIFIED ELSEWHERE

- A. See Division 01, General Requirements
- B. See Section 01 33 00, Submittals

1.04 BASIC REQUIREMENTS

- A. Time is of the essence in the performance of this Contract.
- B. Work shall immediately commence in late summer of 2015 or as directed by the Owner.
- C. All work must be substantially complete as determined by the Owner and/or Owner's Designed Representative(s).

1.05 FORMAT

- A. Prepare Schedules as a horizontal bar chart with separate bar for each major portion of Work or operation, identify first workday of each week.
- B. Sequence of Listings: The chronological order of the start of each item of Work.
- C. Scale and Spacing: To provide space for notations and revisions.

1.06 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- C. Identify work of separate stages and other logically grouped activities.
- D. Provide sub-schedules to define critical portions of the entire Schedule.
- E. Show accumulated percentage of completion of each item, and total percentages of Work completed, as of the first day of each month.

- F. Provide separate schedule of submittal dates for shop drawings, product data, and samples, including Owner furnished products, and dates reviewed submittals will be required from the Architect.
- G. Provide a separate schedule for when access to building is required.

1.07 REVISIONS TO SCHEDULES

- A. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
- B. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
- C. Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken, or proposed, and its effect including the effect of changes on schedule of separate contractors.

1.08 SUBMITTALS

- A. Submit initial schedules within 10 days after the date of an executed agreement between the Owner and Contractor. After review, resubmit required revised data within 5 days.
- B. At a minimum, every two weeks after initial approval of the Construction Schedule, submit updated schedules as required, accurately depicting progress to first day of each month. Updated schedules shall be submitted with monthly requests for payment as required.
- C. Distribute copies of the approved schedules to the Owner, Architect, other Contractors and other concerned parties. Instruct each recipient to report any inability to comply and provide detailed explanation with suggested remedies.

1.09 DISTRIBUTION

- A. Distribution: Following response to the initial submittal, correct, print, and distribute copies to the Architect, Owner, Sub-Contractors, and other parties required to comply with scheduled dates.
 - 1. Revise and update the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each bi-monthly progress meeting.
 - 2. When the revisions and updates are made distribute to the same parties. The Contractor may delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
 - 3. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in Schedules.

1.10 CONSTRUCTION SCHEDULE

- A. It is the intent that all operating systems such as heating, ventilating, air conditioning, sprinkler systems, plumbing and drainage, electric power and lighting shall be maintained in operating condition to serve the needs of the existing building during alterations and construction of the new work. Prior to the start of work on any of these systems, the Contractor shall consult with the Owner to establish a mutually satisfactory schedule for cut over, cutoff, or other changes in operation of the system. When

established, such schedules shall be adhered to, except as mutually adjusted by the Contractor and the Owner.

- B. For any areas required to be vacated by Owner for the work to be performed under this Contract, Contractor shall submit a notification not less than twenty-one (21) days prior to the time such areas are required for construction operations. The notifications shall indicate the length of time the area will be unavailable for Owner's use, and the work shall not proceed until the Owner approves the proposed length of time the space will be out of service.

PART 2 - PRODUCTS

- 2.01 No materials are required by this Section.

PART 3 - EXECUTION

- 3.01 No execution is required by this Section.

END OF SECTION 01 32 13

SECTION 01 33 00 - SUBMITTALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General Contract Provisions and the General Requirements of Division 01 apply to the work of this Section.

1.02 WORK SUMMARY

- A. General: This Section includes procedural requirements for non-administrative submittals including Shop Drawings, Product Data, Samples, and other miscellaneous work related submittals.
 - 1. Work-related submittals are required to be submitted by the Contractor to amplify, expand, and coordinate the information contained in the Contract Documents. These include but are not limited to:
 - a. Condition of Site Report
 - b. Contractor's Construction Schedule
 - c. Contractor's Submittal Schedule
 - d. Product Data
 - e. Shop Drawings
 - f. Integrated Drawings
 - g. Samples and Option Selections
 - h. Field Reports
 - i. Certificates of Compliance
 - j. Project Photographs
 - k. "As built" drawings
 - 2. Workmanship Bonds, Warranties, and Maintenance Agreements are included in Section 01 78 00, Closeout Submittals.
 - 3. Refer to other sections of the Specifications, and other Contract Documents, for administrative, non-work-related submittals.

1.03 SUBMITTAL PROCEDURES

- A. Where two or more kinds, types, brands, manufacturers, or materials are named in these specifications, they are to be regarded as the required standard of quality and are presumed to be equal. The contractor may select one of these items or, if the contractor desires to use any kind, type, brand, manufacturer, or materials other than those named in the specifications, the contractor shall indicate in writing, when requested, and prior to the award of contract, what kind, type, brand, manufacturer or material is included in the base bid for the specified item."
- B. General: Except as otherwise specifically directed by the Architect, the basic procedures for submittal handling are as specified herein.
- C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

2. Coordinate transmittal of different units of submittals for related elements of the Work so processing will not be delayed by the need to review a related submittal.
 3. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- D. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to properly process submittals; including sufficient time(s) for resubmittal(s) if necessary. Allow additional time if processing must be delayed to permit coordination with subsequent submittals.
1. Allow 10 calendar days for initial review.
 2. If intermediate submittals are necessary, process the same as the initial submittal.
 3. Contractor shall advise the Architect on each submittal transmittal, when processing time is critical to the progress of the work.
 4. The Architect will attempt to process submittals as expeditiously as is practicable. Considering that processing time, at any point, is directly dependent on the quality, quantity, and coordination of the Contractor's submission, it will be the responsibility of the Contractor to transmit submittals in advance of the Work to permit adequate processing.
 5. No extension of Contract time will be authorized because of the failure to transmit submittals to the Architect sufficiently in advance of the Work to permit adequate processing.
 6. Except for submittals for the record, information and similar purposes, where action and return on submittals is required or requested, the Architect will review each submittal; mark with a uniform, self-explanatory action stamp appropriately executed.
- E. Preparation: Place a permanent label or title block on each submittal for identification. Include the following spaces and information on the label for processing and recording action to be taken.
1. Name of the Entity that prepared the submittal.
 2. Project name.
 3. Date.
 4. Name and address of Architect.
 5. Name and address of Contractor.
 6. Name and address of Sub-Contractor.
 7. Name and address of supplier.
 8. Name of Manufacturer.
 9. Number of the applicable Specification section.
 11. Contractor's review and approval markings.
 12. A 4X5" clear space, abutting the top of the title block, for the Architect's stamp, and Owner's stamp.
- F. Submittal Number Description
1. A three-part identification number shall be assigned by the Contractor to each individual Shop Drawing, sets of Product Data, or Samples required to be submitted by the Specifications. An example of a number is: 05 12 00-014B. The information relayed by the three parts is as follows:
 - a. 05 12 00-14B The first five digits identify the CSI Specification Section. This number refer to Specification Section 05 12 00 Structural Steel.

- b. 05 12 00-14B The next three digits identify individual submittals within the same Specification Section. This number indicates that this is the 14th individual submittal related to the Structural Steel section.
- c. 05 12 00-14B The last letter indicated the number of times an individual item has been submitted for review. "A" identifies the initial submittal, "B" indicates the first resubmittal, "C" indicates the second resubmittal and so on.

2. The submittal number should be noted or attached to all individual submittals and on the accompanying transmittal. In addition, the transmittal should also include the following information for each submittal number: drawing originator (sub-contractor, fabricator, or manufacturer), name or brief description of each submittal, and the originator's number. For example:

<u>Submittal No.</u>	<u>Originator</u>	<u>Description</u>	<u>Drawing No.</u>
05 12 00-14B	Titan Steel	Erection Dwgs.: Upper Level	E-5

- G. Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. Submittals received from sources other than the Contractor will not be recorded for processes.

1. On the transmittal form record relevant information and requests for date. On the form, or a separate sheet attached to the form, record deviations from Contract Document requirements, including minor deviations and limitations.
2. Provide on the transmittal form places for the following information:
 - a. Project Name:
 - b. Date:
 - c. To:
 - d. From:
 - e. Names of Sub-Contractors, Manufacturer, and Supplier.
 - f. References.
 - g. Category and Type of Submittal.
 - h. Submittal Purpose and Description.
 - i. Submittal and Transmittal Distribution Record.
 - j. Signature of Transmitter
 - k. Contractor certification stating that the information submitted complies with the requirements of the Contract Documents, with a place for the Contractor's signature.
3. Transmittals should be numbered numerically beginning with No. 001. Each transmittal should be limited to one Specification Section only; however, multiple submittals within one Specification Section are acceptable on a single transmittal.
4. Transmittals should describe each submittal by its unique submittal number and a brief description including name of the drawing originator (sub-contractor), name of drawing, and originator's drawing number.

1.04 CONTRACTOR'S SUBMITTAL SCHEDULE

- A. Concurrently with the Contractor's Construction Schedule, submit a complete Schedule of Submittals. Coordinate Submittal Schedule with the list of sub-contractors, as well as the Contractor's Construction Schedule.
- B. Prepare the schedule in chronological order. Provide the following information.
 - 1. Related Specification Section number.
 - 2. Related Drawings and Detail number.
 - 3. Name of Sub-Contractor, Manufacturer, or Supplier.
 - 4. Number of Drawings or Items in the Submittal.
 - 5. Submittal Category.
 - 6. Name and/or Description of the Item.
 - 7. Requested Turn Around Time for Critical Items.
 - 8. Scheduled Dates for First and Subsequent Submittals.
 - 9. Target Date for Release or Approval of Final Submission.
 - 10. Manufacturing Lead Time.
- C. Distribution: Following response to initial submittal, correct, print, and distribute copies to the Architect, Owner, Sub-Contractors, and any other parties required to comply with submittal dates indicated.
 - 1. Revise and update the schedule when required; where revisions have been recognized or made. Distribute the updated schedule.
 - 2. When revision and updates are made, distribute to the same parties. Contractor may delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

1.05 PRODUCT DATA

- A. General: Information required specifically as product Data includes manufacturer's standard printed recommendations for application and use, compliance with recognized trade associates and testing agency standards, application of testing agency labels and seals, special notation of dimensions verified by field measurements, notation of coordination requirements for interfacing the material, product, or system with other work; where applicable, input and performance data.
 - 1. Submittal of Product Data is primarily to confirm the product purchased and related general information.
 - 2. Review is only for conformance with the design concept and information given in the Contract Documents; it is not intended to imply that Product Data submittals have been reviewed for technical details.
- B. Preparation: Collect required Product Data in a single submittal for each unit of Work or system.
 - 1. Mark each copy to show which choices and options are applicable to the Project.
 - 2. Where Product Data has been printed to include information on several similar products, some of which are not required for use on the project or are not included in this submittal, mark the copies to show clearly that such information is not applicable.

3. Where Product Data must be specifically prepared for required products, materials, equipment, or systems, because standard printed data is not suitable for use submit data as "Shop Drawings" and not as "product Data."

C. Submittals

1. Do not submit Product Data until compliance with the requirements of the Contract Documents has been confirmed by the Contractor.
2. Unless otherwise instructed, all submittals shall be made electronically in PDF format to the Office of the Architect with copies to the Owner's designated representative(s).
3. Provide as many additional sets; of re-submittals as may be required.
4. When finalized, furnish copies of Product Data to Sub-Contractors, Suppliers, Fabricators, Manufacturers, Installers, Governing Authorities, and others as required for proper performance of the Work.
5. Do not proceed with installation of materials, products, equipment, and systems until a finalized copy of Product Data applicable to the installation is in the possession of the Installer. Do not permit the use of unmarked copies of Product Data in connection with the performance of the Work.

1.06 SHOP DRAWINGS

- A. General: Information required specifically as Shop Drawings and Erection Drawings include newly prepared information, drawn to accurate scale with dimensions verified by field measurements, identification of products and materials included, compliance with specific standards, coordination requirements; including fabrication and installation, setting diagrams, schedules, patterns, templates, and similar drawings.
1. Erection drawings must be submitted showing details of layout/components of each element of the job.
 2. Highlight, encircle, or otherwise indicate deviations from the Contract Documents on Shop Drawings to bring them to the Architect's attention.
 3. Include detailed indication of adjacent materials and interfaces, and provide notation of coordination requirements for interfacing the materials, products, or systems with other Work.
 4. Review is only for conformance with the design concept and information given in the Contract Documents; it is not intended to imply that Shop Drawings submittals have been reviewed for technical details.
 5. The Architect reserves the right to reject, without action, any submission that appears to be sub-standard, incomplete, uncoordinated, or unchecked by the Contractor. The Contractor shall have no claims upon the Architect or Owner for any costs or delays resulting from such rejection.
- B. Preparation: Shop Drawings shall be drawn to accurate scale; sufficiently large to show all the pertinent aspects of the item and its method of connection to the Work.
1. Drawings shall be on sheets not less than 8.5" x 11"; except for actual patterns or templates, the maximum size shall be a multiple of 8.5" x 11".

2. Indicate the name of the entity that prepared each Shop Drawing and provide appropriate project identification in the title block. Provide a space not less than 3" x 4" besides the title block for marking the record of the review process and the Architect's stamp and Owner's approval. Indicate applicable Specification Sections and numbers of applicable Drawings and Details.
3. Do not reproduce Contract Documents or reproduce standard printed information as the basis of Shop Drawings.
4. Prior to submittals the Contractor shall review Shop Drawings for completeness, accuracy, confirmation of field dimensions, and where applicable coordination of trades. Incomplete submissions and resubmissions resulting in numerous reviews (more than three) shall become the Contractor's responsibility. The Contractor will bear the cost of review by the Architect and the Architect's Consultants.

C. Submittals

1. Do not submit Shop Drawings until compliance with the requirements of the Contract Documents have been confirmed by the Contractor.
2. Unless otherwise instructed, all submittals shall be made electronically in PDF format to the Office of the Architect with copies to the Owner's designated representative(s).
3. Provide as many additional sets of re-submittals as may be required.
4. When finalized, furnish prints of the reproducible Shop Drawings to Sub-Contractors, Suppliers, Fabricators, Manufacturers, Installers, Governing Authorities, and others as required for proper performance of the Work.
5. Do not proceed with Work unless a finalized copy of Shop Drawings applicable to the Work is in possession of the Fabricators and Installers when they are working. Do not use Shop Drawings without an appropriate stamp indicating final action to be taken in connection with construction.

1.07 SAMPLES AND OPTION SELECTION SUBMITTALS

- A. General: Samples and Option Selection Materials are submitted for the Architect's visual review of general generic kind, color, pattern, and texture, and for final check of the coordination of these characteristics with other related elements of the Work. Refer to individual Sections of these Specifications for additional Sample requirements, which may be intended for examination or testing of additional characteristics.
1. Documentation required for Samples includes a generic description of the Sample, the Sample source or the product name or Manufacturer; compliance with governing regulations and recognized standards.
 2. Samples for materials which are to be installed in Mock-Ups shall be submitted for processing sufficiently in advance of construction of Mock-Ups to allow review and approval of Sample prior to Construction of Mock-Ups.
 3. Indicate limitations in terms of availability, sizes, delivery time, and similar limiting characteristics, if any.

- B. Preparation: Prepare and submit full-scale, fully fabricated, units which have been cured and finished in the manner specified. Samples shall be physically identical with the proposed material or product to be incorporated in the Work.
1. Where variations in color, pattern, or texture are inherent in the material or product represented by the Sample, submit not less than two (2) units, which show the approximate limits of potential extremities of variations.
 2. Where Samples are for the Architect's selection of color, texture, or pattern, submit a full set of available choices for the material or product.
 3. Mount, display, or package Samples in the manner specified to facilitate the review of indicated qualities.
- C. Option Selection Submittals: Where Samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit three (3) full sets of choices for the material or product. Submittals will be reviewed and one (1) set returned with the Architect's stamp indicating selection or other action. When making submittals send Owner and User a copy of the transmittal (only).
- D. Sample Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit three (3) sets; one will be returned marked with the action taken. When making submittal send Owner and User a copy of the transmittal (only).
- E. Re-Use of Samples: Unless otherwise specified in other Sections, the Architect's retained samples will not be available for use in the construction of the installed items. Where re-use is allowed by Specification, the Architect retained samples will only be available for use in construction when it is, in the opinion of the Architect, undamaged.

1.08 MOCK-UPS

- A. Mock-ups: Prior to start of work, prepare samples/mock-ups where directed by Architect for each material, assembly, installation, etc., as specified in individual specification Sections. Obtain Architect's acceptance of visual qualities and label mock-ups before proceeding with the work. Retain approved panels during construction in undisturbed condition, suitably marked, as standard for judging completed work. For each submission, show range of possible color, texture and other qualities of appearance.
1. Mockups shall be prepared by the Contractor using the same workers, methods and materials that will be employed for the remainder of the work.

1.09 MISCELLANEOUS SUBMITTALS

- A. Daily Construction Reports: Prepare a Daily Construction Report, recording the following information concerning events at the site; and submit duplicate copies to the Architect:
1. List of Sub-Contractors at the Site.
 2. Approximate Count of Personnel at the Site.
 3. High and Low Temperatures; General Weather Conditions
 4. Summary of Work Done.
 5. Meetings and Significant Decisions.
 6. Stoppages, Delays, Shortages, and Losses.
 7. Meter Readings and Similar Recordings.
 8. Emergency Procedures.

9. Orders and Request of Governing Authorities.
10. Change Orders Received; Implemented.
11. Services Connected; Disconnected.
12. Equipment or Systems Tests and Start-Ups.
13. Partial Completions Authorized.
14. List of Accidents and Unusual Events.
15. Substantial Completions Authorized.

B. Certificates of Compliance: Certify that all materials used in the Work comply with all Specified provisions thereof. Certifications shall not be construed as relieving the Contractor from furnishing satisfactory materials if the material is later found to not meet Specified requirements.

1. Show on each certification the name and location of the Work, name and address of Contractor, quantity and date or dates of shipment or delivery to which the certificate applies, and the name of the manufacturing or fabricating company. Certification shall be in the form of a letter or company-standard forms containing all required data. Certificates shall be signed by a duly authorized officer of the manufacturing or fabricating company.
2. In addition to the above information, all laboratory test reports submitted with Certificates of Compliance shall show the date or dates of testing, the specified requirements for which testing was performed, and results of the test or tests.
3. Furnish two (2) executed copies of such certificates, with back-up data. Provide two (2) additional copies where required for maintenance manuals.

C. Reporting Accidents: The Contractor shall immediately advise the Owner and Architect in the event of an accident; then prepare and submit reports of significant accidents, at site and anywhere else work is in progress. Record and document data and actions. For this purpose, a significant accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury.

1.10 CONSTRUCTION PHOTOGRAPHS

- A. During the progress of the Work, have digital photographs taken twice a month, consisting of twelve (12) views, all taken at the direction of the Architect. At the completion of all Work, twelve (12) final photographs shall be taken at the direction of the Architect.
- B. At the completion of all Work, provide the Owner and Architect with a compact disk containing all digital photographs.

1.11 PROJECT RECORD DOCUMENTS

- A. As the work progresses, keep a complete and accurate record of changes or deviations from the Contract Documents and the Shop Drawings, indicating the Work as actually installed.
 1. Changes shall be neatly and correctly shown on the respective portions of the affected documents, using reproducible Mylar's of the drawings affected, or the Specifications, with appropriate supplementary notes.
 2. The records above shall be arranged in order, in accordance with the various Sections of the Specifications, and properly indexed.
 3. This record set of Drawings, Shop Drawings, and Specifications shall be kept at the job site for inspection by the Architect and Owner.

- B. At the completion of the Work, certify by endorsement thereof that each of the revised Drawings and Specifications is complete and accurate.
- C. Prior to application of final payment, and as a condition to its approval by the Architect and Owner, deliver the record Drawings and Specifications, arranged in proper order, indexed, and endorsed as herein before specified. Provide suitable transfer causes and deliver the records therein, indexed and marked for each division of the Work.
- D. No review or receipt of such records by the Architect or Owner shall be a waiver of any deviation from the Contract Documents or the Shop Drawings, or in any way relieve the Contractor from its responsibility to perform the work in accordance with the Contract Documents and the Shop Drawings to the extent that they are in accordance with the Contract Documents.

PART 2 - PRODUCTS

- 2.01 No materials are required by this Section.

PART 3 - EXECUTION

- 3.01 No execution is required by this Section.

END OF SECTION 01 33 00

SECTION 01 41 00 - REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General Contract Provisions and the General Requirements of Division 01 apply to the work of this Section.

1.02 ORDINANCES, PERMITS, FEES, ETC.

- A. All necessary permits from the municipal or other public authorities shall be secured by and at the cost and expense of the Contractor who shall give all notices required by law, municipal ordinances, or the rules and regulations of the various municipal bureaus or departments, and also as a part of the Contract, and without extra charge or compensation, shall comply with all Federal and State laws and all municipal ordinances or regulations that may be applicable to this work, together with all orders of the Department of Buildings, Department of Health, Department of Environmental Protection for water, Con Edison for Gas and Electricity, Fire Department, etc., which shall be issued (in compliance with ordinances or regulations existing at the time of Notice to Proceed) by any or all of said departments as applying to the work of the Contract.
- B. The Contractor shall secure, pay for and maintain during construction all of the insurance policies required by the Owner and by law. Insurance certificates shall be supplied to the Owner on or before the date of the pre-construction conference. Insurance certificates shall name the Owner and shall include a right of notice no less than thirty (30) days prior to cancellation or any material change in coverage.
- C. Wherever in these specifications the name of a city official, bureau or department is mentioned, it is intended to mean the Official, Bureau or Department having jurisdiction.
- D. Attention is called to certain provisions of the Building Code regarding safety of public and property during construction operations, particularly obstruction of sidewalks and streets, support of walls adjoining excavations, sidewalk sheds, scaffolding, hoists and material handling equipment, protection of floor openings, overloading, demolition operations, structures to be carried up, which provisions shall be complied with.
- E. The Contractor shall deliver to the Owner all permits or Certificates of Approval and Controlled Inspections issued by the municipal agencies having jurisdiction in connection with this work, before the certificate for final payment is issued.

1.03 COMPENSATION AND LABOR LAWS

- A. The Contractor shall comply with all applicable Workmen's Compensation Laws.

PART 2 - PRODUCTS

- 2.01 No materials are required by this Section.

PART 3 - EXECUTION

- 3.01 No execution is required by this Section.

END OF SECTION 01 41 00

SECTION 01 42 13 - ABBREVIATIONS AND ACRONYMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General Contract Provisions and the General Requirements of Division 01 apply to the work of this Section.

1.02 DESCRIPTION

- A. References to known "Standard Specifications" or "Standards", are made throughout these specifications, for the purpose of establishing minimum standards of quality for materials and workmanship.
- B. The term "Standard" used herein includes recognized industry wide recommendations of good practice, manuals of standard practice, methods of procedures, and similar documents.
- C. Referenced "Standards" shall include all amendments in effect for any particular edition in effect on the date of Notice to Proceed and shall form a part of these specifications.
- D. In case of conflict between the referenced "Standard" and the project specifications, the most stringent requirements shall prevail.

1.03 STANDARDS AND SOURCES OF CONSTRUCTION INFORMATION

- A. The following list of Technical Societies, Associations and Manufacturers' Organizations are referred to throughout these specifications. The abbreviations are implied to mean the latest edition of each such standard adopted.
- B. Addresses from which published "Standards" can be obtained will be furnished by the Architect upon request.

A.A.	Aluminum Association.
A.A.M.A.	Architectural Aluminum Manufacturers Association.
A.A.S.H.T.O.	American Association of State Highways & Transportation Officials.
A.C.E.C.	American Consulting Engineers Council.
A.C.I.	American Concrete Institute.
A.C.P.A.	American Concrete Paving Association.
A.C.P.A.(1)	American Concrete Pumping Association.
A.D.A.	Americans with Disabilities Act. P.L. 101-336, Title III & Appendix A to Part 36.
A.D.A.A.G.	Americans with Disabilities Act Accessibility Guidelines.
A.D.C.	Air Diffusion Council.
A.G.C.	Associated General Contractors of America.
A.I.	Asphalt Institute.
A.I.A.	American Institute of Architects.
A.I.M.A.	Acoustical & Insulating Materials Association.
A.I.S.C.	American Institute of Steel Construction.
A.I.S.I.	American Iron and Steel Institute.
A.I.T.C.	American Institute of Timber Construction.
A.M.C.A.	Air Moving & Conditioning Association.
A.N.S.I.	American National Standards Institute.
A.R.I.	Air Conditioning and Refrigeration Institute.
A.R.M.A.	Asphalt Roofing Manufacturer's Association.

A.P.A.	American Plywood Association.
A.P.F.A.	American Pipe Fittings Association.
A.S.A.	Acoustical Society of America.
A.S.A.H.C.	American Society of Architectural Hardware Consultants.
A.S.C.E.	American Society of Civil Engineers.
A.S.H.R.A.E.	American Society of Heating, Refrigeration & Air Conditioning Engineers.
A.S.M.E.	American Society of Mechanical Engineers.
A.S.T.M.	American Society of Testing and Materials.
A.W.I.	Architectural Woodwork Institute.
A.W.P.A.	American Wood Preserver's Association.
A.W.S.	American Welding Society.
B.H.M.A.	Builders Hardware Manufacturers Association.
B.I.A.	Brick Institute of America.
B.O.C.A.	Building Officials and Code Administrators.
B.R.I.	Building Research Institute.
C.&C.S.	Copper and Common Sense by Revere Products, Inc. 7 th Edition 1982.
C.I.P.I.	Cast Iron Soil Pipe Institute.
C.I.S.C.A.	Ceilings and Interior System Contractors.
C.R.I.	Carpet and Rug Institute.
C.S.	Commercial Standard of National Bureau of Standard (NBS), U. S. Department of Commerce.
C.S.I.	Construction Specifications Institute.
C.T.I.	Ceramic Tile Institute.
C.R.S.I.	Concrete Reinforcing Steel Institute.
D.H.I.	Door and Hardware Institute.
E.E.A.	Electric Energy Association.
F.M.	Factory Mutual.
F.G.M.A.	Flat Glass Marketing Association.
FS	Federal Specification of General Services Administration.
G.A.	Gypsum Association.
I.C.B.O.	International Conference of Building Officials.
I.E.E.E.	Institute of Electrical & Electronics Engineers.
I.E.S.	Illuminating Engineering Society.
I.H.A.C.I.	Institute of Heating & Air Conditioning Industries.
I.P.C.	International Plumbing Code.
L.I.A.	Lead Industries Association.
L.P.I.	Lightning Protection Institute.
M.B.M.A.	Metal Building Manufacturers Association.
M.H.I.	Material Handling Institute.
M.I.A.	Marble Institute of America.
N.A.P.A.	National Asphalt Pavement Association
N.B.H.A.	National Builders Hardware Association
N.C.M.A.	National Concrete Masonry Association
N.C.A.C.	National Council of Acoustical Consultants
N.C.S.A.	National Crushed Stone Association
N.E.C.A.	National Electrical Contractors' Association
N.E.M.A.	National Electrical Manufacturers' Association
N.E.I.	National Elevator Industry
N.F.P.A.	National Fire Protection Association.
N.F.P.A.	National Forest Protection Association.
N.Y.C.B.C.	New York City Building Code
N.L.A.	National Lime Association.
N.M.W.I.A.	National Mineral Wood Insulation Association.
N.P.C.A.	National Paint & Coatings Association.

N.R.M.C.A.	National Ready Mixed Concrete Association.
N.R.C.A.	National Roofing Contractors Association.
N.S.F.	National Sanitation Foundation Testing Laboratory.
N.P.E.	National Society of Professional Engineers.
N.T.M.A.	National Terrazzo and Mosaic Association.
N.W.M.A.	National Woodwork Manufacturers Association.
N.Y.S.	New York State Building Construction Code
O.S.H.A.	Occupational Safety and Health Administration.
P.C.A.	Portland Cement Association.
P.D.C.A.	Painting and Decorating Contractors of America.
P.P.I.	Plastic Pipe Institute.
P.D.I.	Plumbing and Drainage Institute.
P.H.C.C.	National Association of Plumbing, Heating and Cooling Contractors.
R.D.M.I.	Roof Drainage Manufacturers Institute.
R.I.E.I.	Roofing Industry Educational Institute.
S.B.C.C.I.	Southern Building Code Congress International.
S.I.G.M.A.	Sealed Insulating Glass Manufacturers Association.
S.D.I.	Steel Deck Institute.
S.D.I. (1)	Steel Door Institute.
S.I.S.T.H.P.	Secretary of the Interior's Standards for the Treatment of Historic Properties, 1995
S.M.A.C.N.A.	Sheet Metal and Air Conditioning Contractors National Association.
S.M.F.M.A.	Sprayed Mineral Fiber Manufacturers Association.
S.S.P.C.	Steel Structures Painting Council.
T.N.B.C.	Technical Notes of Brick Construction, Brick Institute of America.
T.C.A.	Tile Council of America.
T.W.B.	The Wood Book, Hatton-Brown Publishers, Montgomery, Alabama 1990 Edition (205) 834-1170.
U.L.	Underwriter's Laboratories, Inc.
W.C.L.I.B.	West Coast Lumber Inspection Bureau.
W.P.C.F.	Water Pollution Control Federation.
W.R.I.	Wire Reinforcement Institute.

PART 2 - PRODUCTS

2.01 No materials are required by this Section.

PART 3 - EXECUTION

3.01 No execution is required by this Section.

END OF SECTION 01 42 13

SECTION 01 42 16 - DEFINITIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General Contract Provisions and the General Requirements of Division 01 apply to the work of this Section.

1.02 DESCRIPTION OF REQUIREMENTS

- A. This section defines certain terms used in the specifications, and explains the language, abbreviations thereof, format and certain conventions used in the specifications and associated Contract Documents.
- B. Other Contract Documents which are directly related with, and in some cases, modified by this section include, but are not necessarily limited to, the following:
 - 1. Contract General Conditions.
 - 2. Supplementary General Conditions.

1.03 DEFINITIONS

- A. Certain specifications language can be recognized as specific definitions for terms found on the drawings and in other Contract Documents. Terms used more generally include:
 - 1. "General Requirement(s)" and "Division 01 Section(s)" are alike in meaning and significance.
 - 2. "Indicated" is a cross reference to details, notes or schedules on the drawings, other paragraphs or schedules in the specifications, and similar means of recording requirements in the Contract Documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used in lieu of "indicated", it is for the purpose of helping the reader accomplish the cross reference; no limitation of location is intended except as specifically noted.
 - 3. "Directed", "requested", "authorized", "selected", "approved", "required", "accepted", and "permitted" mean "directed by the Architect", etc. No such implied meaning should be interpreted to extend the Architect's responsibility into the Contractor's area of construction supervision or responsibilities.
 - 4. The extent of the "project site" is shown on the drawings, and may or may not be identical with the description of the land upon which the project is to be built.
 - 5. "Accepted", as used in conjunction with the Architect's or Engineer's response to submittals, requests, applications, inquiries, reports and claims by the Contractor, will be held to the limitations of the Architect's responsibilities and duties as specified in the General and Supplementary Conditions. In no case will "acceptance" by the Architect be interpreted as an assurance to the Contractor that the requirements of the Contract Documents have been fulfilled.
 - 6. "Furnish" is used to mean "...supply and deliver to the project site, complete and ready for the intended use."
 - 7. "Provide" means to furnish and install, complete and ready for the intended use.

1.04 SPECIFICATION EXPLANATIONS

- A. Specification explanations are provided in an attempt to assist the user of these specifications and associated Contract Documents to more readily understand the format, language, implied requirements and similar conventions of the content. None of these explanations should be interpreted to modify the substance of the requirements.
- B. The format of the principal portions of the specifications can be described as follows, although other portions may not fully comply and no particular significance will be attached to such compliance or non-compliance:
1. Uniform Construction Index: The specifications are divided into 48 Divisions of the Uniform Construction Index of the Construction Specification Institute hereinafter abbreviated as "CSI". The section titles and five digit section numbers follow the cost-analysis format of that index for the convenience of writing, production, and use of the specifications.

The titles of these are not intended to imply a particular meaning or to fully describe the work of each section, and are not an integral part of the text which specified the requirements.
 2. Three Part Format: Sections have been subdivided into Part 1 - General, Part 2 - Products, and Part 3 - Execution in accordance with the Section Format of CSI.
 3. Imperative language is frequently used and, unless otherwise specified, requirements expressed imperatively are to be performed by the Contractor. For clarity of reading, contrasting subjective language is frequently used to describe the responsibilities which must be fulfilled either indirectly by the Contractor or by others.
 4. Section numbering is for the purposes of abbreviated identification in connection with cross-references. The numbers indicate division number by the first two digits, families of related sections by the third digit and individual section numbers by the last two digits. The sections are basically placed in numeric sequence. The Table of Contents of the specifications should be consulted to determine the total listing of Sections.
 5. Paragraph lettering and subparagraph numbering are in a self-explanatory format, and are purely for the purpose of facilitating subsequent references to specific text, for addenda, purchasing, sub-contracting, modifications, change orders and similar references.
- C. Specification Content Conventions: Certain specifications conventions of the text and content can be explained as follows:
1. The type or style of specification language used to specify the requirements varies throughout the text, and may include types commonly recognized as "descriptive", "open generic-descriptive", "compliance with standards", "performance", "proprietary", or a combination of these.
 2. "Contractor's Option:" Where more than one set of requirements are specified for a particular unit of work, regardless whether or not specifically indicated as such in the text.
 3. Overlapping requirements occur where compliance with two (or more) sets of requirements is specified, and two different levels or minimums for a particular quality have been established; there, the more stringent level will be enforced (which is generally the more costly of the two levels). Instances of different-but-equal requirements should be referred to the Architect for

decision. Also refer instances of uncertainty as to which of two levels of quality is usually that more stringent to the Architect for decision.

4. "Specification Minimum" in every instance is the minimum requirement to be performed or fulfilled. The actual work may either comply exactly with that minimum (within specified tolerances), or may exceed that minimum within reasonable limits. In complying with minimum requirements, the indicated numeric values are either minimums or maximums as noted or as appropriate for the context of the requirement. Refer instances of uncertainty to the Architect for decision.
5. "Abbreviations" occur in the language of these specifications and the Contract Documents and imply words and meanings which should be interpreted in a proper manner. Actual word abbreviations of a self-explanatory nature are included in the text. Specific abbreviations have been established, principally for lengthy technical terminology and primarily in conjunction with coordination of the specifications requirements with notations, explanations on drawings and in schedules. Trade associations and general standards are frequently abbreviated. "Singular words" should be interpreted as plural and plural words as singular wherever the full context of the requirements so indicate.
6. "Responsibility Assignments" exist. The specifications text sometimes requires specific responsibility assignment to individual recognized specialist or expert entities, who must be engaged by work. These are recognized as special requirements over which the Contractor has no choice or option, but which are not confused with and are not intended to interfere with the normal application of trade regulations, union jurisdictions and similar conventions. The purpose of each such "responsibility assignments" is to establish which party or entity involved in a specific unit of work is the "recognized expert" for each of the various requirements. The final responsibility for fulfillment of the entire set of requirements remains with the Contractor.

PART 2 - PRODUCTS

2.01 No materials are required by this Section.

PART 3 - EXECUTION

3.01 No execution is required by this Section.

END OF SECTION 01 42 16

SECTION 01 43 00 - QUALITY ASSURANCE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General Contract Provisions and the General Requirements of Division 01 apply to the work of this Section.

1.02 MINIMUM STANDARDS

- A. As a minimum, all work shall comply with all prevailing codes, including but not limited to the latest editions of the local/state Building Code, the local/state Energy Conservation Code, the Uniform Building Code, the N.F.P.A. National Electrical Code, the N.F.P.A. Life Safety Code, and all related Standards referenced by these Codes.
- B. As a minimum, all work shall comply with all generally recognized means and methods of good building and construction practice.
- C. All work shall be performed as required whether or not indicated by the Contract Documents, so as to create a complete and fully functioning project.

1.03 INSPECTIONS

- A. The Contractor shall comply with the inspection requirements cited in each Section of this Specification.
- B. The Contractor shall notify the inspecting party a minimum of five working days prior to a proposed date of inspection.

1.04 VERIFY IN FIELD

- A. Contractor or Sub-Contractors shall verify all dimensions, existing conditions and all other conditions on site prior to commencement of their work and at the time of the uncovering of new conditions.
- B. The Contractor shall notify the Architect immediately of any discrepancies between field conditions and the Contract Documents or the execution of the intent of the Contract Documents.
- C. No work shall proceed until discrepancies between the field conditions and the Contract Documents have been resolved by the Owner and Architect by Change Order or other written method, as required by the General Conditions.
- D. Commencement of work, or continuation of work on newly uncovered conditions, shall imply acceptance of said conditions and their consequences by the Contractor.

1.05 SOURCE OF MATERIALS:

- A. Manufacturers supplying specialty products shall have been regularly engaged and specialized for the preceding ten (10) years.

1.06 PROJECT CONDITIONS

- A. Cold Weather Conditions:

1. Do not use frozen materials or materials mixed or coated with ice or frost. Do not use salt to thaw ice in anchor holes or slots or for any other purpose. Do not build on frozen work; remove and replace masonry construction damaged by frost or freezing.
 2. Do not lower freezing point of mortar by use of anti-freeze, calcium chloride, or other additives.
- B. Hot Weather Protection: The work shall be protected during hot weather from premature or rapid drying or curing by the use of dampened fabric coverings.
- C. Protect materials from weather, moisture and contamination by earth and other foreign materials.

PART 2 - PRODUCTS

- 2.01 No materials are required by this Section.

PART 3 - EXECUTION

- 3.01 No execution is required in this Section.

END OF SECTION 01 43 00

SECTION 01 45 33 - CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The Contract Documents, including but not limited to, the Drawings and Individual Specification Sections and New York City (NYC) Statement of Special Inspections and Tests, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality assurance and quality control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit the Contractor's other quality assurance and quality control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for the Contractor to provide quality assurance and quality control services required by the Owner or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections:
 - 1. Section 01 32 13 – Construction Scheduling, for developing a schedule of required tests and inspections.
 - 2. Individual Specification Sections, for specific inspections and tests requirements.

1.03 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements.
- C. Mockups: Full size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Approved mockups establish the standard by which the Work will be judged.

- D. Product Testing: Tests and inspections that are performed by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- E. Field Quality Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- F. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- G. Installer/Applicator/Erector: The Contractor or another entity engaged by the Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
- H. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.04 ACTION SUBMITTALS

- A. Shop Drawings: For mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
 - 1. Indicate manufacturer and model number of individual components.
 - 2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.05 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality assurance and quality control activities and responsibilities.
- B. Contractor's Quality-Control Manager Qualifications: For supervisory personnel.
- C. Testing-Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Entity responsible for performing tests and inspections.
 - 3. Description of test and inspection.
 - 4. Identification of applicable standards.
 - 5. Identification of test and inspection methods.
 - 6. Number of tests and inspections required.
 - 7. Time schedule or time span for tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality control service.

1.06 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to the Owner. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality assurance and quality control responsibilities. Coordinate with Contractor's construction schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality assurance and quality control procedures similar in nature and extent to those required for Project.
 - 1. Project quality control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: Include in quality control plan a comprehensive schedule of the Work requiring tests or inspections, including the following:
 - 1. The Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and the Contractor-elected tests and inspections.
 - 2. Special inspections required by authorities having jurisdiction and indicated on the "NYS Statement of Special Inspections and Tests."
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work the Owner has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.07 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.

11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of technical representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
 2. Statement that equipment complies with requirements.
 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 4. Statement whether conditions, products, and installation will affect warranty.
 5. Other required items indicated in individual Specification Sections.

1.08 PERMITS, LICENSES, AND CERTIFICATES:

- A. The Contractor shall obtain, maintain and pay for all applications, permits, filings, and licenses necessary for the execution of the Work and for the use of such Work when completed as required by any and all authorities having jurisdiction. The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of authorities having jurisdiction bearing on performance of the Work.
- B. The Contractor shall promptly assist the Owner in securing all approvals from authorities having jurisdiction. Without limitation, the Contractor shall assist the Owner in making application for Project approval, variances or other approvals, Letters of Completion, Temporary Certificates of Occupancy, and Certificates of Occupancy, including completion of all necessary applications and supporting documentation.
- C. The Contractor shall comply with all regulations governing conduct, access to the premises, operation of equipment and systems and conduct while in or near the premises and shall perform the Work in such a manner as not to unreasonably interrupt or interfere with the conduct of business of the Institution.
- D. For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, material certificates/affidavits, approvals, releases, jurisdictional settlements, notices, receipts for fee payments,

judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

- E. New York City Permits: The Contractor shall secure and pay for all work permits, applications, filings, and approvals that are associated with the Work of the Contract and pay all other permits, fees, licenses and inspections necessary for the proper execution and completion of the Contract as required by applicable New York City agencies and departments (i.e. Department of Buildings, Bureau of Electrical Control, Fire Department, Department of Environmental Protection, etc.).
 - 1. The Contractor shall secure required work permits and approvals prior to commencement of the Work, provide a copy to the Owner and post a copy of the permit at the Project site.
 - 2. The Contractor shall be responsible to maintain updated work permits and approvals.
 - 3. Upon Substantial Completion of the Work of the Contract, the Contractor shall secure all required approvals from applicable New York City agencies and departments. The Contractor shall provide a copy to the Owner.

1.09 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
- F. Testing-Agency Qualifications: An independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329, and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
- G. Manufacturer's Technical-Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

- I. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 1. Build mockups in location and of size indicated or, if not indicated, as directed by the Owner.
 2. Notify the Owner seven days in advance of dates and times when mockups will be constructed.
 3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at the Project.
 4. Demonstrate the proposed range of aesthetic effects and workmanship.
 5. Obtain the Owner's approval of mockups before starting work, fabrication, or construction.
 - a. Allow seven days for initial review and each re-review of each mockup.
 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 7. Demolish and remove mockups when directed by the Owner.

1.10 QUALITY CONTROL

- A. Owner Responsibilities: Where quality control services are indicated as the Owner's responsibility, the Owner will engage a qualified testing agency to perform these services.
 1. The Owner will furnish the Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to the Owner are the Contractor's responsibility. Perform additional quality control activities required to verify that the Work complies with requirements, whether specified or not.
 1. Unless otherwise indicated, provide quality control services specified and those required by authorities having jurisdiction. Perform quality control services required of the Contractor by authorities having jurisdiction, whether specified or not.
 2. Where services are indicated as the Contractor's responsibility, engage a qualified testing agency to perform these quality control services.
 - a. Contractor shall not employ same entity engaged by the Owner, unless agreed to in writing by the Owner.
 3. Notify testing agencies at least 24 hours in advance of time (excluding weekends and holidays) when Work that requires testing or inspecting will be performed.
 4. Where quality control services are indicated as the Contractor's responsibility, submit a written report, in duplicate, of each quality control service.
 5. Testing and inspecting requested by the Contractor and not required by the Contract Documents are the Contractor's responsibility.
 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 33 00 - Submittals.
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include

participation in pre-installation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

E. Retesting/Re-inspecting:

1. Regardless of whether original tests or inspections were the Contractor's responsibility, provide quality control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.
2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents, or costs attributable to the Contractor's lack of coordination in properly scheduling the Work requiring testing and inspection will be charged to Contractor and the Contract Sum will be adjusted by Change Order.

F. Testing Agency Responsibilities: Cooperate with the Owner and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify the Owner and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a written report, in duplicate, of each test, inspection, and similar quality control service through Contractor.
5. Does not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of the Contractor.

G. Associated Services: The Contractor shall cooperate with agencies performing required tests, inspections, and similar quality control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. The Contractor shall provide the following:

1. Access to the Work, including equipment required to access the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality assurance and quality control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to the Owner, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 NYC SPECIAL INSPECTIONS AND TESTS

- A. Special Inspections and Tests: The Owner will engage a qualified testing agency to conduct special inspections and tests required by authorities having jurisdiction as the responsibility of the Owner, as indicated in the NYC Statement of Special Inspections and Tests, attached to this Section, and as follows:
 1. Notifying Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 2. Submitting a written report of each test, inspection, and similar quality control service to the Owner with copy to the Contractor and to authorities having jurisdiction. Frequency of reporting shall be determined in consultation with the Owner.
 3. Submitting a final report of special tests and inspections at Substantial Completion, this includes a list of unresolved deficiencies.
 4. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents or code requirements.
 5. Retesting and re-inspecting corrected work.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve a Contractor of responsibility for compliance with the Contract Document requirements.
 1. Specified tests, inspections, and related actions do not limit Contractor's quality control procedures that facilitate compliance with the Contract Document requirements.
 2. Inspections and tests performed by the testing agency shall in no way relieve the Contractor of the responsibility to construct in accordance with the Contract Documents.

PART 2 - PRODUCTS

- 2.01 No materials are required by this Section.

PART 3 - EXECUTION

3.01 TEST AND INSPECTION LOG

- A. Prepare a record of tests and inspections. Include the following:
 1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to the Design Professional.
 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for the Owner's reference during normal working hours.

3.02 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
- B. Protect construction exposed by or for quality control service activities.
- C. Repair and protection are the Contractor's responsibility, regardless of the assignment of responsibility for quality control services.

END OF SECTION 01 45 33

SECTION 01 51 00 - TEMPORARY UTILITIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General Contract Provisions and the General Requirements of Division 01 apply to the work of this Section.

1.02 DESCRIPTION

- A. This Section pertains to the provision, maintaining, and removal of all temporary utilities and services and related items required to complete the work.

1.03 TEMPORARY UTILITIES

- A. Temporary utility connections and distribution lines shall be installed and maintained by the Contractor in accordance with Municipal Codes and ordinances having jurisdiction of the trades involved; contractor shall pay all costs for fees and permits pertaining thereto. When the temporary service lines are no longer required, they shall be removed prior to final inspection. Any part of the permanent service lines or grounds disturbed or damaged by the installation and use of the temporary utility lines shall be restored to acceptable condition at no additional cost to the Owner.

1.04 TEMPORARY LIGHTING AND POWER

- A. Provide immediately upon the start of work, electric power for use by all trades engaged in the construction, and provide sufficient lighting for the proper execution of all work. In no case shall work be performed when the light level on the work surface is less than 50 foot candles.
 - 1. Electric power from Owner's existing systems will be available for Contractor's use during construction.
 - 2. Should there be any wastage or misuse of this privilege, in the opinion of the Owner, which impairs the operation of the existing building, permission to use Owner's power supply will be withdrawn, and Contractor will be required to provide electric power from other sources at his own expense.
 - 3. The Contractor will be required to provide alternate power supplies if the existing building service is not adequate or if power is not available in all work areas at his own expense..

1.05 TEMPORARY WATER

- A. Provide, immediately upon the start of work, adequate temporary water for construction use, fire protection, and adequate drinking water for site personnel. All temporary water supply lines shall be properly valved, maintained, protected, and kept tight and free from leaks and freezing conditions.
 - 1. Water from Owner's existing systems will be available for Contractor's use during construction.
 - 2. Consult Owner for location and method of connection to Owner's water supply. Maintain temporary water service in operating condition until the new construction is completed and usable.

3. Protect water service from damage or freezing and be responsible for repairs necessitated through negligence or carelessness in this respect.
4. Should there be any wastage of water or misuse of this privilege, in the opinion of the Owner, which impairs the operation of the existing building, permission to use Owner's water supply will be withdrawn, and Contractor will be required to provide water from other sources at his own expense.

1.06 TEMPORARY HEAT

- A. The Contractor shall provide all required temporary heating required to suit the project schedule. Temporary heat will be supplied by the Contractor. When the temporary heating system is ready for operation, it may be used for temporary heating, but only with the permission of the Owner.
- B. Every precaution must be taken to maintain uniform temperature and prevent shrinkage, cracking or swelling of floors, trim and other work in building due to varying conditions.

PART 2 - PRODUCTS

- 2.01 No materials are required by this Section.

PART 3 - EXECUTION

- 3.01 No execution is required by this Section.

END OF SECTION 01 51 00

SECTION 01 52 00 - CONSTRUCTION FACILITIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General Contract Provisions and the General Requirements of Division 01 apply to the work of this Section.

1.02 DESCRIPTION

- A. This Section pertains to the provisions, maintaining, and removal of all temporary construction and facilities and similar related work.

1.03 TEMPORARY SHEDS

- A. Provide and maintain a suitable temporary storage sheds and other temporary buildings as required at the job site.
- B. Materials stored in the open on the job site shall be stored on planks or other dunnage as necessary to keep materials from contact with ground and shall be covered with tarpaulins to protect them from the weather.

1.04 TEMPORARY TOILETS

- A. The contractor shall provide and maintain temporary toilets through the construction phase of the project.

1.05 TEMPORARY HOISTWAYS, LADDERS, SIDEWALK BRIDGING, PIPE AND SUPPENDED SCAFFOLDING SSYSTEMS

- A. All hoists, ladders, sidewalk bridging, pipe and suspended scaffolding shall comply with all applicable local, state, and federal codes.
- B. Contractor shall provide adequate numbers of material hoists for the most expeditious performance of all parts of his work. They may be located at the exterior sides of the structure. They shall be located a sufficient distance (at least 3'-0") from the exterior walls and be so protected as to prevent damage, staining or marring any permanent work. Platforms and gangways shall not slope or drain toward the building.
- C. The Contractor shall provide all ladders required for his work. Ladders shall comply with all Labor Law requirements.
- D. Sidewalk Bridging:
 - 1. All scaffolding, above-ground protection, barricades and sidewalk sheds required for the work of this project shall be the responsibility of the Contractor, and shall be erected, maintained and utilized in conformance with all safety regulations pertaining thereto, and as required by law.
 - 2. The Contractor shall provide layout of bridging including locations of supports for approval by Owner and Architect prior to installation.
 - 3. Bridge and pipe painting shall a color as approved by Owner and Architect.

4. Shop drawings are to be signed and sealed by the contractor's Professional Structural Engineer (PE) prior to its submission to the Architect and Owner for approval.
5. All bridging to have 45 degree catch all's installed.
6. All gaps in the sidewalk bridge must be properly closed. Lighting must be properly grounded and installed by a licensed electrician.
7. The Contractor must install the necessary Sidewalk bridge permit on all major thoroughfares and also install the 311 signs.
8. PE sign-off required prior to scaffolding installation on top of bridge.
9. Daily maintenance logs must be kept onsite as per DOB regulations.

E. Scaffolding:

1. All scaffolding, ladders and swing staging shall be provided by Contractor, and shall be erected, maintained and utilized in conformance with all safety regulations pertaining thereto, and as required by law.
2. Shop drawings are to be signed and sealed by the Contractor's professional structural engineer (PE) prior to its submission to the Architect and Owner for approval. The Contractor shall provide the Owner with copies all required supported or suspended scaffolding training certificates for all workers.
3. All users of the scaffold must have the required 4 hour user training certification issued by an approved DOB agency in accordance with Local Law 52.
4. Any modifications, daily maintenance, etc. must be done by a 32 hour trained and certified worker in accordance with Local Law 52.
5. Fall protection (guard rail system, top rail, mid rail and toeboard required on all working/walking platforms). All temporary lighting must be so installed so as not to make any contact with the metal frames of the scaffold. All wiring must be properly insulated and grounded and installed by a licensed electrician.
6. Fire retardant fine mesh debris netting is required on all the scaffolds. The Owner and Architect shall approve the debris mesh color.
7. Scaffolds and scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.
8. Scaffolds and scaffold components shall be inspected for visible defects by a competent person before each work shift, and after any occurrence which could affect a scaffold's structural integrity.
9. Any part of a scaffold damaged or weakened such that its strength is less than that required Capacity shall be immediately repaired or replaced, braced to meet those provisions, or removed from service until repaired and must inspected by PE before use.
10. Scaffolds shall not be erected, used, dismantled, altered, or moved such that they or any conductive material handled on them might come close to exposed and energized power lines.

11. Scaffolds shall be erected, moved, dismantled, or altered only under the supervision and direction of a competent person qualified in scaffold erection, moving, dismantling or alteration. Such activities shall be performed only by experienced and trained employees selected for such work by the competent person.
12. Employees shall be prohibited from working on scaffolds covered with snow, ice, or other slippery material except as necessary for removal of such material except as necessary for removal of such materials.
13. Where swinging loads are being hoisted on to near scaffolds such that the loads might contact the scaffold, tag lines or equivalent measures to control the loads shall be used.
14. Work on scaffolds is prohibited during storms or high winds unless a competent person has determined that it is safe for employees to be on the scaffold and those employees are protected by a personal fall arrest system or wind screens. Wind screens shall not be used unless the scaffold is secured against the anticipated wind forces imposed.
15. Debris shall not be allowed to accumulate on platforms.
16. Each employee performing overhand bricklaying operations from a supported scaffold shall be protected from falling from all open sides and ends of the scaffold.

1.06 RESPONSIBILITY, SECURITY, ETC.

- A. Hours of Responsibility: Contractor shall be responsible at all times for the loss, theft, or damage of all material, construction, or equipment stored at the Job Site or incorporated in the work until final acceptance by the Owner.
- B. The Contractor shall provide an outdoor security system for the bridge scaffolding that complies with the Owner's requirements for site security.

1.07 TEMPORARY ENCLOSURES

- A. Contractor shall provide temporary enclosures for the protection of the interiors of the existing building during the work involved in demolition and removal within the existing building.
- B. Temporary Enclosures shall be insulated and constructed of such materials and in such manner and extent that the interior of the existing premises shall be kept free of the elements and occupants of the building are protected. The enclosures shall consist of plywood on suitable frames covered with heavy duty polyethylene film barrier or tarpaulins, or other suitable protection of adequate size for the purpose intended. Insulation shall be minimum full thick foil covered fiberglass batt insulation with stapling flanges.

1.08 TEMPORARY PARTITIONS

- A. Contractor shall provide temporary dust-tight partitions or barricades as required to seal off connections within existing buildings, as well as to isolate areas of work from occupied portions of the existing building. Enclosures shall be installed around all cutting operations such as floors, walls or ceilings to prevent dust from spreading. Where holes are cut in ceiling, or roof, the underside shall be dustproofed to catch any debris and dust which may result from these operations and to protect personnel from damage or injuries.
- B. Temporary dust-tight partitions shall be substantially constructed to Owner's satisfaction. Joints in the partitions, including joints at walls, floor and ceilings shall be sealed dustproof with 1-1/2 inch wide

pressure sensitive tape. Provide dust-tight doors of similar construction where necessary, including hinges and a first quality padlock and hasp on each door.

- C. Temporary partitions shall be erected over a layer of 30-lb roofing felt for protection of existing floors.
- D. Temporary partitions shall be relocated as necessitated by the work and shall be removed only when directed by the Architect. Patch and repair any damage resulting from temporary work.
- E. Contractor shall verify that all occupied spaces adjacent to the areas of demolition are completely secured and rendered dustproof prior to the commencement of demolition.

1.09 POSTERS AND SIGNS ON SHEDS OR BUILDINGS

- A. No posters, advertising billboard or signs of any nature shall be placed on any part of any post, fence, bridge, railing, shed, existing and new buildings or structures of any kind about the premises, except such as may be necessary in connection with the work under this Contract to identify the Contractor and his work.

1.10 "NO SMOKING" SIGNS

- A. Signs with the words "NO SMOKING" painted or stenciled thereon, with letters 2 inches high shall be furnished by the Contractor and hung in conspicuous places as directed, and kept in position until the completion of all work.

1.11 PROTECTION OF WINDOWS

- A. All necessary precautions shall be taken by mechanics and workmen performing the work of masonry repairs, window and stained glass restoration, painting, caulking, cleaning, etc., against marring, soiling or defacing any part of the windows. All dirt, residue, etc., on the window resulting from the work of such mechanics and workmen shall immediately be cleaned off leaving the window and entrance assemblies in a clean, operating condition ready for final cleaning and adjustment as required by the specifications.

1.12 EXITWAYS

- A. Contractor shall maintain all existing exits as required by prevailing Codes throughout the construction period.

1.13 REMOVAL OF RUBBISH

- A. The Contractor shall at all times keep the building, premises and surrounding sidewalks and streets clean and free from his rubbish and discarded or surplus materials; he shall provide suitable receptacles of adequate size and number, in handy locations about the premises to receive his own rubbish and discarded or surplus materials and also that of his various subcontractors, and shall direct his subcontractors, to deposit their rubbish and surplus materials in the receptacles provided for this purpose, or in orderly piles in locations as he may designate; also he shall provide all labor required to remove said rubbish and discarded or surplus materials from the various floors and yards, and shall cart it from the premises.
- B. Rubbish shall not be thrown out of windows. Rubbish shall not be allowed to pile against the building and thus mar its appearance.
- C. Should the Contractor fail to keep the building, premises and surrounding streets and walks shovel clean and free from his rubbish at all times, then the Owner shall employ such parties as he pleases, in the

open market, to remove the rubbish and shall withhold from any payment due the Contractor such sums as may be required to pay for the removal of the rubbish or materials, and such sums shall be deducted from the amount of the Contract.

1.14 REMOVAL OF TEMPORARY WORK

- A. All temporary work such as guards, shoring, scaffolding, etc., provided or erected by the Contractor shall be removed and shall become the property of the Contractor when such temporary work is no longer required, or when directed, or at completion of the Contract.
- B. Repair any finishes damaged by temporary construction facilities to match existing to the approval of the Architect and Owner.

PART 2 - PRODUCTS

2.01 No materials are required by this Section.

PART 3 - EXECUTION

3.01 No execution is required by this Section.

END OF SECTION 01 52 00

SECTION 01 73 29 - CUTTING AND PATCHING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General Contract Provisions and the General Requirements of Division 01 apply to the work of this Section.

1.02 WORK SUMMARY

- A. Work under this Section shall consist, in general, of all coordination, labor, materials and equipment required to cut and patch existing building fabric, as indicated or implied by the Drawings and Specifications, to facilitate the Work.

1.03 WORK SPECIFIED ELSEWHERE

- A. See Sections of this Specification related to the materials to be cut and patched.

1.04 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load bearing capacity or load-deflection ratio.
 - 1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
 - a. Exterior masonry veneer.
 - b. Lintels.

1.05 SUBMITTALS

- A. Cutting and Patching Proposal: The Contractor shall submit a proposal describing procedures well in advance of the time cutting and patching will be performed. Request approval to proceed. Include the following information, as applicable, in the proposal.
 - 1. Describe the extent of cutting and patching required. Show how it will be performed and indicate why it cannot be avoided.
 - 2. Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
 - 3. List products to be used and firms or entities that will perform the work.
 - 4. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be out of service.
 - 5. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of unsatisfactory work.
 - 6. Mark all surfaces within the building that are to be cut so that the Architect and sub-contractors can review prior to cutting. Markings should be made in a completely reversible medium such as chalk. Remove all remaining markings after the completion of work.

PART 2 - PRODUCTS

2.01 GENERAL

- A. All patching materials shall be according to the Sections of this Specification referring to the materials to be cut and patched, and good practice.
- B. All patching materials for a particular application shall be as drawn or specified, and as appropriate for the surrounding material, and to match the surrounding material so as to minimize the visual and practical impact of the patch.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective actions before proceeding.
 - 1. Before proceeding, meet at the project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.02 PREPARATION

- A. Temporary Support: Provide temporary support of work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the project that might be exposed during cutting and patching operations.
- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.03 PROTECTION AGAINST FIRE

- A. The Contractor shall assume full responsibility for maintaining the hazards of fire during the construction period at the absolute minimum. Comply with all codes and regulations of governing agencies have jurisdiction over the project and with the following restrictions, regulations, and procedures. Architect and Owner's Representative take no responsibility for the means and methods to achieve this end.
 - 1. Burning of rubbish on property is hereby strictly and unconditionally prohibited.
 - 2. On-site welding and cutting is strictly prohibited, except where expressly permitted by reference in individual specification sections.
 - 3. When on-site welding and cutting is permitted for certain portions of the Work, special care shall be exercised in handling and storage of welding equipment, acetylene and oxygen tanks, burners, and other materials used for welding or cutting. Welding and equipment shall comply with AWS D1.0 – latest version.
 - 4. Welding, cutting, and hot work, when permitted for certain portions of the Work, shall not be commenced until the Contractor has provided the means and methods to ensure that:

- a. Flammable lint, dust, vapors, and liquids or unpurged tanks or equipment previously containing such material have been removed from the area in which the work is to be done.
 - b. The work will be confined to the area where such work is permitted.
 - c. Surrounding areas within the work area have been swept clean.
 - d. Ample portable extinguishing equipment, including extinguisher, have been placed.
 - e. All combustibles are at least twenty (20) feet from the operation and the work area.
 - f. Whenever welding, cutting, or hot work is in progress, at least one (1) responsible employee of the performing Contractor is assigned solely as a fire watch to stand by and look out for any potential hazards and is equipped with a portable fire extinguisher of ABC type. Such fire watch shall be continued for at least twenty-four (24) hours past the completion of welding, cutting, or hot work.
 - g. Flame and spark-producing equipment to be used has been inspected and found to be in good repair.
5. Ample portable fire extinguishers shall be provided and located throughout building.

3.04 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
- B. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original installer; comply with the original Installer's recommendations.
 - 1. In general, where cutting, use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.
 - 4. Where services are required to be removed, relocated, or abandon, by-pass utility services, such as pipe or conduit, before cutting. Cut-out pipe or conduit in walls or partitions to be removed.
- C. Patching: Patch with durable seams that are invisible as possible. Comply with specified tolerances.
 - 1. Where feasible, inspect and test patch areas to demonstrate integrity of the installation.
 - 2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3.05 CLEANING

- A. Clean areas and spaces where cutting and patching are performed.

END OF SECTION 01 73 29

SECTION 01 74 19 – CONSTRUCTION-WASTE MANAGEMENT

PART 1 - GENERAL

1.01 MANAGEMENT

The Contractor shall take a pro-active, responsible role in the management of construction and demolition waste and require all subcontractors, vendors and suppliers to participate in the effort. Construction and demolition waste includes products of demolition or removal, excess or unusable construction materials, packaging material for construction products, and other materials generated during the construction process but not incorporated into the work. In the management of waste consideration shall be given to the availability of viable markets, the condition of the material, the ability to provide the material in suitable condition and in a quantity acceptable to available markets, and time constraints imposed by internal project completion mandates. The contractor shall be responsible for implementation of any special programs involving rebates or similar incentives related to recycling of waste. Revenues or other savings obtained for salvage, or recycling shall accrue to the Contractor. Firms and facilities used for recycling, reuse, and disposal shall be appropriately permitted for the intended use to the extent required by federal, state, and local regulations.

1.02 PLAN

A waste-management plan shall be submitted to the Architect and Owner's Representative within 15 days after contract award and before initiating any site preparation work. The plan shall include the following

- A. Name of individuals on the Contractor's staff responsible for waste prevention and management.
- B. Actions that will be taken to reduce solid waste generation.
- C. Description of the specific approaches to be used in recycling/reuse of the various materials generated, including the areas and equipment to be used for processing, sorting, and temporary storage of the waste.
- D. Characterization, including estimated types and quantities, of the waste to be generated.
- E. Name of landfill and/or incinerator to be used and the estimated costs for use, assuming that there would be no salvage or recycling on the project.
- F. Identification of local and regional reuse programs, including non-profit organizations such as schools, local housing agencies and organizations that accept used materials such as materials exchange networks and Habitat for Humanity.
- G. List of specific waste materials that will be salvaged for resale, salvaged and reused or recycled. Recycling facilities that will be used shall be identified.
- H. Identification of materials that cannot be recycled/reused with an explanation or justification.
- I. Anticipated net cost savings determined by subtracting Contractor program management costs and the cost of disposal from the revenue generated by sale of the materials and the incineration and /or landfill cost avoidance.

1.03 RECORDS

Records shall be maintained to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. The records shall be made available to the Architect and Owner during construction, and a copy of the records shall be delivered to the Owner upon completion of the construction.

1.04 COLLECTION

The necessary containers, bins, and storage areas to facilitate effective waste management shall be provided and shall be clearly and appropriately identified. Recyclable materials shall be handled to prevent contamination of materials from incompatible products and materials and separated by one of the following methods:

- A. Source-Separated Method - Waste products and materials that are recyclable shall be separated from trash, sorted into appropriately marked separate containers, and then transported to the respective recycling facility for further processing.
- B. Co-Mingled Method - Waste products and recyclable materials shall be placed into a single container and then transported to a recycling facility where the recyclable materials are sorted and processed.
- C. Other Methods - Other methods proposed by the Contractor may be used when approved by the Owner and Architect.
- D. Disposal - Except as otherwise specified in other section of the specifications, disposal shall be in accordance with the following:
- E. Reuse - First consideration shall be given to salvage for reuse since little or no reprocessing is necessary for this method, and less pollution is created when items are reused in their original form. Sale or donation of waste suitable for reuse shall be considered. Salvaged materials, other than those specified in other sections to be salvaged and reinstalled, shall not be used in this project.
- F. Recycle - Waste materials not suitable for reuse, but having value, as being recyclable, shall be made available for recycling whenever economically feasible.
- G. Waste - Materials with no practical use or economic benefit shall be disposed at a landfill or incinerator.

PART 2 - PRODUCTS

- 2.01 No materials are required by this Section.

PART 3 - EXECUTION

- 3.01 No execution is required by this Section.

END OF SECTION 01 74 19

SECTION 01 74 23 - CLEANING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 DESCRIPTION:

- A. This Section pertains to keeping the premises free from accumulation of waste materials, rubbish and other debris, and for final cleaning both during progress of work and at completion of the project.
- B. Specific cleaning and cleaning up requirements for particular trades or work is specified under respective sections pertaining to that trade or work and should be executed under this Section. It is to be clearly understood that the entire project, inside and out, shall be thoroughly cleaned and polished, as required, prior to acceptance by the Owner.

1.03 GENERAL:

- A. Inspections: Conduct daily inspections, and more often if necessary, to verify that cleanliness requirements are being met.
- B. Pollution Control: Clean-up and disposal operations shall comply with all local ordinances and anti-pollution laws and regulations. Burning or burying of rubbish and waste materials on the job site is not permitted. Disposal of volatile fluid wastes (such as mineral spirits, oil, or paint thinner) in storm or sanitary sewer systems is not permitted.
- C. Fire Protection: Volatile (flammable and combustible) waste materials shall be stored in covered metal containers, and removed from premises daily.

PART 2 - PRODUCTS

2.01 CLEANING MATERIALS AND EQUIPMENT:

- A. Provide all required personnel, equipment and materials needed to maintain the specified standard of cleanliness.
- B. Only cleaning materials recommended by manufacturer of surface to be cleaned shall be used and shall be limited to those specific surfaces. Verify that cleaning materials and equipment are compatible with the surface to be cleaned.

PART 3 - EXECUTION

3.01 DURING CONSTRUCTION:

- A. General: Perform or oversee cleaning operations and ensure that the building and surrounding streets and grounds are maintained free from accumulations of waste materials, rubbish and other debris resulting from construction operations at reasonable intervals. At no time shall accumulations be allowed to become an unsightly or hazardous condition. General cleaning operations shall be "broom clean" on an as-needed basis.

- B. All materials accumulated as waste materials, rubbish, and debris shall become the property of the Contractor and shall be removed from the job site and legally disposed of by him.
- C. Handling of waste materials shall be in a controlled manner with as few handlings as possible. Do not drop or throw materials from heights without protective barricades, warning signs or devices, and sentries posted at strategic locations such as to forewarn workmen and other persons as to possible danger.
- D. Schedule cleaning operations so that dust and other contaminants resulting from the cleaning process will not fall on wet, newly painted surfaces or otherwise damage freshly placed materials.
- E. Preparatory cleaning prior to installation of succeeding materials shall be to the extent recommended by the manufacturer of the succeeding materials.

3.02 FINAL CLEANING:

- A. General: **At completion of construction and just prior to acceptance or occupancy, all exposed interior and exterior surfaces shall be inspected and cleaned by approved methods by experienced workmen or professional cleaners.** Maintain cleaning until acceptance by Owner.

END OF SECTION 01 74 23

SECTION 01 78 00 – CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General Contract Provisions and the General Requirements of Division 01 apply to the work of this Section.

1.02 SUBSTANTIAL COMPLETION

- A. At Substantial Completion the Contractor shall contact the Owner and Architect at least five working days in advance for an inspection.
- B. Following the inspection the Architect shall determine whether or not Substantial Completion has been achieved as per the General Conditions.
- C. If the Project is determined to be Substantially Complete, the Architect shall prepare certification of same, and a punch list of minor items to complete, and deliver these to the Contractor for execution, and to the Owner.

1.03 FINAL COMPLETION

- A. At Final Completion the Contractor shall contact the Owner and Architect at least five working days in advance for an inspection.
- B. Following the inspection, the Architect shall determine whether or not Final Completion has been achieved as per the General Conditions.
- C. If the Project is determined to be complete, the Contractor shall deliver to the Owner, if not previously delivered, the originals of the following items in addition to those required by the General Conditions.
 - 1. Equipment and product operations data, warranties, and spare parts for material and equipment permanently incorporated into the Project.
 - 2. Affidavit of legal hazardous waste disposal if required.
 - 3. Any other regulatory paperwork related to the Project.
 - 4. The Contractor shall supply the Architect and Owner with an inventory list of all salvaged building and landscape materials.
 - 5. Affidavit of Debts and Claims and Affidavit of Release of Liens.
- D. When the Architect has determined that all of the above conditions have been met, he will promptly issue certification of Final Completion, as per the General Conditions, to the Contractor and the Owner.

1.04 GUARANTEE

- A. The Contractor, upon Final Completion, guarantees all work of the Contractors and Subcontractors to be first quality, free from faulty materials, equipment, workmanship, and installation and in conformance with the Contract Documents and each section of the Technical Specification.

- B. This guarantee shall be provided in addition to, and not as a replacement of, manufacturer's warranties on materials and equipment permanently incorporated into the Project.

PART 2 - PRODUCTS

- 2.01 No materials are required by this Section.

PART 3 - EXECUTION

- 3.01 No execution is required by this Section.

END OF SECTION 01 78 00

END OF DIVISION 01

DIVISION 02 – EXISTING CONDITIONS

SECTION 02 41 19.13 - SELECTIVE BUILDING DEMOLITION

PART 1 - GENERAL

2.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

2.02 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of selected portions of exterior granite block masonry.**
 - 2. Demolition of existing plaza assembly including pavers, topping slab, insulation, drainage matt and existing waterproofing membrane.**
 - 3. Salvage of existing items to be reused or to be reinstalled, including granite blocks, granite copings and railings.**
 - 4. Salvage and reinstall door and door hardware**
 - 5. Salvage and reinstall electrical items associated with the scope of work, regardless of them shown on the drawings.**

2.03 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

2.04 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

2.05 PRE-INSTALLATION MEETINGS

- A. Pre-demolition Conference: Conduct conference at Project Site.
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.

2.06 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of Selective-Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.

Coordination for shutoff, capping, and continuation of utility services.
 - 3. Use of existing roadways, pathways and stairs.
 - 4. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- C. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- D. Pre-demolition Photographs or Video: Submit before Work begins.
- E. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

2.07 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

2.08 QUALITY ASSURANCE

- A. Demolition Qualifications: Engage a experienced firm or crew that has successfully completed demolition work on historic buildings similar to that indicated for this project.
- B. Regulatory Requirement: Comply with governing EPA notification regulations before starting demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

2.09 FIELD CONDITIONS

- A. The Owner will occupy portions of the site; conduct selective demolition so Owner 's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 - 1. Before selective demolition, Owner/tenants will remove the following items:
 - a. Movable furniture.
 - b. Window treatments.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- D. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- E. Survey of Existing Conditions: Record existing conditions by use of measured drawings, pre-construction photographs or pre-construction videotapes.
 - 1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

3.02 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
- C. Comply with requirements for temporary enclosures, dust control, heating, and cooling.
- D. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.

3.03 SELECTIVE DEMOLITION, GENERAL

- E. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly.
- F. Reuse of Building Elements: Do not demolish building elements beyond what is indicated on Drawings without Architect's approval.
- G. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner storage area on-site or off-site designated by Owner.
 5. Protect items from damage during transport and storage.
- H. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.

4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- I. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.04 SELECTIVE-DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- B. Plaza assembly: Remove no more existing assembly than what can be covered in one day by new waterproofing and so that building interior remains watertight and weathertight.
 1. Remove existing plaza system down to substrate including flashings and accessories.

3.05 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
 1. Do not allow demolished materials to accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.06 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.07 SELECTIVE-DEMOLITION SCHEDULE

- A. Existing Items to Be Removed and Salvaged:
 1. All items identified in the drawings
- B. Existing Items to Be Removed and Reinstalled:
 1. All items identified in the drawings

END OF SECTION 02 41 19.13

SECTION 02 41 19.14 –PLAZA ROOF ASSEMBLY REMOVAL

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Work Included: The work of this Section includes, but is not limited to, the following:
 - 1. Removal of existing paving assembly, including pavers, setting bed, existing topping slab, insulation and associated fasteners, and related roof waterproofing assembly materials down to deck.
 - 3. Removal of damaged or deteriorated existing membrane termination flashing and related sheet metal work.
 - 4. Coordinate paving system removals for protection of decks to receive new paving system. Coordinate temporary waterproofing installation and related protections with existing paving system removals.
 - 5. Provide miscellaneous removals associated with new work, including, removal of railings, planter soil, irrigation system in planters for incorporation of new work.

1.03 RELATED SECTIONS

- A. See Section 01 33 00, Submittals
- B. See Section 02 41 19.13, Selective Demolition
- C. See Section 07 56 00, Fluid-Applied Waterproofing System
- D. See Section 02 51 20 Pavers
- E. See Section 22 14 26 Drains

1.04 SUBMITTALS

- A. Submit written description in a timely manner, of the intended method of ensuring that the area affected by removals, including all penetrations and perimeters, is complete and watertight at the end of each work day.
- B. Prior to the start of work submit, date marked, photographs of existing conditions of structures, surfaces, equipment, and adjacent work that might be misconstrued as damage related to removal operations. Submit copies to the Architect, Owner, and Owner's Designated Representative prior to the start of work.
- C. As appropriate, submit hazardous materials and asbestos management proposal, including all requirements for staging, containment, removals, handling and disposal of materials.

1.05 QUALITY ASSURANCE

- A. Foreman Qualifications: The foreman of the crew performing roof removals shall be a qualified roofer or waterproofing journeyman with at least 5 years' experience in paving system removals similar in nature and scope to the Work of this Section.

- B. Regulatory Requirements: Comply with governing EPA notification regulations before starting roof removals and related selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
 - 1. All removal and demolition work shall comply with requirements of State and Local Building Codes, OSHA, EPA, other local governing authorities having jurisdiction and Owner's requirements.
- C. Pre-Paving System Removal Conference: Conduct conference at Project site to comply with requirements. Review methods and procedures relating to roof removal and related selective demolition including, but not limited to, the following:
 - 1. Inspect and discuss condition of waterproofing and related construction.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize roof removal schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by roof removals demolition operations.
 - 5. Review protections and environmental containment procedures.
 - 6. Review hazardous materials issues and containment procedures.
- D. As appropriate, notify agencies of any hazardous materials found on the site. Do not proceed with removal of said substance until so instructed.

1.06 PROJECT CONDITIONS

- A. No representation is made that the assembly exists uniformly throughout the area to be removed.
- B. Protections: Ensure safe passage of persons around area of demolition. Conduct operations to prevent injury to adjacent portions of the building, structure, utilities, other facilities, and to the public and other persons.
 - 1. Protect from damage existing work that is to remain in place and becomes exposed during demolition operations.
 - 2. As required, provide protective sidewalk enclosures and bridges at areas surrounding the building perimeter. As required, provide protective devices over areas that have operable windows.
 - 3. Containment: Provide containment of existing materials during removals and demolition. The Work of this Section shall include preventing dislodgment and blow-off of materials being removed, debris production and other hazardous conditions.
 - a. Fully coordinate containment with the requirements for ACM removals and waste management as specified elsewhere.
 - 4. Containment procedures and protections shall be constructed and secured in a secure manner that does not harm the public and other persons and does not damage or compromise the

building envelop and associated waterproof membranes including waterproofing, paving assemblies, building structure and adjacent facilities.

- C. Damages: Promptly repair damages caused to adjacent materials and equipment by demolition work at no cost to the Owner. All remedial work to be done by the Contractor shall first be approved by the Owner and the Architect.
 - 1. Any dust and debris falling into the interior of the building due to the work of this Section shall be removed by the Contractor.
- D. Traffic: Conduct removal operations and removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent or used facilities.
 - 1. Do not enclose or obstruct streets or other occupied or used facilities without permission from the authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- E. Partial Demolition and Removal: Items indicated to be removed but not saved are of salvageable to Contractor may be removed from the structure as work progresses. Transport salvaged items from site as they are removed.
 - 1. Storage or sale of removed items will not be permitted on the site.
- F. Damages: Promptly repair damages caused to adjacent facilities by demolition operations.
- G. Flame Cutting: Use of torches is strictly forbidden. Maintain portable fire suppression devices during roof removal operations.
- H. Utility Services: Maintain existing utilities indicated to stay in services and protect against damage during demolition operations.
 - 1. Do not interrupt existing utilities serving occupied or used facilities, except when authorized by the Owner, Contractor, and other authorities having jurisdiction. Provide temporary services during interruption to existing utilities, as acceptable to governing authorities.
 - 2. Arrange for disconnecting and sealing utilities serving structures to be demolished, prior to start of removal and demolition work.
 - 3. Do not start removal and demolition work until utility disconnections have been completed and verified in writing.
- I. Environmental Controls: Use temporary enclosures, water sprinkling, and other methods to limit dust and dirt migration. Comply with governing regulations pertaining to environmental protection.
 - 1. Do not use water when it may create hazardous or objectionable conditions such as damage to finishes, flooding, and pollution.
 - a. Fully coordinate environmental controls with the requirements for ACM removals and waste management as specified in the Contract Documents.
- J. Provide tarping or other types of temporary roofing as roofing removals and related selective demolition of exterior building envelop progress. Completely protect structure from water damage, Provide anchoring to protect temporary roofing from wind damage or dislocation, anchoring methods shall not impair building water tightness nor bring harm to persons or property.

PART 2 – PRODUCTS

2.01 REPAIR MATERIALS

- A. Use repair materials identical to existing materials.
 - 1. Where identical materials are unavailable or cannot be used for exposed surface, use materials that visually match adjacent surfaces to the fullest extent possible.
 - 2. Use materials whose installed performance equals or surpasses that of existing materials.
- B. Repair work, of roofing structures damaged prior to selective demolition shall be specified within the applicable Sections(s), as indicated.

PART 3 - EXECUTION

3.01 GENERAL

- A. General: The removal and demolition work is to be coordinated with the installation of the new masonry, flashing, and waterproofing systems and related construction.
 - 1. General: Execute removal work carefully. Minimize interference with existing building and site operations, inconvenience to building tenants, building staff, vehicles, public, danger to persons, and damage to existing building materials to remain.
 - 2. Do not throw removed materials from the roof.
- B. Coordination: Coordinate work of trades and schedule elements of removal work by procedures and methods to expedite completion of work.
- C. Noise Control: Maintain noise levels of removal work and equipment at a minimum level as to avoid disturbance to building tenant and adjacent building occupants. Comply with governing regulations pertaining to environmental protection and OSHA.
- D. Pollution Controls: Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air. Comply with governing regulations pertaining to environmental protection.
 - 1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.
 - 2. Provide duct proof barriers for interior removals and demolition, prevent uptake of duct and debris into air handling system.
 - 3. Clean adjacent structures and improvements of duct, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing prior to start of work.
- E. Demolition: Demolish structures completely and remove from site. Use such methods as required to complete work within limitations of governing regulations.
 - 1. Proceed with demolition in systematic manner, from top of an item to be removed or demolished to bottom. Complete demolition work above each level or tier before disturbing supporting members on lower levels.

- F. If unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit a report to the Architect in written, accurate detail. Pending receipt of directive from the Architect, rearrange selective demolition schedule as necessary to continue overall job progress without undue delay.
- G. Prior to removal work, check all drains and leaders and document any plugged or non-working drains and leaders and notify the Architect.
1. Provide protection of roof drains and leaders to remain and drain terminations from becoming obstructed and clogged.
- H. Promptly remove debris to avoid imposing excessive loads on the roof and supporting walls, floors or framing. Do not exceed 20 psf roof loading.
- I. Ensure that the paving system removal is coordinated with the new paving installation work so that all penetrations and perimeter are completed and watertight at the end of each work day.
- J. In cutting the existing roofing, ensure that cutting tools do not penetrate into the structural slab intended to remain.
1. If cutting machines are used in the performance of the Work, set the blade depth high enough to prevent penetration into the substrate intended to remain.
- K. Where waterproofing removal is required remove existing waterproofing materials complete, down to the existing structural deck.
- L. Substrate Observation: During roof removals and demolition, the contractor shall observe waterproofing substrates and decks, if unacceptable conditions of waterproofing substrates and waterproofing structural decks including but not limited to, deterioration, and detrimental conditions that will affect both roof removals and placement of new waterproofing are observed, promptly make the building watertight and notify the Architect. Maintain protection until the disposition of the condition is resolved.
1. If in addition to the above other conditions are uncovered that vary substantially from those indicated to the extent that modifications to the work may be required, promptly make the building watertight and notify the Architect. Maintain protection until the disposition of the condition is resolved.
- M. The work of this Section includes removal of damaged substrates and roof decking as required for repairs.
1. After observation if damaged waterproofing substrates and decking by the Architect, Contractor shall proceed as directed by the Architect. Where removals are directed, properly remove damaged roof substrate and decking, provide supports, shoring and bracing, refer to selective demolition for additional requirements for removals and demolition work, coordinate removals with requirements of repair work. Provide protection of adjacent structures, finishes, and interior spaces from damage during the Work of this Section. Provide temporary secure watertight protection of interior spaces as the Work progresses.
- N. Sweep or vacuum all surfaces, remove loose aggregate and foreign substances. Provide at the end of the Work of this Section an existing roof free of loose materials or conditions objectionable to the installation of new waterproofing.

- O. Remove existing equipment and curbs as indicated, existing structural framing is to remain. Provide protection of adjacent structures, finishes, and interior spaces from damage during the Work of this Section. Provide temporary secure watertight protection of interior spaces at existing openings as the Work progresses.

3.02 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove debris, rubbish and other materials resulting from demolition operations from building site. Do not let products of demolition accumulate.
- B. Transport waste materials resulting from demolition work and legally dispose of off-site. Cost of transportation and disposal of all waste materials shall be included in the base bid. Hazardous materials shall be handled and disposed of in accordance with all State, City, and Federal regulations.

3.03 CLEAN-UP AND REPAIR

- A. Upon completion of demolition work, remove tools, equipment and demolished materials from site.
- B. Repair demolition performed in excess if that required. Return structures and surfaces to remain to condition prior to demolition. Repair adjacent construction or surfaces soiled or damaged b this demolition work.

END OF SECTION 02 41 19.14

SECTION 027800 - UNIT PAVERS

PART 2 - GENERAL

2.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

2.02 SUMMARY

- A. Section Includes:
 - 1. Asphalt-block pavers set in bituminous setting beds.
- B. Related Requirements:
 - 1. **Section 075600 Fluid-Applied Waterproofing System**

2.03 ACTION SUBMITTALS

- A. Product Data: For materials other than water and aggregates.
- B. Product Data: For the following:
 - 1. Pavers.
 - 2. Bituminous setting materials.
 - 3. Mortar and grout materials.
- C. Sieve Analyses: For aggregate setting-bed materials, according to ASTM C 136.
- D. Samples for Initial Selection: For each type of unit paver indicated **size and the following:**
 - 1. Joint materials involving color selection.
 - 2. Exposed edge restraints involving color selection.
- E. Samples for Verification: For full-size units of each type of unit paver indicated. **[Assemble no fewer than five Samples of each type of unit on suitable backing and grout joints.][Include Samples of the following:]**
 - 1. Joint materials.

2.04 INFORMATIONAL SUBMITTALS

- A. Adhesion and Compatibility Test Reports: From latex-additive manufacturer for mortar and grout containing latex additives.
- B. Material Certificates: For unit pavers. Include statements of material properties indicating compliance with requirements, including compliance with standards. Provide for each type and size of unit.

- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for unit pavers, indicating compliance with requirements.

- 1. For solid interlocking paving units, include test data for freezing and thawing according to ASTM C 67.

2.05 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

- 1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

2.06 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Submit to latex-additive manufacturer, for testing as indicated below, Samples of flooring materials that will contact or affect mortar and grout that contain latex additives.

- 1. Use manufacturer's standard test methods to determine whether mortar and grout materials will obtain optimal adhesion with, and will be nonstaining to, installed brick and other materials constituting brick flooring installation.

2.07 DELIVERY, STORAGE, AND HANDLING

- A. Store pavers on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Store liquids in tightly closed containers protected from freezing.
- E. Store asphalt cement and other bituminous materials in tightly closed containers.

2.08 FIELD CONDITIONS

- A. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.
- B. Weather Limitations for Bituminous Setting Bed:
 - 1. Install bituminous setting bed only when ambient temperature is above 40 deg F (4 deg C) and when base is dry.
 - 2. Apply asphalt adhesive only when ambient temperature is above 50 deg F (10 deg C) and when temperature has not been below 35 deg F (2 deg C) for 12 hours immediately before application. Do not apply when setting bed is wet or contains excess moisture.

C. Weather Limitations for Mortar and Grout:

1. Cold-Weather Requirements: Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
2. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6. Provide artificial shade and windbreaks and use cooled materials as required. Do not apply mortar to substrates with temperatures of 100 deg F (38 deg C) and higher.
 - a. When ambient temperature exceeds 100 deg F (38 deg C), or when wind velocity exceeds 8 mph (13 km/h) and ambient temperature exceeds 90 deg F (32 deg C), set pavers within 1 minute of spreading setting-bed mortar.

PART 3 - PRODUCTS

2.01 MANUFACTURERS

- A. Source Limitations: Obtain each type of unit paver, joint material, and setting material from single source with resources to provide materials and products of consistent quality in appearance and physical properties.

2.02 ASPHALT-BLOCK PAVERS

- A. Asphalt-Block Pavers: Solid units made from asphalt cement complying with ASTM D 312, Type III; inorganic stone dust or cement filler; and coarse aggregate, consisting of clean, hard, unweathered stone crushed into angular particles varying in size up to 3/8 inch (9.5 mm).
1. **Hanover® Asphalt Block shall be manufactured by Hanover® Architectural Products, 5000 Hanover Road, Hanover, PA 17331**
 2. Thickness: to match existing
 3. Face Size: to match existing
 4. Dimensional Tolerances: to match existing
 5. Finish: to match existing
 6. Color: to match existing

2.03 ACCESSORIES

- A. Cork Joint Filler: Preformed strips complying with ASTM D 1752, Type II.
- B. Compressible Foam Filler: Preformed strips complying with ASTM D 1056, Grade 2A1.

2.04 BITUMINOUS SETTING-BED MATERIALS

- A. Primer for Base: ASTM D 2028/D 2028M, cutback asphalt, grade as recommended by unit paver manufacturer.
- B. Fine Aggregate for Setting Bed: ASTM D 1073, No. 2 or No. 3.
- C. Asphalt Cement: ASTM D 3381/D 3381M, Viscosity Grade AC-10 or Grade AC-20.

- D. Neoprene-Modified Asphalt Adhesive: Paving manufacturer's standard adhesive consisting of oxidized asphalt combined with 2 percent neoprene and 10 percent long-fibered mineral fibers containing no asbestos.
- E. Sand for Joints: Fine, sharp, washed, natural sand or crushed stone with 100 percent passing No. 16 (1.18-mm) sieve and no more than 10 percent passing No. 200 (0.075-mm) sieve.

- 1. Provide sand of color needed to produce required joint color.

2.05 BITUMINOUS SETTING-BED MIX

- A. Mix bituminous setting-bed materials at an asphalt plant in approximate proportion, by weight, of 7 percent asphalt cement to 93 percent fine aggregate unless otherwise indicated. Heat mixture to 300 deg F (149 deg C).

PART 4 - EXECUTION

2.01 EXAMINATION

- A. Examine surfaces indicated to receive unit paving, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Where unit paving is to be installed over waterproofing, examine waterproofing installation, with waterproofing Installer present, for protection from paving operations, including areas where waterproofing system is turned up or flashed against vertical surfaces.
- C. Proceed with installation only after unsatisfactory conditions have been corrected [**and waterproofing protection is in place**].

2.02 PREPARATION

- A. Remove substances from concrete substrates that could impair mortar bond, including curing and sealing compounds, form oil, and laitance.
- B. Sweep concrete substrates to remove dirt, dust, debris, and loose particles.
- C. Proof-roll prepared subgrade according to requirements in Section 02300 "Earthwork" to identify soft pockets and areas of excess yielding. Proceed with unit paver installation only after deficient subgrades have been corrected and are ready to receive [**subbase**] [**and**] [**base**] course for unit pavers.

2.03 INSTALLATION, GENERAL

- A. Do not use unit pavers with chips, cracks, voids, discolorations, or other defects that might be visible or cause staining in finished work.
- B. Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures.
- C. Cut unit pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.

1. For concrete pavers, a block splitter may be used.
- D. Handle protective-coated brick pavers to prevent coated surfaces from contacting backs or edges of other units. If, despite these precautions, coating does contact bonding surfaces of brick, remove coating from bonding surfaces before setting brick.
- E. Joint Pattern: To match existing
- F. Pavers over Waterproofing: Exercise care in placing pavers and setting materials over waterproofing so protection materials are not displaced and waterproofing is not punctured or otherwise damaged. Carefully replace protection materials that become displaced and arrange for repair of damaged waterproofing before covering with paving.
 1. Provide joint filler at waterproofing that is turned up on vertical surfaces[**unless otherwise indicated; where unfilled joints are indicated, provide temporary filler or protection until paver installation is complete**].
- G. Tolerances: Do not exceed 1/32-inch (0.8-mm) unit-to-unit offset from flush (lippage) nor 1/8 inch in 10 feet (3 mm in 3 m) from level, or indicated slope, for finished surface of paving.
- H. Expansion and Control Joints: Provide for sealant-filled joints at locations and of widths indicated. Provide compressible foam filler as backing for sealant-filled joints[**unless otherwise indicated; where unfilled joints are indicated, provide temporary filler until paver installation is complete**]. Install joint filler before setting pavers. Sealant materials and installation are specified in Section 07920 "Joint Sealants."
- I. Expansion and Control Joints: Provide cork joint filler at locations and of widths indicated. Install joint filler before setting pavers. Make top of joint filler flush with top of pavers.
- J. Provide edge restraints as indicated. Install edge restraints before placing unit pavers.
 1. Install edge restraints to comply with manufacturer's written instructions. Install stakes at intervals required to hold edge restraints in place during and after unit paver installation.
 2. For metal edge restraints with top edge exposed, drive stakes at least 1 inch (25 mm) below top edge.
 3. Install job-built concrete edge restraints to comply with requirements in Section 03300 "Cast-in-Place Concrete."
 4. Where pavers set in mortar bed are indicated as edge restraints for pavers set in aggregate setting bed, install pavers set in mortar and allow mortar to cure before placing aggregate setting bed and remainder of pavers. Cut off mortar bed at a steep angle so it will not interfere with aggregate setting bed.
 5. Where pavers embedded in concrete are indicated as edge restraints for pavers set in aggregate setting bed, install pavers embedded in concrete and allow concrete to cure before placing aggregate setting bed and remainder of pavers. Hold top of concrete below aggregate setting bed.
- K. Provide steps made of pavers as indicated. Install paver steps before installing adjacent pavers.
 1. Where pavers set in mortar bed are indicated for steps constructed adjacent to pavers set in aggregate setting bed, install steps and allow mortar to cure before placing aggregate setting bed and remainder of pavers. Cut off mortar bed at a steep angle so it will not interfere with aggregate setting bed.

2.04 BITUMINOUS SETTING-BED APPLICATIONS

- A. Apply primer to concrete slab or binder course immediately before placing setting bed.

- B. Prepare for setting-bed placement by locating 3/4-inch- (19-mm-) deep control bars approximately 11 feet (3.3 m) apart and parallel to one another, to serve as guides for striking board. Adjust bars to subgrades required for accurate setting of paving units to finished grades indicated.
- C. Place bituminous setting bed where indicated, in panels, by spreading bituminous material between control bars. Spread mix at a minimum temperature of 250 deg F (121 deg C). Strike setting bed smooth, firm, even, and not less than 3/4 inch (19 mm) thick. Add fresh bituminous material to low, porous spots after each pass of striking board. After each panel is completed, advance first control bar to next position in readiness for striking adjacent panels. Carefully fill depressions that remain after removing depth-control bars.
 - 1. Roll setting bed with power roller to a nominal depth of 3/4 inch (19 mm). Adjust thickness as necessary to allow accurate setting of unit pavers to finished grades indicated. Complete rolling before mix temperature cools to 185 deg F (85 deg C).
- D. Apply neoprene-modified asphalt adhesive to cold setting bed by squeegeeing or troweling to a uniform thickness of 1/16 inch (1.6 mm). Proceed with setting of paving units only after adhesive is tacky and surface is dry to touch.
- E. Place pavers carefully by hand in straight courses, maintaining accurate alignment and uniform top surface. Protect newly laid pavers with plywood panels on which workers can stand. Advance protective panels as work progresses, but maintain protection in areas subject to continued movement of materials and equipment to avoid creating depressions or disrupting alignment of pavers. If additional leveling of paving is required, and before treating joints, roll paving with power roller after sufficient heat has built up in the surface from several days of hot weather.
- F. Joint Treatment: Place unit pavers with hand-tight joints. Fill joints by sweeping sand over paved surface until joints are filled. Remove excess sand after joints are filled.

2.05 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.
- B. Pointing: During tooling of joints, enlarge voids or holes and completely fill with grout. Point joints at sealant joints to provide a neat, uniform appearance, properly prepared for sealant application.
- C. Cleaning: Remove excess grout from exposed paver surfaces; wash and scrub clean.
 - 1. Remove temporary protective coating as recommended by coating manufacturer and as acceptable to paver and grout manufacturers.
 - 2. Do not allow protective coating to enter floor drains. Trap, collect, and remove coating material.

END OF SECTION 027800

DIVISION 03 – CONCRETE

SECTION 03 73 00– CONCRETE REPAIR

PART 1 - GENERAL

2.01 GENERAL PROVISIONS

- A. Perform work in accordance with requirements of General Conditions and Division 01 - General Requirements as well as provisions of all applicable laws, codes, ordinances, rules and regulations. If applicable, all regulations regarding the transportation, handling, storage and removal of hazardous materials shall be strictly adhered to.
- B. Related work specified elsewhere:
 - 1. Exterior Joint Sealant - Section 07 92 02

1.02 SUMMARY

- A. Extent of concrete restoration work is as indicated on Drawings, as specified herein, and as required by conditions and regulatory authorities, for the proper completion of the work.
- B. Briefly, and without force and effect upon Contract Documents, work of this Section includes, but is not limited to, the following:
 - 1. Removal and replacement of parging and sounding of all exposed concrete 100% at the window sill and at the interior face of the wall below the store front. (Finish to match existing)
 - 2. Remove all eminent spalls, loose and deteriorated concrete and failed previous patch material until sound concrete is met.
 - 4. Remove and repair material at concrete stair landings after installation and waterproofing. (Finish to match existing)
 - 5. Trowel-applied patches:
 - a. The concrete should be square and undercut to provide a mechanical key. Install additional 3/16" diameter threaded stainless steel ASTM 316 rods bedded in epoxy spaced as detailed. Install new properly formulated patching material, mechanically secured and keyed into the sound adjacent concrete. Install flush with adjacent sound concrete or per details on Drawings (assume 170 SF as part of Base Bid).
- C. Extent and Location: Work of this Section shall be performed where indicated on Drawings, as specified herein, and include, but not be limited to, the following:
 - 1. All exposed concrete columns and panels.

2.02 QUALITY ASSURANCE

- A. System Approach:

1. The Contractor shall install a "system-oriented" restoration of the concrete. The "system" shall consist of the coordinated use of Architect-approved repair products and techniques.
 2. The Contractor shall ensure that all products used in the restoration shall be fully compatible with each other. The Contractor must submit for each proposed product a manufacturer's written certification that the product is compatible with the other products in the system, and that the use of multiple manufacturers' products shall not in any way infringe on any of the manufacturers' warranties.
 3. Any manufacturer's system or products must conform to the requirements of this specification in order to be considered acceptable, and to receive the approval of the Architect.
- B. Qualifications: Work must be performed by a firm having not less than five (5) years regular, successful, experience in comparable concrete restoration projects and employing personnel skilled in the restoration processes and operations indicated. Comply with all requirements set forth in Division 1 of these specifications.

The concrete restoration contractor or subcontractor must submit documentation of being approved or trained by the manufacturer(s) of the selected concrete patching and coating product(s).

In evaluation of work offered for the acceptance of the Architect, no allowance will be made for lack of skill or competence on the part of workers.

- C. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures, to maintain optimum working conditions and to coordinate this work with related and adjacent work. Agenda for meeting shall include special details and flashings. Attendees shall include manufacturer's representative, representative of the approved Contractor, Owner's Representative and the Architect/Engineer.
- D. Materials: Manufacturer shall be a Company specializing in manufacturing of polymer-modified Portland cement mortar with a minimum of ten years experience. As deemed necessary to warranty the installation, the manufacturer shall supply a technical representative on the job site during the course of the work to approve the application.
- 1) Work specified herein shall be performed by and be the responsibility of the installation contractor. The installation contractor shall be certified by the manufacturer of the materials used to be a qualified installer of their product and to have the necessary equipment and facilities to fulfill the requirements of the manufacturer and of this section.
 - 2) The installation contractor shall submit a list of five (5) projects in which similar work to that specified was successfully completed. The list shall contain the following for each project: Project name, Property owner, Owner's representative's name and phone number, Scope of work, Date of completion, Total square footage of work.
 - 3) Field-Constructed Mock-Ups: Prior to start of general concrete restoration, prepare the following sample panels on building where directed by Engineer/Architect. Obtain Owner and Engineer/Architect's acceptance of visual qualities and Manufacturer's representative acceptance of technical qualities before proceeding with the work. Retain acceptable panels in undisturbed condition, suitably marked, during construction as a standard for judging completed work.

1. Concrete Patch: Prepare sample panels of size indicated for each type of masonry material indicated. Erect mock-up panels into an existing wall, unless otherwise indicated, to demonstrate quality of materials and workmanship.

- a. Perform mock ups of concrete removal and surface preparation for approval of Architect and Manufacturer.
- b. Provide 3 concrete repair mocks up approximately 8" high by 6" wide with new replacement patch and approved color installed in dismantled area.

2. Coating: Prepare 3 separate color sample areas of approximately 1' high by 1' wide over the approved patches.

E. Coordination:

1. Coordinate concrete restoration work and coating work to ensure that patching and treatment compounds have cured, as required by water repellent manufacturers, prior to application of the water repellent.
2. All concrete patching work must take place and have cured before water repellent work may proceed on repaired concrete.

2.03 SUBMITTALS

A. Data and Sample Submittal Schedule: Submit 2 copies of shop drawings, brochures certifications, samples and maintenance data to Owner or Owner's representative prior to any work and leaving sufficient time for their review prior to schedule site work.

B. Methods: The contractor shall submit a detailed description of the methods he will use to accomplish the façade repair work. Specified methods of the following are required.

1. Storage and protection of material.
2. Hoisting material.
3. Cutting material.
4. Shoring material.
5. Movement of material.
6. Disposal of debris.
7. Distribution of material.
8. Dust and noise control.
9. Movement of personnel.
10. Protection of existing surfaces and adjacent property including netting installation.
11. All weather masonry construction including hot and cold weather protections.
12. Protection for exposed and unfinished work areas.
13. A detailed logistic plan showing work schedule, scaffold locations, method of rigging (other than outriggers), special rigging, demolition plan, and protection of adjacent property.

All such operations must be approved by the Owner and its representative, who will provide information governing access to work areas, use of elevators, etc. All rules, regulations and directions concerning noise, removal of debris, storage of materials and tools, etc., as issued by the Owner must be strictly obeyed.

All Submittals: Comply with General Provisions of the Contract and Division 1 Specification Sections.

- B. Product Data: Submit selected manufacturers' technical data for each manufactured product offered for inclusion in the work. Include manufacturer's recommendations for use, and instructions for handling, storage, installation and protection of each product. Include test reports and certifications substantiating that products comply with specified requirements.
- C. Shop Drawings: No shop drawings are required.
- D. Samples: Submit for verification purposes samples of all materials required for the work of this Section, whether specified or not. Minimum size of powder and liquid samples shall be 250 ml (1 cup) of each. The following samples must be included:
 - 1. Patching compounds.
 - 2. Steel primer.
 - 3. Epoxy bonding agent/grout adhesives.
 - 4. Stainless steel fasteners, anchors and threaded rod.
 - 5. Crystalline waterproofing.
- E. Test Results: Manufacturer of patching compound shall provide recent independent test results verifying that patching material shows a length change of less than 500 microstrains when tested in accordance with ASTM C 157 using the air-cured method. Provide a notarized certificate stating that the materials specified herein meet the specified requirements.
- F. Affidavit: Provide affidavit certifying materials meet specified requirements and issuance of certification for use in City of New York.
- G. Warranty: Submit a copy of the manufacturer's warranty describing type and period of coverage.

2.04 SCOPE OF WORK

- A. Furnish all labor, materials, tools, and equipment required to perform the work of this section as shown on the drawings and as specified herein. In general, the work shall include, but not necessarily be limited to, the following:

1. Selective removal of concrete, including cutting, chipping, and removing of all deteriorated, unsound concrete on horizontal, vertical, and overhead surfaces, as directed in the drawings or by the Engineer.
2. Proper surface preparation of the concrete area, in accordance with the instruction material of the manufacturer of the repair material.
3. Preparation and coating of all exposed reinforcement steel.
4. Placement of appropriate repair material to horizontal and vertical surfaces.
5. Matching concrete aggregate finish.
6. Proper surface preparation of the patch concrete substrate according to the manufacturer's instructions before installation of coating.
7. Apply two coats of the acrylic, anti-carbonation protective coating to vertical and overhead surfaces at a minimum dry film thickness of 5 mils.

2.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver the specified material in original, unopened containers with the manufacturer's name, labels, product identification, batch numbers, and expiration date.
- B. Store material in conditions as recommended by the manufacturer.

1.06 PROJECT CONDITIONS

- A. Local Climate: Ambient weather conditions of moisture, temperature, humidity and wind can adversely affect the application, setting, curing, etc. of the products specified herein for concrete restoration. The Contractor shall take positive actions to offset any unfavorable state of one or more of these conditions as specified or recommended by the restoration product(s) manufacturers.
 1. Temperature: Do not use concrete restoration products and materials unless air temperatures are between 40 degrees F and 80 degrees F. and will remain so for at least 48 hours after completion of work. Do not install concrete restoration products and materials on substrates that are frozen or have been below 40 degrees F. for at least 48 hours prior to installation.
 2. If air temperatures are between 70 and 80 degrees F and the building is in direct sunlight apply patching compound only as follows:
 - a. Wet surfaces of area to be patched with cool water before patching.
 - b. Cover new patches with opaque fabric or membrane immediately after completion of patch. Keep patch covered for 8 hours or until facade is out of direct sunlight.
 - c. Do not apply patching compound on the south facade at any time when the air temperature is between 70 and 80 degrees F and the building is in direct sunlight.
 3. Protect newly applied materials from rain and other precipitation.
 4. Provide moist curing immediately after finishing. No curing compounds shall be permitted, as these may inhibit the subsequent application of the water repellent stain, unless specifically approved by the manufacturer in writing.
- B. Protect sills, ledges, window frames, glazing and projections from droppings and spills.

- C. Protect persons, motor vehicles, surrounding surfaces of building whose concrete surfaces are being restored, building site, and surrounding buildings from damage or injury which could result from the performance of the work.
- D. Site shall be left broom clean at the end of each workday.

1.07 CONCRETE RESTORATION GUARANTEE AND WARRANTY

- A. The following Guarantee and Warranty shall apply to all concrete repair work.
- B. Guarantee and Warranty: The Contractor shall guarantee the concrete restoration for seven (7) years and provide a seven-Year Full System Manufacturer's Warranty, starting on the date of Owner/Owner's Representative final acceptance of the completed construction work.
- C. Contractor's Guarantee:
 - 1. The Contractor guarantees that the total concrete restoration installation, together with all related substrate and reinforcing preparation, rebar coating, patching compound, surface water-repellent coating, adhesives, sealants and so forth installed in connection with same, will be sound and free from defects as to materials, installation and/or workmanship, for a period of five (7) years from the date of acceptance of the completed project.
 - 2. During the seven (7)-year guarantee period, the Contractor agrees that within 24 hours of receipt of notice from the Owner/Owner's Representative, he will inspect and make immediate emergency repairs to defects that pose a hazard to the public, and that within a reasonable time, he will restore the affected items to the standard of the original specifications.
 - 3. All emergency and permanent work during the life of the Contractor's guarantee will be done without cost to the Owner/Owner's Representative, except in the event it is determined that such defects were caused by abuse, lightning, hurricane, tornado, hail storm, other unusual climatic phenomena of the elements, or failure of adjacent or related work previously installed by others.
- D. Manufacturer's Warranty:
 - 1. In addition to the Contractor's guarantee, there shall be a Manufacturer's Concrete Restoration Full System Warranty (Labor and Materials; No Dollar Limit) that the concrete restoration will be sound and free from defects as to materials, installation, and/or workmanship, including coverage against shrinkage of patching material, for a period of five (7) years. Such warranty shall commence upon date of Owner/Owner's Representative final acceptance of the completed construction work.
 - 2. Final payment will not be made until receipt of properly executed and approved Manufacturer's Warranty.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Polymer-modified Portland cement mortar for horizontal, vertical and overhead repairs shall meet the following requirements.

1. The material shall not contain asbestos, chlorides, nitrates, added gypsum, added lime, or high aluminum cements.
 2. The material shall be non-combustible, both before and after cure.
 3. The mortar shall be supplied in factory proportioned units.
- B. The steel reinforcement protective coating shall be an epoxy-cementitious coating that will not create a bond barrier between the polymer-modified Portland cement mortar used for concrete repair and the steel reinforcement.

2.02 ACCEPTABLE PRODUCTS

- A. Polymer-modified Portland cement mortar for vertical and overhead repairs:
1. SIKAREPAIR SHB with Latex R, Manufactured by Sika Corporation, 201 Politi Avenue, Lyndhurst, New Jersey 07071 .
 2. Sikatop 123 Plus Manufactured by Sika Corporation, 201 Politi Avenue, Lyndhurst, New Jersey 07071 .
 3. HB2 Repair Mortar manufactured by BASF Construction Chemicals LLC 889 Valley Park Drive Shakopee, MN 55379
- B. Steel reinforcement protective coating:
1. Sika Armatex 110 Epocem, Manufactured by Sika Corporation, 201 Politi Avenue, Lyndhurst, New Jersey 07071.
- C. Coating over new patch:
1. Sikagard 670W as manufactured by Sika Corporation, 201 Politi Avenue, Lyndhurst, New Jersey 07071.
 2. Silflex manufactured by BASF Construction Chemicals LLC 889 Valley Park Drive Shakopee, MN 55379
 3. Sikagard 701W as manufactured by Sika Corporation, 201 Politi Avenue, Lyndhurst, New Jersey 07071.

Coating should be compatible with the repair material to obtain full warranty

2.03 MISCELLANEOUS MATERIALS

- A. Stainless Steel Rods: Bend 3/16" diameter threaded stainless steel rods, ASTM A-316, or approved equal.
- B. Epoxy:
1. For bedding rods: Sikadur 32 Hi-Mod Epoxy, high-modulus, two-component, solvent-free, moisture-insensitive, structural epoxy adhesive conforming to current ASTM C 881, as manufactured by Sika Corporation (201) 933-8800, or approved equal.
- C. Abrasive Blasting Aggregate (If Required): Use only aggregate which does not release free silica into the air.
- D. Water: Potable, free of deleterious amounts of oils, rust, acids, alkalies and organic matter.

2.04 SUBSTITUTIONS:

The use of other than the specified product will be considered providing the contractor requests its use in writing to the Engineer. This request shall be accompanied by (a): A certificate of compliance from an approved independent testing laboratory that the proposed substitute product meets or exceeds the specified performance criteria, tested in accordance with the specified test standards; and (b): Documented proof that the proposed substitute product has a five year proven record of performance, confirmed by actual field tests and five successful installations that the Engineer can investigate.

PART 3 - EXECUTION

3.01 GENERAL PROCEDURES

- A. Install scaffolding and visually inspect and sound all exposed concrete 100% (exposed concrete columns and panels) on all building facades. All exposed concrete on all façades is to be examined, sounded and repaired as follows:
- B. It is the Contractor's responsibility to locate and remove all defective exposed concrete on all building facades. In general, all deteriorated concrete must be removed until sound concrete is reached. Follow manufacturer's instructions and methods for patch preparation and installation for selected concrete patching products.
- C. The Contractor is advised that the Drawings and Specifications do not undertake to illustrate or describe every item, detail or location of work necessary to complete this Project. The Documents intend to convey quantities of work insofar as they have been determined visually prior to full access to the building, and these quantities at a minimum shall be included in the Base Bid.
- D. Previous Coatings: Prior to commencement of patching, remove all previous coatings, waterproofing, etc. that may interfere with the compatibility and integrity of the patching and mortar products. Shot-blasting shall be an acceptable means of removing previous coatings.
- E. Survey Mark-Ups: Mark all areas of hollowness or losses on the façade and on copies of the Drawings supplied by the Architect.
- F. Architect's Verification of Survey: After marking locations of hollowness and losses, inform Architect to come to the site to inspect these areas. Architect will inspect the areas and confirm the removals and quantities for repair.

3.02 PREPARATION

- A. Inspection: Install scaffolding and visually inspect and sound all exposed concrete 100% (exposed concrete columns and panels) on all building facades.
- B. Removals: Remove all eminent spalls, cracked, loose, rust-stained and deteriorated concrete. Prepare all defective locations as specified. All rebar exposed by sounding or spalling must be fully exposed (360°) as described below:
 - 1. Length of deteriorated concrete areas to be removed: Remove concrete as specified from around 100% of the circumference of rebars in both directions along length of bar until minimum 1" of clean, un-corroded rebar is exposed.

2. Depth of deteriorated concrete areas to be removed: Voids containing rebar must be deep enough to provide 1" minimum clearance between the back of rebar and the back of the void. Voids which do not contain rebar must be a minimum of 3" deep.
 3. Surface width of deteriorated concrete areas to be removed: Voids containing rebar must be wide enough to provide 4" of clearance on each side of rebar. Width of voids not containing rebar shall have concrete removed a minimum of 3" across in all directions.
- C. Cutting: At locations where the reinforcing steel is back far enough from the surface of the concrete to allow for proper patching (3" min), use grinders to square and undercut the outline of patch openings. Grinder should be held on a minimum 10 degree angle when cutting concrete to form an undercut void, allowing for a keyed patch. Do not cut into or through rebars with grinders.
- D. Removals: Remove concrete from within patch outline. A minimum depth of 3/8 inches shall be provided at all edges of the patch. Do not hit rebars with hammers, chisels or power tools during removal process. The bond between unexposed rebar and concrete will be broken if rebar is hit or vibrated.
- E. Reinforcing Bars Too Close to Surface: Any modification of rebars closer than 1-1/2" from the surface must be approved by the Architect on an individual basis. In general, follow these guidelines:
1. If the bar is the end of a single, isolated bar that is located at the surface, it can be cut off.
 2. If the bar is part of a cage of rebar, it may not be cut or hammered.
- F. At all locations where spalls have occurred, the spalls shall be removed adequately to expose the condition of the reinforcing bars and the extent of deterioration. Reinforcing bars that have lost more than 10% of their section shall be reinforced by splicing with additional bars as required and as recommended by the Architect on a case-by-case basis.
- G. The Contractor shall clean 100% circumference of exposed rebar to bright, white metal. Conform to Specification #SSPC-SPG-63 - Commercial Blast Cleaning. Pay special attention to cleaning the back of the rebar. The contractor shall also clean any exposed steel sleeves for railing post system encountered.
1. Abrasive blasting is preferred, provided the Contractor follows local code restrictions and employs equipment that provides full containment of abrasive grit and residues, or retains such materials by vacuum in a closed cycle.
 2. Power wire brushing will be acceptable, provided the Contractor meets the requirements of this specification and the requirements of manufacturers whose products depend on this preparation.
- H. The surface must be mechanically prepared. Areas to be patched must be clean and sound. All loose and deteriorated concrete shall be removed by mechanical means approved by the Engineer. Chip concrete substrate to obtain a surface profile of + 1 inch min, with fractured aggregate surface. Be sure the area to be patched is not less than 1 in. in depth. Scrape and sandblast reinforcing steel to remove all contaminants and rust. Where reinforcing steel is encountered, the following procedures will be used. If reinforcing bar is exposed, chip out behind the reinforcing bar. The distance chipped behind the reinforcing bar shall equal or exceed the diameter of the reinforcing bar. Expose corroded rebar 4 in. beyond end of corrosion to expose sound uncorroded steel.
- I. Cracks in the substrate in the area of the patching or overlay work must be treated as directed by the Engineer.

J. Extend all existing control and expansion joints through any patch or overlay. Install new joints as directed by the Engineer. Fill all joints as directed by the Engineer.

K. Rebar Coating and installation of pins: Prime rebar and sleeves as soon as possible, but preferably within three (3) hours of cleaning, using specified primer and following manufacturer's instructions. Apply two (2) coats of primer. The second application should be of a slightly different shade to differentiate the two (2) coats. Make sure that the primer coats 100% of the exposed rebar surface. Allow primer to cure properly before proceeding. Avoid spilling or over-brushing primer on back or sides of void in concrete substrate unless manufacturer recommends the primer's use, and the Contractor uses it, as a bonding agent. (Any bonding agent must be overlaid with patching compound while still tacky.) Follow manufacturer's recommendations for curing of rebar coating. Provide and install pins as described in the drawings details.

3.03 TROWEL-APPLIED PATCH APPLICATION

A. Mixing: Mix and apply specified patching compound following manufacturer's instructions. Match texture and profile of surrounding concrete.

1. Do not apply patching compound when ambient temperatures are below 40 degrees F. or above 80 degrees F. or are predicted to be either within 48 hours of installation. Do not apply patching compound on substrates with ice or frost or which have been below 40 degrees F. for at least 48 hours prior to installation. Contractor shall install thermometer on each facade of building to monitor temperatures as work progresses.

3. At all locations the area of concrete removed on the backside of the any/all steel to allow for proper cleaning and painting of the steel shall be fully patched. Do not patch areas of damaged concrete smaller than 3"x 3", but remove any loose concrete and prepare surface to same as for patching and enlarge void to minimum size for patching.

3. At all areas of damaged concrete to receive trowel-applied patch, form a squared opening with keyed edges, as wide as is required and with minimum depth of 1".

4. Patches are applied in lifts of 1/2" or as directed by the manufacturer's representative for complete warranty

3.04 CURING PATCHES

A. General: Protect freshly placed patching compound from premature drying and excessive cold or hot temperatures. Follow manufacturer's directions for curing fresh patches.

B. Formwork Removal: Formwork shall be left in place no less than seven (7) days to provide a proper cure. Formwork shall be stripped only after recasting concrete is sufficiently hard to not be damaged by formwork removal operations.

1. Repair and patch defective areas of recast concrete with cement mortar immediately after removal of forms. Follow manufacturer's recommendations.

C. Start of Curing: Start curing process immediately after installation of patching/recasting compound.

D. Curing: A combination of wet burlap and polyethylene sheet or a pre-combined product called "Burlene" shall be secured tightly over the fresh concrete. Smooth the wet burlap and polyethylene tightly over the surface. Secure with duct tape or other approved means that will not cause damage to the concrete. Material must be held in tight contact with the concrete surface, especially at edges. Burlap must be continuously moist. Keep finished repair moist for a period of seven (7) days minimum. Refer to ACI 308,

“Standard Practice for Curing Concrete.” In cold weather conditions, the finished repair must be protected from freezing.

- E. Architect’s Inspection: Inform Architect when patching is complete and has cured. Architect will inspect completed patching from Contractor’s scaffold.

3.05 CLEANING

- A. The applicator shall promptly remove all temporary coverings and protections of adjacent work areas and will clean these areas of all foreign materials resulting from their work.
- B. The uncured polymer-modified Portland cement mortar can be cleaned from tools with water. The cured polymer-modified Portland cement mortar can only be removed mechanically.
- C. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

END OF SECTION 03 73 00

DIVISION 04 – MASONRY

SECTION 04 01 20.61– COLD WEATHER MASONRY

PART ONE - GENERAL

1.01 Related Documents

- A. General Contract Provisions and the General Requirements of Division One apply to the work of this Section.

1.02 Work Summary

- A. Work in this Section includes all labor, materials, equipment, and services necessary to complete cold weather masonry as shown on the Drawings and specified herein, including, but not limited to, work necessary to comply with special requirements for undertaking masonry work specified in other sections when temperatures are below 40 degrees Fahrenheit.

1.03 Work Specified Elsewhere

- A. See Division One, General Requirements
- B. See Section 01 33 00, Submittals
- C. See Section 04 01 20.52, Masonry Cleaning
- D. See Section 04 01 20.91, Masonry Restoration
- F. See Section 04 05 13, Masonry Repointing

1.04 Quality Assurance

- A. Comply with the requirements of "Cold Weather Masonry Construction and Protection Requirements," Brick Institute of America, latest edition; requirements specified in this Section; and requirements specified in individual sections requiring masonry work. In case of conflict, strictest requirements shall govern.
- B. Do not proceed with masonry work in cold weather unless the Architect has specifically approved:
 - 1. Contractor's Work Proposal for Cold Weather Masonry
 - 2. Specific masonry work to be undertaken in each case
- C. Do not add unapproved substances to mortars or grouts

1.05 Submittals

- A. General: Submit each item in this Section in compliance with the Conditions of the Contract and Division One specification sections. Revise and resubmit each item as required to obtain approval of the Architect.
- B. Work Proposal for Cold Weather Masonry: Proposal for executing masonry work as specified in other sections during cold weather. Include proposed materials, equipment, methods, and procedures to ensure that cold weather masonry work complies with requirements of this section.

1.06 Project Conditions

- A. Applicable Regulations: Perform work in this Section in accordance with federal state, and local laws and regulations.

- B. Protection of the Building: Protect building elements, materials, and finishes from damage or deterioration caused by work in this Section. Repair damage to materials or finishes caused by cold weather masonry work to the satisfaction of the Architect at no additional cost to the Owner.
- C. Protection from Fire: Take all necessary precautions to prevent fire or spread of fire.
 - 1. Covers: Membranes, insulation blankets, and other materials used to cover masonry shall be flame retardant and fire resistant.
 - 2. Warming Devices: Heating blankets, infrared heaters, and other warming devices shall be UL approved and inspected for damage prior to use.
 - 3. Open Flame Heaters: No open flame heaters shall be used to protect finished masonry. Heaters used to warm water and sand for mortar and grout shall be well away from the building and from flammable substances.

PART TWO - MATERIALS

2.01 No materials are required for this Section.

PART THREE - EXECUTION

3.1 General

- A. Covers: Install membrane covers, insulation blankets, and other protection to avoid damaging masonry. Do not drill holes or in any other way damage masonry.

3.02 Cold Weather Construction

- A. General: Cold weather construction shall adhere to the following requirements for work, performed in ambient temperatures indicated, as well as all published guidelines in "Cold Weather Masonry Construction and Protection Requirements," Brick Institute of America, latest edition. Work shall not be permitted in freezing weather, or when temperature of air or wall is at or below freezing or expected to freeze within 48 hours of work without Architect's prior written approval. No work shall begin when any part of the wall or material in use are frozen or subject to freezing temperatures.
- B. Temperature Range 40°F to 32° F:
 - 1. Heat mixing water or sand to produce mortar between 40° F and 120° F and maintain above 40° F until placed at that temperature.
- C. Temperature Range 32° F to 20° F:
 - 1. Heat mixing water and sand to produce mortar between 40° F and 120° F. Heat grout materials so grout is maintained and placed at a temperature between 40° F and 120° F. Maintain mortar and grout above freezing until used in masonry
 - 2. For work between 25° F and 20° F heat and maintain masonry units above 40° F if grouting
- D. Temperature 20° F and below:
 - 1. Heat mixing water and sand to produce mortar between 40° F and 120° F. Heat grout materials so grout is placed at a temperature between 40° F and 120° F. Maintain mortar and

grout above freezing until used in masonry. Heat masonry units to 40° F. Provide enclosure to heat and maintain temperatures above freezing within enclosure.

3.03 Protection of Completed Masonry Work

- A. General: Protect completed masonry and adjacent masonry to be pointed in the following manner. Temperature ranges indicated apply to anticipated minimum night temperatures:
- B. Temperature Range 40° F to 32° F
 - 1. Protect masonry from rain or snow for at least 24 hours by covering with weather-resistive membrane.
- C. Temperature Range 32° F to 20° F
 - 1. Completely cover masonry with weather-resistive insulating blankets or similar protection for at least 24 hours, 48 hours for grouted masonry.
- D. Temperature 20° F and Below
 - 1. Except as otherwise indicated, maintain masonry temperature above 32° F for 24 hours using enclosures and supplementary heat, electric heating blankets, infrared lamps, or other methods proven to be satisfactory. For grouted masonry maintain heated enclosures to 40° F for 48 hours.

END OF SECTION 04 01 20.61

SECTION 04 01 20.91 –MASONRY RESTORATION

PART ONE - GENERAL

1.01 Related Documents

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 Work Summary

- A. Work under this Section shall consist in general, of all coordination, labor, materials, services, and equipment necessary to complete brick masonry restoration at street and courtyard facades, all as shown on the Drawings and specified herein, including, but not limited to, the following:
 - 1. Replacement of existing granite blocks masonry.
 - 2. Waterproofing masonry at storefront lintel level.
 - 3. Provide ties, anchors, and flashing required to ensure structurally sound and water tight masonry.
 - 4. Prepare, prime, and paint any existing exposed structural steel.
 - 5. Coping stone resetting or replacing.
 - 6. Remove sealants from masonry surfaces.
 - 7. Remove and replace expansion joints

1.03 Work Specified Elsewhere

- A. See Division One, General Requirements
- B. See Section 01 33 00, Submittals
- C. See Section 01 73 29, Cutting and Patching
- D. See Section 02 41 19.13, Selective Building Demolition
- E. See Section 04 01 20.52, Unit Masonry Cleaning
- F. See Section 04 01 20.61, Cold Weather Masonry
- G. See Section 04 05 13, Masonry Repointing
- H. See Section 05 50 00, Metal Fabrications
- I. See Section 07 62 00, Flashing and Sheet Metal
- J. See Section 07 92 02, Exterior Joint Sealers

1.04 Quality Assurance

- A. Reference Standards
 - 1. ANSI A41.1, "American Standards Building Code Requirements of Masonry"
 - 2. NCMA, "Specification for the Design and Construction of Load Bearing Concrete Masonry"
 - 3. PCA, "Concrete Masonry Handbook"
 - 4. PCA, "Plasterer's Manual".
 - 5. ACI "Manual of Masonry Practice"
 - 6. New York City Building Code

- D. Restoration Specialist: Contractor that performs brick masonry restoration shall be regularly engaged in the restoration of masonry on existing buildings. Contractor shall demonstrate to the Architect and Owner's satisfaction that, within previous five (5) years, he has successfully performed and completed in a timely manner at least three (6) projects similar in scope
1. Sub-Contractors: Sub-contractors are bound by the same requirements as the Contractor. No sub-contractors shall be employed unless approved in writing by the Architect.
 2. Foreman: Brick masonry restoration shall be directly supervised by a full-time foreman with experience equal to or greater than required of the Restoration Specialist. The Foreman shall read and speak English fluently. The Foreman shall be on site daily for the duration of the Work of this Section. Same Foreman shall remain on the project throughout work unless his performance is deemed unacceptable by the Architect.
 3. Mechanics: granite masonry restoration shall be carried out by a steady crew of skilled mechanics who are thoroughly experienced with materials and methods specified, have a minimum of three (3) years' experience with work on historic buildings similar to that required by this Section, and are familiar with design requirements. The Contractor shall certify that all mechanics employed for the Work of this Section fully understand the project requirements. In acceptance or rejection of this Section, no allowance will be made for workers' incompetence or lack of skill.
- C. Source of Materials: Obtain materials for brick masonry restoration from a single source for each type of material required to ensure a match in quality, color, and texture.
- D. Field Supervised Construction: The Contractor shall notify the Architect and Owner before beginning masonry pointing work.
- E. Familiarity with Site Conditions: Bidders shall visit the site prior to submitting a bid and carefully examine the project scope and conditions that may affect proper execution of the work of this Section and determine or verify dimensions and quantities. Contractor's submission of a bid shall be acknowledgment that he is thoroughly familiar with the Project scope and site conditions.
- F. Replace all broken, lost and damaged brick masonry resulting from Work of this Section to the satisfaction of the Architect, at no additional expense to the Owner.

1.05 Submittals

- A. General: Submit each item in this Section in compliance with the Conditions of the Contract and Division One Specified Sections. Revise and resubmit each item as required to obtain approval of the Architect.
- B. Qualification Data: Submit qualification data for the firm and personnel specified in "Quality Assurance" Article that demonstrates that both the firm and personnel have capabilities and experience complying with the requirements specified. For the firm and foreman, provide a list of at least six (6) completed projects within the New York metropolitan region similar in size and scope to work required on this project. For each project list project name, address, architect, conservator, supervising preservation agency, scope of Contractor's work, and other specified information. This information shall be submitted with the Form of Proposal.
- C. Product Literature: Manufacturer's published technical data for each product to be used in Work of this Section including recommendations for application and use. Include test reports and certificates verifying that the product complies with the specified requirements.

- D. Program of Work: Submit a written program for each type of brick masonry restoration required by this Section
1. Include a detailed description of proposed materials, methods, tools, and equipment for each type of Work.
 2. Include descriptions, drawings, and diagrams, outlining proposed methods and procedures for protection of personnel, public, and existing construction during Work of this Section.
 3. If alternate methods and materials to those specified are proposed for any phase of masonry pointing work, provide written description. Provide evidence of successful use on comparable projects and demonstrate effectiveness for use on this project.
- E. Samples
1. granite bricks: Sets of each type of granite bricks required including sufficient numbers of brick to show the full range of colors and textures to be expected in the completed Work.
 2. Anchors and Fasteners: Each type and configuration specified and/or required for Work of this Section.
 3. Sealant installation: The Contractor shall prepare a sample area of approximately two (2) linear feet for each type of sealant installation required. The samples, upon the Architect's approval, will be standard for the entire job. Refer to Section 07 92 02 – Exterior Joint Sealers.
 5. Flashing: Each type and configuration specified and/or required for the Work of this Section.
 6. Mortar: After a mortar analysis, prepare matching samples for comparison to original by Architect.
- G. Shop Drawings: Detailed drawings showing installation of the following:
1. Each type of replacement coping stone: 3" – 1' - 0" minimum scale
 3. New stainless steel plate, inverted shelf angle and waterproofing at the landing rebuilding: 3" – 1' - 0" minimum scale
 4. Brick replacement: 3" – 1' - 0" minimum scale
 5. Anchors and Reinforcements: 3" – 1' - 0" minimum scale
 6. Flashings: 1" = 1' – 0" minimum scale
 7. Expansion Joints: 3" – 1' - 0" minimum scale
- H. Prepare quality control panels as specified in Article "Quality Control Panels" below.

1.06 Quality Control Panels

- A. General: Before beginning general brick masonry restoration, prepare quality control panels to provide standards for work of this Section. Do not proceed with brick masonry restoration until Architect has approved relevant quality control panels.

1. Locate quality control panels as directed by the Architect.
2. Provide 48 hours' notice to the Architect prior to the start of each quality control panel.
3. Architect or Architect's representative will monitor quality control panels. No quality control panels done in the absence of the Architect or Architect's representative will be accepted.
4. Perform quality control panels using the crew that will be executing the Work and following the requirements of this Section.
5. Repeat quality control panels as necessary to obtain Architect's approval.
6. Protect approved quality control panels to ensure that they are without damage, deterioration, or alteration at time of Substantial Completion.
7. Approved quality control panels in undamaged condition at time of Substantial Completion may be incorporated into the Work.
8. Approved quality control panels will represent the minimum accepted standard for brick masonry restoration. Subsequent work that does not meet the Standard of approved quality control panels will be rejected.

B. Quality Control Panels: Provide the following quality control panels:

1. Removal and Rebuilding Brick Masonry
 - a. Main Facades: One (1) location, minimum two (2) sq. ft.
2. Spot Brick Replacement
 - a. Main Facades: Two (2) locations
3. Provision of Expansion Joint: One (1) location

1.07 Delivery, Storage, and Handling

- A. Do not deliver materials to the site until they have been approved by the Architect.
- B. Deliver and store materials in manufacturer's original sealed containers or packaging, clearly labeled with manufacturer's name, address, and product identification, including grade, type, and color. Immediately reseal containers after partial use.
- C. Store all materials in spaces designated by the Owner or Owner's Designed Representative. Such spaces shall comply with applicable federal, state, and local laws, codes, and regulations and shall be locked and in accessible to those not employed under this Section.
 1. Maintain temperatures in storage spaces within the range recommended by manufacturer of material being stored in each case. Protect liquid components from freezing.
 2. Store products and materials at least 4" above floor and protect them from water, dampness, or high humidity.

- D. Deliver, store, and handle all products and materials to prevent damage, deterioration, or degradation, and intrusion of foreign materials.
- E. Discard and remove from site deteriorated or contaminated materials and products that have exceeded their expiration dates. Replace with fresh materials.

1.08 Project Conditions

- A. Laws and Regulations: Perform Work of this Section in compliance with applicable federal, state, and local laws and regulations.
- B. Protection of Persons: Take necessary measures to protect persons, whether or not they are involved with the Work of this Section, from harm resulting from Work of this Section.
- C. Protection of Building: Protect building elements and finishes from damage or deterioration resulting from Work of this Section. Repair damaged materials or finishes to the satisfaction of the Architect at no additional cost to the Owner.
- D. See Section 02 41 19.13, Selection for shoring requirements.
- E. Material Safety: Chemical materials shall be safe in use and shall comply with applicable federal, state, and local laws and regulations.
- F. Coordination: Coordinate Work of this Section with other Division Four Sections and other phases of the project to ensure proper completion of all work.
- G. Contract Documents
 - 1. Drawings are two-dimensional representations of three-dimensional objects and do not show all surfaces. Perform work on surfaces of projections, reveals, ornament, and other elements associated with areas on which work is indicated.
 - 2. Dimensions indicated on Drawings are for bidding purposes only. Field measure dimensions before preparing shop drawings or beginning work. Contractor is responsible for all dimensions.
- H. Access for Inspection and Approvals: Provide Architect access on a regular basis to locations on which testing or quality control panels are being carried out, on which work is ongoing, and where work has been completed to allow for inspections and approvals. Provide means of access and safety precautions required to facilitate inspections and approval.

1.09 Environmental Conditions

- A. Do not use any material in brick masonry restoration work unless air and masonry temperatures are within range recommended by material manufacturer.
 - 1. Masonry work in temperatures below 40 degrees Fahrenheit shall comply with requirements of Section 04 01 20.61, Cold Weather Masonry and with work proposal specifically approved by the Architect.
 - 2. Remove masonry work determined by the Architect to be damaged by freezing conditions. Repoint as specified to satisfaction of the Architect at no addition cost to the Owner.

- B. Hot Weather Masonry Work: During hot weather, protect work from premature or too-rapid curing by use of dampened fabric coverings.

1.10 Guarantee

- A. Contractor shall guarantee for a period of two (2) years the repointing against the following:
 - a. Discoloration or mismatch of new mortar to adjacent old mortar.
 - b. Discoloration or damage to brick from improper mortar clean-up.
 - c. Loss of bond between mortar and brick work.
 - d. Fracturing of brick edges from improper mortar joint preparation procedures or improper mortar formulation.
 - e. Occurrence of efflorescence.

PART TWO - MATERIALS

2.01 Materials - General

- A. Grade and Quality: Materials shall conform to requirements of this Section and shall be new, free from defects, and of recent manufacturer.
- B. Ready-Mixed Products: Whenever a ready-mixed product is specified for use, containers shall bear labels, giving exact formula of mixture. Manufacturer shall guarantee formula, and products shall be subject to chemical analysis by a laboratory selected by the Architect.
- C. Manufacturer's Instructions: Comply with material manufacturer's instructions for use of products (including surface preparation, mixing, applying, drying, etc.) In case of conflict with requirements of this Section, the more stringent requirements shall govern.
- D. ASTM Standards: All materials shall comply with relevant ASTM standards
- E. Chemical materials shall be safe for use and not in violation of federal, state, or local laws and regulations.
- F. Substitutions: The Contractor shall not be permitted the option of substituting "equivalent" materials for the specified materials without prior written permission of the Architect. Consideration of "equivalent" materials will occur only upon the Contractor's submission of all of the following information to the satisfaction of the Architect.
- G. Successful in-place installation: Three (3) successful examples of in-place installation for no less than ten (10) years similar to the conditions of this particular project.

2.02 Mortar for Brick Rebuilding and Repair

- A. General: Setting mortar shall match original in appearance and physical characteristics. Mortar that is not normally visible does not require special coloring.
- B. Cement: ASTM C 150 Type I (provide both gray and white as needed, proportioned for proper color mix).
- C. Lime: Hydrated High-Calcium masons lime, ASTM C 207.

- A. Sand: Clean sharp sand free of loam, silt, soluble salts and organic matter. Sand shall contain no more than 50 parts per million of chloride ions and shall be free of organic contaminants. Aggregate shall conform to ASTM C 144, unless otherwise required to accommodate joint widths.
 - 1. Provide fine sand to accommodate extremely thin existing joints, and to match size, texture, and gradation in existing mortar as closely as possible.
- E. Premixed mortar: Use of pre mixed mortar may be permitted as a substitute for separate mix components. Submit product and Manufacturer for Architects approval. Color of mortar to match existing.
- F. Water: Potable, free of deleterious amounts of oils, acids, rust, alkalis and organic matter.
- G. Pigments: Should the mortar require artificial coloring, provide natural and synthetic iron oxides and chromium oxides, compounded for mortar mixes. Use inorganic pigments that are described by the manufacturer as being alkali stable and that are packaged as dry colors. Do not exceed 10% by weight of cement. (Do not use more than two 5-pound boxes of pigment to one bag of cement.) Use only pigments with record of satisfactory performance in masonry mortars. Provide colors as may be determined necessary by samples and mock-ups. The following are acceptable products:
 - 1. Rainbow Cement Pigment Colors as manufactured by Empire White Products, Newark, NJ, or approved equal.
- H. Mortar Mix: Prepare mortar mix for masonry proportioned to match existing per mortar analysis.
 - 1. Match existing mortar in color, profile, hardness and texture.
 - 2. Setting bed mortar shall contain minimum amount of water necessary to produce a workable consistency.
 - 3. Do not use admixtures of any kind in the mortar unless prior written approval is given by the Architect.

2.03 Granite Brick Unit Masonry

- A. The bricks for the masonry walls shall be new units to match existing in color, texture, size, and configuration as approved by the Architect, or carefully salvaged full bricks from the job without defects or old mortar.
 - 1. Parapets: Match existing original as approved by the Architect and Owner.

2.04 Masonry Ties and Reinforcement

- A. Metal Components - General: All metal components required for the work of this Section shall be made of stainless steel, Type 302/304 unless specifically stated otherwise in the Drawings or the Specifications.
- B. Inverted angles: comply with ASTM A 36. Size shall be approved by the Architect or Engineer.
- C. Brick Ties for Anchoring New Brick to Back-Up Masonry: Provide products from one of the following manufacturers, or approved equal.
 - 1. #401 and #403 Buck and Frame Anchor, 16 gauge, 1-1/2" wide, stainless steel, as manufactured by Dur-O-Wal (800-468-2035).

2. #345 Corrugated Buck Anchor, 126 gauge, 1-1/2" wide, stainless steel, as manufactured by Hohman & Barnard (800-645-0616).
- D. Brick Ties for Anchoring New Brick to Spandrel Webs: Provide products from one of the following manufacturers, or approved equal.
1. D/A 709 anchor, 1/4" diameter, stainless steel, as manufactured by Dur-O-Wal.
 2. #VWT Vee Wall Tie, 1/4" diameter, stainless steel, as manufactured by Hohman & Barnard.
- E. Wall Trusses: Dur-O-Wal Truss, Composite Wall Type, stainless steel with 9 gauge rods, as manufactured by Dur-O-Wal, or approved equal. Provide width as recommended by manufacturer.
- F. Joint Stabilizers: Provide products from one of the following manufacturers, or approved equal.
1. D/A 2200 Joint Stabilization Anchors, stainless steel, as manufactured by Dur-O-Wal.
 2. Slip-Set Stabilizer, stainless steel, as manufactured by Hohman & Barnard.
- G. Coping Stone Anchors: 1/4" diameter x 6" stainless steel threaded eye rod with 1/4" diameter x 5" stainless steel dowels.
- H. Dowels for Installing New Sills: 1/4" or 3/8" diameter stainless steel threaded rods, conforming to ASTM A 82 or A 16, as manufactured by Hohman Barnard (516-234-0600), or approved equal.
- I. Reinforcing: 2 (two) #4 galvanized, embossed reinforcing bars, complying with ASTM A 615, Grade 40 or Grade 60 steel. Cover with 2" of material for bars greater than 5/8" and 1-1/2" of material for bars 5/8" or smaller.
- J. Expansion joint: Use Emseal for expansion joints in masonry (TBD)
- J. Epoxy: Provide the following products, or approved equal.
1. Sikadur 32, Hi-Mod, high-modulus, high-strength, epoxy bonding/grouting adhesive, as manufactured by Sika Corporation (201-933-8800).
 - a. Epoxy shall be a multipurpose, two-component, 100% solids, moisture-insensitive, structural epoxy adhesive which conforms to ASTM C 881 and AASHTO M 235 specifications.
 - b. Epoxy shall be capable of bonding fresh, plastic concrete to hardened concrete and steel; of grouting bolts, dowels and pins, etc; of grouting horizontal cracks in structural concrete and wood by gravity feed; of being a machinery and 'robotic' base-plate grout; and of acting as a structural adhesive for concrete, masonry, metal, wood, etc.
 - c. Epoxy shall be a super-strength bonding/grouting adhesive which is insensitive to moisture before, during and after cure, and shall have excellent adhesion to most structural materials. It shall have a convenient easy-to-mix ratio by volume. It shall be easy-to-use for bonding/grouting applications, free of service-inhibiting polysulfides, and have a fast initial set with rapid gain to ultimate strengths.
 2. Sikadur 52, super-low-viscosity, moisture-insensitive epoxy injection adhesive, as manufactured by Sika Corporation.

- a. Epoxy shall be a two-component, 100% solids, moisture-insensitive, epoxy adhesive. Epoxy shall be a super-low-viscosity, high-strength adhesive formulated specifically for grouting both dry and damp cracks which conforms to ASTM C 881 and AASHTO M 235 specifications.
- b. Epoxy shall be capable of being used neat for gravity feed or pressure injection of cracks in structural concrete, masonry, wood, etc. Epoxy shall be capable of sealing interior slabs and exterior above grade slabs from water, chlorides and mild chemical attack to improve wearability.
- c. Epoxy shall be a tenacious crack-sealing grout with a convenient easy mix ratio by volume. It shall be a high-strength adhesive for 'can't dry' cracks.

2.06 Remover for Removing Sealant Residue from Masonry: HydroClean HT-350 Epoxy and Urethane Paint Remover manufactured by Hydrochemical Techniques, Inc., P.O Box 2078 Hartford, CT, 00615, 860.527.6350 telephone.

2.07 Miscellaneous Materials

- A. Weep slots: Quadro vent weep slots gray in color.
- B. Sealant: Refer to Section 07 92 02, Joint Sealers.
- C. Backer Rod: Refer to Section 07 92 2, Joint Sealers.
- D. Metal Flashing: Refer to Section 07 62 00, Flashing and Sheet Metal.
- E. pH Test Strips: "colorpHast" pH indicator strips, non-bleeding, pH range 0- 14, available from EM Science, 480 Democrat Road, Gibbstown, NJ 08027.
- F. Inner-Wall Flashing System: Use the following products, or an approved equal system. All components of any proposed alternate waterproofing system must be compatible.
 1. Membrane: Bituthene 4000 Membrane, as manufactured by WR Grace (800-447-1982).
 - a. Membrane shall be a self-adhesive, cold-applied composite sheet consisting of a thickness of 1.4 mm (0.056 in) of rubberized asphalt and 0.1 mm (0.004 in) of cross-laminated, high-density polyethylene film specially formulated for use with water-based surface conditioner. Provide rubberized membrane covered with a release sheet which is removed during installation. No special adhesive or heat shall be required to form laps.
 - b. Properties: The physical properties of the flashing membrane shall conform to the following:

Properties	Test Method	Typical Value
Thickness	ASTM A 3767 Method A	1.5 mm (0.06 in)
Flexibility, 180 degree Bend over 25 mm (1 in) Mandrel at -43 degrees C (-45 degrees F)	ASTM D 1970	Unaffected
Tensile Strength, Membrane Die C	ASTM D 412 Modified*	2240 kPa (325 lbs/sq in)

Tensile Strength, Film	ASTM D 882 Modified*	34.5 MPa (5,000 lbs/sq in) minimum
Elongation, Ultimate Failure of Rubberized Asphalt	ASTM D 412 Modified*	300% minimum
Crack Cycling at -32 degrees C (-25 degrees F), 100 Cycles	ASTM C 836	Unaffected
Lap Adhesion at Minimum Application Temperature	ASTM 1876 **	880 N/m (5 lbs/in)
Peel Strength	ASTM D 903 Modified ***	1576 N/m (9 lbs/in)
Puncture Resistance, Membrane	ASTM E 154	222 N (50 lbs) minimum
Resistance to Hydrostatic Head	ASTM D 5385	70 m (231 ft) of water
Permeance	ASTM E 96, Section 12 – Water Method	2.9 ng/sq m sPa (0.05 perms) maximum
Water Absorption	ASTM D 570	0.1% maximum

* Test is run at a rate of 50 mm (2 in) per minute.

** The test is conducted 15 minutes after the lap is formed and run at a rate of 50 mm (2 in) per minute at –4 degrees C (25 degrees F).

*** The 180 degree peel strength is run at a rate of 300 mm (12 in) per minute.

2. Mastic/Sealant: EM-3000 Bituthene Mastic, as manufactured by WR Grace.

- a. Sealant shall be rubberized asphalt-based mastic with excellent adhesion to structural concrete, masonry, metal and wood. The VOC content shall be 200 g/L maximum.
- b. The sealant shall be designed to seal terminations, edges of patches, and overlaps in detail areas. On vertical applications, sealant must be applied to the top and bottom terminations, as well as perimeter (end dams).
- c. Sealant shall be an integral part of the Bituthene waterproofing system. It shall not be applied where it will be covered with Bituthene membrane, except as permitted as a temporary cutoff. It shall not be used as a primary waterproofing material.

3. Primer: Bituthene Water-Based Primer, as manufactured by WR Grace.

- a. Primer shall be a water-based latex primer which is specifically formulated to bind dust and concrete efflorescence, thereby providing a suitable surface for Bituthene membranes.
- b. Primer shall promote good initial adhesion and more importantly, excellent permanent adhesion of Bituthene membranes.
- c. Primer shall be VOC compliant.
- d. Primer shall be capable of being used to prime all structural concrete, masonry, metal or wood surfaces on which Bituthene membranes will be applied.
- e. Primer shall be packaged ready-to-use.

PART THREE - EXECUTION

3.01 Quality Control Panels

- A. General: Provide quality control panels for sealant removal following requirements of "Quality Control Panels" Article, above.

- 1. Do not begin sealant removal until the Architect has approved quality control panels.

3.02 General

- A. Brick Ties: New brickwork installation shall be tied to adjacent masonry with a minimum of one stainless steel tie every two square feet.
- B. Steel: All steel (including reinforcing bars used to anchor parapets) exposed during the course of the work shall be scraped, cleaned with wire brushes, and primed. Contractor shall inspect steel and bring steel which has lost more than 10% of its thickness to the attention of the Architect.
- C. Lintel Flashing: Sheet Metal Flashing shall be installed over new lintels. Flashing shall be secured to back-up material. Fluid-applied flashing membrane shall installed atop metal flashing and adhered to masonry backup.
- D. Weep Slots: Weep slots shall be installed and staggered on 16" horizontal centers in the course of brickwork sitting directly on flashing as well as the second course above flashing.
- E. Galvanic Separation: Provide adequate galvanic protection between dissimilar metals. Seal flashing at all penetrations.
- F. Shoring: Provide adequate temporary shoring as necessary to perform the work described herein. Remove and dispose of temporary shoring when completed.

3.02 Mortar Mixing and Installation

- A. Mortar mix shall be based on mortar sample analysis and as approved by Architect.
- B. Measure by volume or equivalent weight. Do not measure by shovel - use known measure.
- C. Mix ingredients in clean mechanical batcher for 3 to 5 minutes.
- D. Water content for repointing mortar shall contain maximum amount of water to produce a workable consistency. Do not make mixture too wet - avoid bleeding of water and segregation of constituents. A mortar is workable if its consistency allows it to be spread with little effort and if it will readily adhere to vertical masonry surfaces.
- E. Water content for setting bed mortar shall contain minimum amount of water necessary to produce a workable consistency.
- F. Let mortar set for 20 minutes prior to use to allow for initial shrinkage. Place mortar within 2 hours of mixing. Do not re-temper or use partially hardened material.
- G. Place repointing mortar in layers no thicker than 1/2 inch. Roughen surface of each layer to provide key for next.
- H. Keep mortar damp (80-90% RH) for 72 hours or until mortar is set.
- I. Match existing mortar in color, texture, and profile.

- J. The use of admixtures will not be permitted without the prior written approval of the Architect.

3.03 Brick Replacement

A. Extent and Location:

1. Selectively remove defective brick and replace to match existing.
2. Remove adequate brickwork and cracked bricks at vertical cracks in order to remedially install vertical expansion joints where complete rebuilding is not scheduled.

- B. Removals: Carefully remove brick by hand. Cut out full units from joint to joint and in manner to permit replacement with full size units. It is the sole responsibility of the Contractor to protect all masonry surrounding masonry designated for removal, and, if necessary, to replace other masonry damaged by the removal. Do not cut headers.

- C. Shoring: Support and protect remaining masonry which surrounds removal area. Provide adequate shoring as necessary.

- D. Cleaning: Clean remaining brick at edges of removal areas by removing mortar, dust, and loose debris in preparation for rebuilding.

- E. Installation: Install new brick to replace and match removed masonry, anchored to back-up every 2 sq ft. Fit replacement units into bonding and coursing pattern of existing masonry. If cutting is required, use motor driven saw designed to cut masonry with clean, sharp unchipped edges. Wet bricks so that units are nearly saturated but surface dry when laid. Lay replacement brick with completely filled bed, head and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Maintain joint width for replacement units to match existing.

- F. Tooling: Tool exposed mortar joints in restored areas to match joints of surrounding existing brickwork.

- G. Repointing: Repoint new mortar joints in restored area to comply with requirements for repointing existing masonry, except rake out joints before mortar sets.

- H. Waterproofing Repair: Where brick replacement affects existing waterproofing membranes, base flashing and/or cap flashing, it is the Contractor's responsibility to repair waterproofing, base flashing and/or cap flashing as required to maintain watertightness. Follow existing waterproofing manufacturer's recommendations. All work shall be performed so as not to void any existing warranties.

3.04 Masonry Rebuilding

- A. Extent and Location: Parapet rebuilding shall occur where designated on Drawings.

- B. Removal: Dismantle parapet where indicated on Drawings. Salvage existing coping stones, if designated for reuse, and non-destructively label for reassembly in same locations.

- C. New Cap Flashing: Install new copper thru-wall stepped cap flashing at rebuilt parapets as indicated on Drawings. Refer to Section 07 62 00 – Flashing and Sheet Metal. Tie into existing or new cap flashing and provide end dams if necessary.

- D. Spandrel Beam: Clean, prime and waterproof exposed steel spandrel using membrane flashing as per manufacturer's instructions. Install inner-wall membrane flashing on all exposed structural steel. Provide end dams.

- E. Vertical Reinforcement: Weld vertical reinforcement to spandrel beam on 2'-0" horizontal centers before installing flashing membrane. Seal all penetrations through flashing.
- F. Rebuilding: Proceed with masonry rebuilding as shown on Drawings. Install brick ties and weep tubes as indicated on Drawings. Integrate new base flashing at rebuilt parapet with existing waterproofing membranes so as not to void any possible warranties and to provide watertight conditions. Follow existing waterproofing manufacturer's recommendations.
- G. Expansion Joints: Rebuilding of parapet walls shall include vertical expansion joints through the entire width of the parapet at all junctures between the rebuilt parapets and existing parapets to remain (unless directed by the Architect or the Drawings to do otherwise). Masonry on both sides of expansion joints shall be anchored using stainless steel joint stabilizing anchors installed every six (6) brick courses in all wythes of brick, as shown on Drawings. Refer to Section 07 92 02 – Joint Sealers for sealant type and installation.
- H. Coping Stones: After completion of parapet brickwork, install thru-wall flashing and reset existing coping stones or install existing coping stones and railings as specified in item 3.5 below.
- I. Shoring: Support and protect remaining masonry which surrounds removal area. Provide adequate shoring as necessary.

3.05 Coping Stone Resetting and New Coping Stone Setting

- A. Removal: Carefully remove existing coping stones designated for resetting and non-destructively label for reassembly in same locations. Dispose of coping stones to be removed and replaced.
- B. Flashing: Install 26 Ga Stainless Steel ASTM 304 three-way thru-wall interlocking flashing on top of parapet (refer to Section 07620 – Flashing and Sheet Metal). Provide galvanic protection between dissimilar metals. Seal all penetrations.
- C. Anchorage into Parapets: Drill into parapet at location of transverse joints of copings. Install 1/4" diameter x 6" stainless steel threaded eye rod with 1/4" diameter x 5" stainless steel horizontal dowel. Install one for each transverse joint. Bed in epoxy.
- D. Coping Stone Anchoring: Drill 3/8" diameter x 3" holes in the ends of all coping stones to be reset. Provide similar dowel holes in replacement coping stones.
- E. Installation: Set coping stones in mortar on top of copper thru-wall flashing. Insert dowels at the transverse joints into drilled holes in coping stone ends. Bed in epoxy. Refer to Drawings.
- F. Joint Treatment: Back point to within 1" of coping stone surface. Install backer rod and sealant at all transverse joints. Refer to Section 07 92 02 – Joint Sealers.

3.06 Shelf angle Repairs (IF REQUIRED)

- A. Preparation: Where indicated on Drawings, expose steel shelf angle for repair. Remove brickwork to level of window lintels directly below. Thoroughly scrape corrosion from exposed steel as required. Bring any losses of 10% or more in section to the immediate attention of the Architect. Any reinforcement of steel required shall be performed on a unit price basis. Prime steel.
- B. Flashing: Install inner-wall flashing. Provide inner-wall flashing which is continuous to replaced lintels below. Install staggered weeps 16" OC in the two courses of rebuilt brickwork directly above bottom of

flashing. Rebuild brickwork to match existing using masonry ties every 2 sq ft per code. Seal all penetrations through flashing.

3.07 Application of Sealant on Cut Brick: Following all manufacturers recommendations.

3.08 Removal of Sealants from Masonry Surfaces

- A. General: Clean masonry free of sealants using mechanical means and chemical removers. Cleaned masonry shall match accepted quality control panels to Architect's satisfaction.
- B. Mechanical Removal: Physically remove as much sealant as possible without damaging the substrate. Cut, peel off, and scrape sealant to remove as much material as possible using wood scrapers. Do not damage surfaces of masonry units.
- C. Chemical Removal:
 - 1. Apply specified remover to sealant residue. Allow remover to soften residue. Dwell time shall be determined by test results.
 - 2. Remove softened sealant residue and dispose of following manufacturer's recommendations.
 - 3. Rinse masonry surfaces.
 - 4. Repeat above process as required to remove material adhering to masonry surface.
 - 5. Neutralize masonry as recommended by manufacturer.
- D. Repeat removal as specified above to achieve uniformly cleaned masonry surfaces matching accepted quality control panels.

3.09 Final Cleaning

- A. Cleaning: After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter using stiff nylon or bristle brushes and clean water spray applied at low pressure.
- B. Scrapers: Use of metal scrapers or brushes will not be permitted.
- C. Acid: Use of acid or alkali cleaning agents will not be permitted.

END OF SECTION 04 01 20.91

SECTION 04 01 20.52 – UNIT MASONRY CLEANING

PART ONE – GENERAL

1.01 Related Documents

- A. General Contract Provisions and the General Requirements of Division One apply to the work of this Section.

1.02 Work Summary

- A. Work under this Section shall also consist in general, of all coordination, labor, materials and equipment required to clean atmospheric, metallic, and biological staining and soiling from all exterior masonry surfaces, using the gentlest means possible to restore the surfaces to as near original appearance as possible consistent with safety for the substrate. Cleaning procedures are to include and contemplate all adjacent building fabric. Multiple applications should be anticipated. All as indicated on the Drawings and as specified herein.

- 1. Work areas consist of façades of entire building shown on the drawings

- B. Walkthrough: Before bidding, the Contractor shall visit the site, perform a walkthrough to examine the existing masonry, and carefully study the plans and specifications to ascertain work conditions and the nature and exact quantity of work to be performed. Pay special attention to requirements for retaining as much original material as possible. Inspect the brick for cracking, spalling, losses, glaze conditions, potential hidden anchorage and structural conditions and any other deficiencies. The Contractor shall notify the Architect in writing, and before submitting a bid, of any and all discrepancies between the existing conditions and the drawings and specifications.

1.03 Work Specified Elsewhere

- A. See Division One, General Requirements
- B. See Section 01 33 00, Submittals
- B. See Section 01 73 29, Cutting and patching
- C. See Section 02 41 19.13, Selective Building Demolition
- D. See Section 04 01 20.91, Unit Masonry Restoration
- G. See Section 04 05 113, Masonry Repointing
- I. See Section 07 62 00, Flashing and Sheet Metal
- J. See Section 07 92 02, Exterior Joint Sealants

1.04 Quality Assurance

- A. Reference Standards

- 1. U.S. National Park Service, Preservation Brief No. 1 "The Cleaning and Waterproof Coating of Masonry Buildings"
 - 2. U.S. National Park Service, Preservation Brief No. 2 "Repointing Mortar Joints in Historic Masonry Buildings"
 - 3. U.S. National Park Service, "Keeping It Clean/Removing Exterior Dirt, Paint, Stains and Graffiti from Historic Masonry Buildings."
 - 4. ANSI A41.1, "American Standards Building Code Requirements for Masonry."
 - 5. BIA, "Technical Notes on Brick Construction."

1.05 Submittals and Shop Drawings

A. General

1. Comply with all Division 1 requirements, including Section 01 43 00, Quality Assurance.
2. Proof of experience requirements for firm doing the actual work.
3. Designation and qualifications for the Restoration Specialist.
4. Product manufacturers' product literature, including MSDSs.
5. Proposed work plan including but not limited to work sequence, method of scaffolding/rigging, etc.

B. Samples

1. All cleaning methods and materials shall be field tested for each specific condition. The Architect shall approve the method, designate the area to be tested and shall be called to inspect the test, prior to general application.
2. Materials adjacent to areas to be cleaned shall be tested for reactions to the cleaning method. The Architect shall approve the method, designate the area to be tested and shall be called to inspect prior to general application.

C. Daily Log and Record: The Contractor shall keep a daily log and drawings recording the work progress. The log and drawings will be reviewed and their status will be determined at each regularly scheduled construction progress meeting with the Contractor and for each application/request for payment made by the Contractor. The Contractor's log and markups on drawings will become part of the permanent record filed with the Owner and the Architect. This will serve as an "as-built" reference. The following shall be recorded on each day of work:

1. Temperature and weather conditions.
2. All deliveries made to site.
3. Type and size of teams of labor on site.
4. Type, quantity and location of work being performed.
5. Identify on building elevation drawings and/or on details, as necessary to clearly convey the required information, all affected masonry units, showing type, location and quantity or size of work or activity performed.
6. Unforeseen conditions, and items needing repair that were not previously documented, should be recorded on the drawing elevations and submitted to the Architect for review and approval prior to carrying out the repairs. The Architect will determine final approval for additional repairs.

D. Work under this Section must be performed by a firm which has been in the everyday business of masonry building restoration, cleaning and repointing for a minimum of ten years successful operation. Such experience must include projects of scope and extent comparable to this project. The qualifying firm must designate a given individual with commensurate experience to act as the "Restoration Specialist" for purposes of this Contract. Designation of the Restoration Specialist must be approved by the Architect.

E. If the preceding requirement cannot be met, the work must be done under the technical supervision of a qualifying third party restoration specialist whose credentials conform to the requirements set forth in Section 01 43 00, Quality Assurance.

1.06 Contractor's Guarantee: The Contractor guarantees to the Owner that said Contractor shall be responsible for any defective materials and workmanship installed by him for a period of two (2) years. The period of guarantee shall start from the date of Owner acceptance of the Work. The Contractor further guarantees to make permanent repairs forthwith to restore the defective areas, and to make permanent repairs without reference to or consideration of the cause of any defects in the work.

- A. Contractor guarantees that cleaning procedures will not harm substrate or adjacent materials including, but not limited to, the following:
 - 1. Discoloration of substrate from improper product usage.
 - 2. Chemical damage from inadequate rinse procedures.
 - 3. Improper substrate preparation from inadequate rinse procedures.
 - 4. Abrasive damage from improper procedures.

1.07 Delivery, Storage, and Handling

- A. Materials shall be delivered, stored, and handled to protect them from damage, extreme temperature, and moisture in accordance with Manufacturer's written instructions.
- B. Deliver and store material in Manufacturer's original, unopened containers with the production date shown on the container or packaging.
- C. Comply with the Manufacturer's written specifications and recommendations for mixing, application, and curing of mortars.

PART TWO - MATERIALS

2.01 Cleaners

- A. For Brick: 101G Granite, Terra Cotta, and Brick Cleaner by Diedrich Technologies, Inc. 7373 South 6th Street, Oak Creek, WI 53154, 800.323.3565 telephone, 414.764.6993 fax or Architect approved equal.
- B. Solution Preparation
 - 1. Dilute chemical cleaners with water to produce solutions of concentration recommended by chemical cleaner Manufacturer, unless otherwise indicated by tests and mockups, or as directed by the Architect.
 - 2. Recommended dilution is 1:6 chemical to water.

PART THREE – EXECUTION

3.01 General

- A. All masonry cleaning work shall be executed as per the Reference Standards, these Specifications and the Drawings.
- B. Prepare and submit for the approval of the Architect, the Contractor's Restoration Program as required in the Quality Assurance article of this Specification. Contractor's Approved Restoration Program shall describe each phase of the Work of this Project including, but not limited to, the materials, methods, equipment and sequencing necessary to accomplish the intent of these documents.
- C. Contractor shall clean a minimum of four (4) test areas of at least 25 square feet each, on each of the three different types of brickwork, using the specified products and techniques, demonstrating the required level of cleaning for the Architect's approval. Architect will specify the location of all test panels.
 - 1. Allow a waiting period of not less than 7 days after completion of sample cleaning to permit a study of sample panels for negative reactions.

- D. Contractor's Restoration Specialist shall submit written results of tests, outlining methods, materials, pressures, nozzle types and sizes, etc. Obtain approval of Architect before proceeding. Accepted mock-up panels shall form the standard for quality of work for the entire project.

3.02 Performance

- A. The Work shall be done using the products and techniques established in the accepted test panels. Any proposed change of product or technique must be submitted with the product manufacturer's recommendation, and written approval must be issued by the Architect before being undertaken. Actual work shall be monitored by the Restoration Specialist.

3.03 Periodic Re-evaluation of Methods and Results

- A. As the work proceeds, the procedures being used and the results being obtained must be continually re-evaluated by the Contractor and Restoration Specialist in terms of the actual substrate condition being found as the job proceeds. As a condition of the Project, the Contractor is responsible for reporting changing conditions to the Architect and for interrupting the work as needed to allow the Architect's review, without request for additional compensation.
- B. After the report and pause for changing conditions as noted above, the job site testing procedures in Part Three – Execution, 3.2 Test Panels and Mock-ups of this Section will be repeated until an acceptable new procedure is established. Work sequence then reverts to Part Three – Execution, 3.3 Performance.
- C. Contractor shall be responsible for damages or inadequate work when conditions change and the work is continued without notice to the Architect. The Contractor will be required to take corrective measures to repair and/or replace damaged work, and to do inadequate work over again, without additional compensation, to the full satisfaction of the Architect.

3.04 Inspection Documentation

- A. At the end of the cleaning, repointing, and other masonry repairs, the Work shall be inspected and documented by the Restoration Specialist for Architect's consideration.

3.05 Cleaning

A. General

1. The Contractor is responsible for taking all precautions to avoid harm to building occupants, pedestrians, near-by property, vehicles, foliage, metals, and all non-masonry and acid-sensitive surfaces that may come into contact with chemicals used for cleaning, cleaning residues, rinses, and fumes.
2. The Contractor is responsible for taking all precautions to prevent wind drift of chemical solutions that may injure passersby, damage vehicles, or adjacent properties. The Contractor shall protect or coordinate the required protection of pedestrian and auto traffic.
3. Cleaning shall not be performed within 30 days of composite patching or pointing or other masonry repair techniques to allow for repairs to cure fully.
4. The Contractor shall submit a schedule of cleaning and a plan for the protection of all surrounding materials.

5. Safety lines and suspended scaffolding, if any are used, must be equipped with steel or synthetic fiber ropes.
6. All workers must wear protective gear to avoid chemical contact with skin and eyes.

B. Cleaning Methods - General

1. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.
2. Removing Plant Growth: Completely remove plant, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allowing to dry as long as possible before removal. Remove loose soil and debris from open masonry joints to whatever depth they occur.
3. Product data sheets shall be consulted prior to commencement of cleaning so that all necessary precautions will be planned and instituted.
4. If substitute cleaning materials or methods are proposed, they must be "approved equals" and be submitted to the Architect for review and approval. No substitutions will be allowed unless they meet the specified Quality Assurance requirements and successfully complete the testing procedures outlined in this Specification and as directed by the Architect.
5. A pressure washer spray not to exceed 300 PSI shall be used for pre-wetting and rinsing of masonry surfaces, and equipped with a fan-shaped spray tip which disperses water at an angle of 45 degrees.
6. Brushes shall be stiff natural bristle brushes or soft-fibered masonry washing brushes, never metal. Spatulas and trowels shall be corrosion resistant (plastic). Metal tools and fittings that could corrode or deposit corrosion products on the masonry shall not be used.
7. Surrounding areas shall be protected from contact with chemical cleaning agents and rinse water, with special attention to adjacent surfaces and all other surfaces that would be adversely affected if placed in contact with the chemical cleaning agents. Remove any spilled materials immediately and rinse well.
8. pH readings shall be taken and recorded before beginning all cleaning operations and after cleaning to ensure that chemicals are completely rinsed from masonry surfaces. If the pH does not read neutral, repeat the rinsing procedure until pH is neutral.
9. Clean masonry from the bottom up to avoid streaking. Always prewet the masonry before using a cleaning solution.

C. Brick Cleaning

1. Carefully pre-wet the masonry prior to application of the chemical. The masonry must be wet for several minutes.
2. Treat pre-wetted areas of affected masonry with Diedrich 101G, diluted 1:6 in water. The area shall be kept continuously wet during the cleaning, as the chemical solution must not dry on the brick.

3. After a dwell time of 3 to 5 minutes, remove the chemical residue from the surface with a light pressure-wash spray of approximately 300 to 500 psi.
4. Repeat applications only as required to conform to the approved sample. Repetition should be avoided, if possible.
5. Verify the pH of the wall upon completion of rinsing to ensure that the wall has a neutral pH. Test a representative number of locations over the entire cleaned area.

D. Special Considerations

1. Comply with all environmental regulations (City, State, and Federal) regarding VOCs and effluent collection and disposal. Effluent shall be collected and neutralized. Do not allow run-off from the cleaning process to enter the sewer system, contaminate water supplies or to enter natural bodies of water. Dispose of effluent in a safe and legal manner. The Contractor shall be responsible for complying with all requirements of the NYC Department of Sanitation and Department of Environmental Protection .

3.07 Window Frame Protection

- A. Protect window frames using polyethylene secured by duct tape. Do not use masking tape.
- B. When applying cleaners around protected frames, carefully apply to avoid contacting the protected frame surfaces.
- C. Any accidental spill, drip, or splash must be cleaned off protected frames immediately, to ensure that the stripper does not contact frame surfaces.
- D. Do not remove window frame protection until all stripping, cleaning and rinsing is complete. If protection comes loose, it must be resecured before work can proceed.

3.08 Waste Disposal

- A. Regulations regarding pollution or contamination of any land or waters, require users of cleaners to take special precautions when dealing with wastes generated by the paint removal and cleaning process.
- B. Wastes may be classified as "hazardous" if determined to be corrosive, toxic, or both. Do not permit waste waters to seep into the ground or discharge to any separate storm sewer. Do not permit waste waters to discharge to any sanitary sewer prior to testing. In the absence of testing, wastes should be considered hazardous, collected, and disposed of according to local, state, and federal regulations.
- C. Consult appropriate local, state, and federal regulations regarding wasted disposal or discharge. Comply with all pertinent regulations of NYC Department of Sanitation and Department of Environmental Protection.

3.09 Metal Joint Covers: Provide Lead Weathercaps. Refer to Section 07 92 02. Exterior Joint Sealants.

- A. All cross (transverse) joints in masonry, copings, cap stones, parapets, sills, ledges, watertables and other projections of 6 inches or more shall be covered with preformed lead weathercaps set in sealant. Prepare joints, including cutting out joints, cleaning and taping of adjacent masonry. Provide and install all bond breakers, primers and backer rods as recommended by the sealant and weathercap manufacturers.

3.10 Final Cleandown of Building

- A. At the completion of all cleaning operations perform final cleandown of building to remove all traces of chemical cleaners. Use only clean water and low-pressure rinsing equipment. Chemical cleaners and acids are prohibited.
- B. Remove all protection erected only for the cleaning operations.

END OF SECTION 04 01 20.52

SECTION 04 05 13 – MASONRY POINTING

PART ONE - GENERAL

1.01 Related Documents

- A. General Contract Provisions and the General Requirements of Division One apply to the work of this Section.

1.02 Work Summary

- A. Work under this Section shall consist in general, of all coordination, labor, materials, services, and equipment required to complete masonry pointing as shown on the drawings and specified herein, including, but not limited to, the following:
 - 1. Repoint the existing joints in brick masonry as shown on the drawings, removing existing mortar, preparing mortar surfaces, installing new mortar, and tooling joints to match original mortar color, texture, and profile.
 - 2. Cleaning excess mortar from masonry surfaces.

1.03 Work Specified Elsewhere

- A. See Division One, General Requirements
- B. See Section 01 33 00, Submittals
- C. See Section 01 73 29, Cutting and Patching
- D. See Section 02 41 19.13, Selective Building Demolition
- E. See Section 04 01 20.53, Unit Masonry Cleaning
- F. See Section 04 01 20.61, Cold Weather Masonry
- G. See Section 04 05 13, Masonry Repointing

1.04 Quality Assurance

- A. Reference Standards
 - 1. U.S. National Park Service, Preservation Brief No. 1 "The Cleaning and Waterproof Coating of Masonry Buildings."
 - 2. U.S. National Park Service, Preservation Brief No. 2 "Repointing Mortar Joints in Historic Masonry Buildings."
 - 3. U.S. National Park Service, "Keeping It Clean/Removing Exterior Dirt, Paint, Stains and Graffiti from Historic Masonry Buildings."
 - 4. ANSI A41.1, "American Standards Building Code Requirements for Masonry."
 - 5. BIA, "Technical Notes on Brick Construction."
- B. Restoration Specialist: Contractor that performs masonry pointing shall be regularly engaged in pointing masonry on historic buildings. Contractor shall demonstrate to the Architect and Owner's satisfaction that, within previous five (5) years, he has successfully performed and completed in a timely manner at least three (6) projects similar in scope and type to required work involving facilities designated as Landmarks by the New York Landmarks Preservation Commission, buildings designated as Landmarks by other local governmental authorities; or buildings listed on the National Register of Historic Places or on a State Register of Historic Places.
 - 1. Sub-Contractors: Sub-contractors are bound by the same requirements as the Contractor. No sub-contractors shall be employed unless approved in writing by the Architect.

2. Foreman: Masonry pointing shall be directly supervised by a full-time foreman with experience equal to or greater than required of the Restoration Specialist. The Foreman shall read and speak English fluently. The Foreman shall be on site daily for the duration of the Work of this Section. Same Foreman shall remain on the project throughout work unless his performance is deemed unacceptable by the Architect.
 3. Mechanics: Masonry pointing shall be carried out by a steady crew of skilled mechanics who are thoroughly experienced with materials and methods specified, have a minimum of three (3) years' experience with work on historic buildings similar to that required by this Section, and are familiar with design requirements. The Contractor shall certify that all mechanics employed for the Work of this Section fully understand the project requirements. In acceptance or rejection of this Section, no allowance will be made for workers' incompetence or lack of skill.
- C. Testing of Workers: Mechanics proposed for use on this Project will be required to successfully complete six (6) linear feet of cutting and raking of mortar joints in the presence of the Architect or Architect's representative prior to working on this Project. One one-quarter-inch chip of masonry per linear yard will be standard of acceptable skill. Unsuccessful performance in this test area will be grounds for rejection of the mechanic for this job. Mechanics will be tested for both the street and courtyard facades.
 - D. Source of Materials: Obtain materials for masonry pointing from a single source for each type of material required to ensure a match in quality, color, and texture.
 - E. Field Supervised Construction: The Contractor shall notify the Architect and Owner before beginning masonry pointing work.
 - F. Familiarity with Site Conditions: Bidders shall visit the site prior to submitting a bid and carefully examine the project scope and conditions that may affect proper execution of the work of this Section and determine or verify dimensions and quantities. Contractor's submission of a bid shall be acknowledgment that he is thoroughly familiar with the Project scope and site conditions.
 - G. Repair or replace all masonry units damaged during masonry pointing to the satisfaction of the Architect at no additional cost to the Owner.

1.05 Submittals

- A. General: Submit each item in this Section in compliance with the Conditions of the Contract and Division One Specified Sections. Revise and resubmit each item as required to obtain approval of the Architect.
- B. Qualification Data: Submit qualification data for the firm and personnel specified in "Quality Assurance" Article that demonstrates that both the firm and personnel have capabilities and experience complying with the requirements specified. For the firm and foreman, provide a list of at least six (6) completed projects within the New York metropolitan region similar in size and scope to work required on this project. For each project list project name, address, architect, conservator, supervising preservation agency, scope of Contractor's work, and other specified information. This information shall be submitted with the Form of Proposal.
- C. Submit samples for verification, before erecting the mockup, of the following:

1. Each type of mortar for pointing and masonry rebuilding and repair in the form of cured sample mortar strips, 6 inches long by ½ inch wide, set in aluminum or plastic channels. Include all mixes, harnesses, colors and textures expected in the Work.
 2. Submit cured samples of each type of composite repair mortar, coatings, etc., showing range of color and texture which can be expected in finished work.
- D. Product Literature: Manufacturer's published technical data for each product to be used in Work of this Section including recommendations for application and use. Include test reports and certificates verifying that the product complies with the specified requirements.
- E. Program of Work: Written program for joint preparation and pointing of each masonry material and condition.
1. Include a detailed description of proposed materials, methods, tools, and equipment.
 2. Include descriptions, drawings, and diagrams, outlining proposed methods and procedures for protection of personnel, public, and existing construction during Work of this Section.
 3. If alternate methods and materials to those specified are proposed for any phase of masonry pointing work, provide written description. Provide evidence of successful use on comparable projects and demonstrate effectiveness for use on this project.
- F. Prepare quality control panels as specified in Article "Quality Control Panels" below.

1.06 Quality Control Panels

- A. General: Before beginning general masonry pointing work, prepare quality control panels to provide standards for work of this Section. Do not proceed with masonry pointing until Architect has approved relevant quality control panels.
1. Locate quality control panels as directed by the Architect.
 2. Provide 48 hours' notice to the Architect prior to the start of each quality control panel.
 3. Architect or Architect's representative will monitor quality control panels. No quality control panels done in the absence of the Architect or Architect's representative will be accepted.
 4. Perform quality control panels using the crew that will be executing the Work and following the requirements of this Section.
 5. Allow each quality control panel involving mortar to stand until mortar is thoroughly dry and has reached its natural color. Notify the Architect and Owner's Designated Representative that the quality control panel is ready for inspection.
 6. Repeat quality control panels as necessary to obtain Architect's approval.
 7. Protect approved quality control panels to ensure that they are without damage, deterioration, or alteration at time of Substantial Completion.
 8. Approved quality control panels in undamaged condition at time of Substantial Completion may be incorporated into the Work.

9. Approved quality control panels will represent the minimum accepted standard for masonry pointing work. Subsequent work that does not meet the Standard of approved quality control panels will be rejected.

B. Quality Control Panels: Provide the following quality control panels:

1. Joint preparation at Main Façade Brick Masonry: Two panels including at least 12 linear feet of joint.
2. Joint preparation at Annex Brick Masonry: Two panels including at least 12 linear feet of joint.

1.07 Delivery, Storage, and Handling

A. Applicable Regulations: Perform all Work of this Section following all applicable federal, state, and local laws and regulations.

B. Safety: Provide all measures necessary to protect all persons, whether or not involved with Work of this Section, from risk or harm caused by Work of this Section.

C. Protection of Building and Property

1. Protect all adjacent elements and materials from damage or deterioration during work of this Section. Provide all necessary protection and procedures to protect masonry not being pointed and all other elements and materials.
2. Repair all damage to elements and materials caused by masonry pointing work, using mechanics experienced in the respective type of Work, to the satisfaction of the Architect at no additional cost to the Owner.
3. Protect all components of storm drainage systems against damage or blockage caused or accelerated by Work of this Section.
4. Protection from Weather: Protect all exposed areas of the building, including areas of masonry from which mortar has been removed, from penetration by wind, water, or other forces at all times when work is not in progress.

D. Protection of Environment: Provide all precautions necessary to protect site, site features, surrounding buildings, streets and sidewalks, air, water, and other elements of the environment from damage or deterioration caused by Work of this Section.

E. Dust: Minimize dissemination of dust to greatest extent possible.

1. Contractor shall hold the Architect harmless from all claims relating to dust resulting from Work of this Section.

F. Protection of Masonry being Pointed: Use all necessary care to protect existing masonry from damage during Work of this Section. Take special care in removing existing mortar to ensure that no masonry units are damaged, chipped, or broken. Contractor shall replace or repair masonry units damaged by Work of this Section as directed by and to complete satisfaction of the Architect at no additional cost to the Owner.

G. Staining: Prevent grout or mortar from staining the face of masonry to be left exposed. Protect sills, ledges, and projections, from droppings of mortar. Immediately remove grout or mortar in contact with

such masonry. Protect base of walls from rain splashed mud and mortar splatter by means of coverings spread on ground and over wall surfaces.

- H. Protection from Rain: Protect all pointed joints with heavy waterproof sheeting from direct attack by rain or other precipitation for at least 24 hours after mortar has been applied.
- I. Coordination: Coordinate Work of this Section with other Division Four Sections to ensure proper completion of all masonry Work.
- J. Access for Inspection and Approvals: Provide Architect access on a regular basis to locations on which testing or quality control panels are being carried out, on which work is ongoing, and where work has been completed to allow for inspections and approvals. Provide means of access and safety precautions required to facilitate inspections and approval.

1.09 Environmental Conditions

- A. Use materials only within manufacturers' recommended temperature ranges.
 - 1. Masonry pointing in temperatures below 40 degrees Fahrenheit shall comply with requirements of Section 04150, Cold Weather Masonry and with work proposal specifically approved by the Architect.
 - 2. Remove pointing determined by the Architect to be damaged by freezing conditions. Repoint as specified to satisfaction of the Architect at no addition cost to the Owner.
- B. Hot Weather Pointing: During hot weather, protect work from premature or too-rapid curing by use of dampened fabric coverings.

1.10 Guarantee

- A. Contractor shall guarantee for a period of two years the repointing against the following:
 - a. Discoloration or mismatch of new mortar to adjacent old mortar.
 - b. Discoloration or damage to brick from improper mortar clean-up.
 - c. Loss of bond between mortar and brick work.
 - d. Fracturing of brick edges from improper mortar joint preparation procedures or improper mortar formulation.
 - e. Occurrence of efflorescence.

PART TWO - MATERIALS

2.01 Tools

- A. Hand Tools for Joint Preparation: Chisels, hammers, and mallets.
 - 1. Thickness of Chisels: Chisels used in masonry joints shall have a maximum thickness of 5/8" times joint width extending back from the tip of chisel at least one and one half times the depth at which the chisel will be inserted into the joint.
 - 2. Special Tools: provide special knives or special thin cutter blades for use in joints less than 1/8" in width.
- B. Power Tools for Joint Preparation: Small, hand-held electric grinders with diamond or abrasive blades no greater than 3/32" thick and a maximum of 5" in diameter may be used to cut joints only under

certain conditions as described in Part Three –Execution, below and if specifically approved by the Architect.

- C. Brushes: Stiff, natural bristle brushes.
- D. Trowels for Pointing: Long, thin pointing trowels narrower than joints being pointed.
 - 1. Fabricate special trowels for pointing if necessary to provide proper insertion and compaction of mortar.

2.02 Mortar Materials General

- A. Grade and Quality: Materials shall conform to the requirements of this Section and shall be new, free from defects, and of recent manufacture
- B. Ready-Mixed Products: Wherever a ready-mix product is specified for use, containers shall bear labels giving the exact formula of mixture. Manufacture shall guarantee formula, and the product shall be subject to chemical analysis by a laboratory selected by the Architect at the Contractors expense.
- C. Manufacturer's Instructions: Comply with material manufacturer's instructions for use of products (including surface preparation, mixing, applying, drying, etc.). In case of conflict with requirements of this Section, the more stringent requirement shall govern.
- D. ASTM Standards: All materials shall comply with relevant ASTM standards.

2.03 Mortar Materials

- A. White Portland Cement: Type I, ASTM C 150
- B. Portland Cement: Type I or Type II, ASTM 150, non-staining. Do not use masonry cement.
- C. Hydrated Lime: ASTM C207, Type S.
- D. Sand: Clean sharp sand, free of loam, silt, soluble salts, organic matter, and other deleterious substances and graded in compliance with ASTM C 144. Where mortar is to match existing mortar, sand or other aggregate shall be selected to provide mortar matching color and texture of original mortar (with minimum addition of pigment).
- E. Water: Clean, potable, from city mains, and free of deleterious materials.
- F. Pigments: Stable, non-fading, alkali resistant oxide pigments.

2.04 Mixing of Mortar

- A. Measure mortar ingredients carefully so that proportions are controlled and maintained throughout all work periods.
- B. Mix mortar in an approved type of power operated batch mixer. Mix for time required to produce a homogeneous plastic mortar but not less than five minutes: approximately two minutes for mixing dry materials and not less than three minutes for mixing after water has been added.
- C. Use a minimum amount of water to produce a workable consistency for mortar's intended purpose.

1. Mortar for Pointing: As dry a consistency as will produce a mortar sufficiently plastic to be worked into joints.
 2. Mortar for Grouting: Consistency as will easily flow in cracks and voids.
 3. Mortar for Slurry: Consistency as will be brushable
- D. Where mortar or grout is required in small batches or less than one cubic yard and the Architect specifically approves, mortar may be mixed by hand in a clean wooden or metal boxes prepared for that purpose provided that mixing boxes and methods of mixing and transferring mortar are approved by the Architect.
- E. After mixing, mortars for pointing or setting shall sit for 20 minutes prior to use to allow for initial shrinkage. Mortar shall be placed in final position within two hours of mixing. Re-tempering of partially hardened material is not permitted.
- F. Mortar for grout shall be placed in its final position within two hours of mixing. Re-tempering of partially hardened material is not permitted.
- G. Custom patching materials shall be mixed in strict accordance with manufacturer's written instructions.
- 2.05 Mortar
- A. Pointing mortar shall match existing based laboratory analysis.

PART THREE EXECUTION

- 3.01 General Preparation
- A. Examine areas and conditions under which Work of this Section will be performed. Correct conditions detrimental to the timely and proper completion of Work. Do not proceed until unsatisfactory conditions have been corrected.
- B. Before using power grinders or hand methods that generate airborne dust, erect dust impervious barriers and take other measures necessary to prevent dust from traveling beyond the work platform.
- 3.02 Joint Preparation
- A. Remove mortar from joints to a depth of 3/4" or to sound mortar, whichever is greater. In all cases remove all deteriorated, weathered, and loose material.
- B. Take all necessary precautions to ensure that the faces and arrises of masonry units are not damaged in any way during joint preparation.
- C. Joint preparation shall cease if, in the judgment of the Architect, the Contractor's methods are damaging masonry units. Work shall not resume until tools, workman, and methodology have been corrected to meet quality standards of approved quality control panel.
- D. Remove completely mortar from surfaces of masonry units adjoining joint to allow new mortar to bond directly with masonry units. Surface at rear of joint shall be uniform and roughly perpendicular to sides of joint.
- E. Mortar Removal:

1. Hand Tools: Use hand tools for removal of mortar from all joints less than 6" long and from other joints in which the use of power tools might damage masonry units. Use hand tools to complete mortar removal from joints where power tools have been used partially to remove mortar.
 - a. For narrow joints of 1/8" or less in width, rake mortar from joints manually with a sharp knife blade or cutter made for this purpose. The cutter may be used with or without aid of a hammer.
 - b. Sharpen chisels hourly to minimize chipping.
 2. Power Tools: With specific prior approval from the Architect following successful demonstrations of skilled mechanics, power grinders may be used to partially remove mortar from horizontal joints in brick masonry and from joints longer than 6" where this is no danger of cutting into adjacent surfaces.
 - a. Demonstrated Ability of Mechanics: Prior to beginning work, demonstrate that workmen using power tools are proficient in use of power tools for joint preparation. Failure to demonstrate to the satisfaction of the Architect that each worker is proficient and that power tool joint preparation does not result in damage to masonry to remain shall result in the prohibition of power tool use for joint preparation. If proficiency is not demonstrated, or if work in progress results in damage to masonry to remain, all power tools work shall cease, and joints shall be prepared using hand tools.
 - b. Limitations on Use of Power Tools:
 - 1) A "Metabo" angle grinder with a thin 5" diamond blade is recommended.
 - 2) Do not use power grinders on joints less than 3/16" wide or less than 6" long or where ornamental or other surface irregularities might make damage to masonry units likely.
 - 3) Use power grinder only to score one kerf cut in the center of each joint to depth of mortar removal required. Remove remaining mortar using hand tools.
 - 4) Stop kerf at least 4" from inside corners and projecting elements. Remove remaining mortar using hand tools.
 - 5) Construct jigs to guide power tools as required to prevent damage to adjacent masonry units.
- F. Sealant Removal: Remove sealant and sealant residue from surfaces of masonry units at sides of joints following procedures specified in Section 04 01 20.91, Unit Masonry Restoration.
- G. Cleaning: Remove loose mortar and foreign materials from raked joints using a fine, stiff natural bristle brush. Remove remaining particles, dust, and dirt using filtered, oil-free compressed air. Ensure that dust and dirt are not blown back into the joints that have previously been cleaned.
- H. Repair or replace masonry units damaged during joint preparation process to the satisfaction of the Architect at no additional cost to the Owner.

3.03 Mortar Application

- A. Wetting: Thoroughly wet masonry 24 hours prior to and again immediately before pointing. Let surfaces dry slightly. At time of pointing, surfaces shall be damp, so that they do not rapidly absorb moisture, but free of standing water.
- B. Pointing: Point joints as follows:
 - 1. Using a long, thin pointing trowel, tightly pack mortar in layers not exceeding 1/4" thick to fill joint to match original sound joints approved by the Architect.
 - 2. Begin by filling areas from which mortar is missing to a depth greater than 3/4" in 1/4" thick layers to within 3/4" of wall surface to provide a uniform substrate for final pointing. Fill final 3/4" depth continuously and uniformly in 1/4" thick layers.
 - 3. Firmly iron each layer to compact mortar to ensure full bond between mortar and masonry units and a firm, solid joint.
 - 4. Allow each layer to reach thumbprint hardness before applying succeeding layer. Do not let previous layer dry out before applying succeeding layer. Construct uniform joints.
 - 5. Do not spread mortar over edges onto exposed surfaces of masonry units. Do not featheredge mortar.
 - 6. When stopping work at end of each day or for other reasons, stagger layers of mortar so that there will be no through joints in pointing. Stagger joints in layers so that they are at least 3" from each other.
 - 7. Where one day's work joins that of a previous day, dampen previous work to ensure good bond.

3.04 Joint Tooling

- A. Tooling: After final layer of mortar is "leather hard", tool joints with a flat rule jointer, or as directed by the Architect.
- B. Profile: Tool joint to profile as shown on the Drawings or to match original joint profile as directed by the Architect. Solidly compress mortar so that it adheres well to masonry on both sides and forms a dense surface. Premature or late tooling will result in unacceptable finishes that will be rejected.

3.05 Curing

- A. Keep newly pointed joints damp for at least 48 hours after mortar has been inserted. Do not apply a direct stream of water to joints for at least 48 hours after mortar has been placed.
- B. Ensure masonry temperature remains as required by Specifications until mortar is thoroughly cured.

3.06 Cleaning and Repair of Mortar Joints

- A. Water Washing: Wash pointed masonry with clean filtered water and nonabrasive hand tools to remove mortar debris from masonry surfaces.
 - 1. Wash within 48 hours following completion of pointing

2. Use blunt-edged wood scrapers, stiff natural bristle brushes, and rough trowels along with water to remove mortar debris.
- B. Repair of Pointed Joints: As cleaning progresses, examine joints to locate cracks, holes, and other defects. Carefully point up and fill such defects with mortar. Where necessary in the opinion of the Architect, cut out joints and refill with pointing mortar exercising extreme care to ensure that the color matches that of the original pointing work. Exposed joint surfaces shall be free from protruding mortar, holes, pits, depressions, and other defects.

3.07 Corrective Measures

- A. Should a crack occur in any joint surface or should mortar pull away from masonry unit, cut out mortar and repoint following the requirements of this Section to the satisfaction of the Architect.
- B. Should the Architect determine that any masonry pointing work does not equal or exceed the minimum standards established by approved quality control panels, cut mortar to a depth 3/4" and repoint following the requirements of this Section to the Architect's satisfaction.

END OF SECTION 040513

END OF DIVISION FOUR

DIVISION 5 – METALS

SECTION 05 50 00 - METAL FABRICATIONS

PART ONE - GENERAL

1.01 Related Documents

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 Work Summary

- A. Work under this Section shall consist, in general, of all coordination, labor, materials, equipment, services required to supply and install existing handrails and guardrails, all as indicated on the Drawings and as specified herein.
- B. Work under this Section shall consist, in general, of all coordination, labor, materials, equipment, services required to supply and install metal plate at the staircase and inverted shelf angle at the parapet, all as indicated on the Drawings and as specified herein.

1.03 Work Specified Elsewhere

- A. See Division One, General Requirements
- B. See Section 01 33 00, Submittals
- C. See Section 01 73 29, Cutting and Patching
- D. See Section 02 41 19.13, Selective Building Demolition
- E. See Section 04 01 20.91, Unit Masonry Restoration
- F. See Section 07 92 02, Exterior Joint Sealers
- G. See Section 09 90 13, Painting

1.04 References

- A. Except as shown or specified otherwise, the Work of this Section shall meet the requirements of the following:
 - 1. Design, Fabrication, and Erection: "Specification for Structural Steel Buildings, Allowable Stress Design and Plastic Design" adopted by the American Institute of Steel Construction, June 1, 1989 (AISC Specification).
 - a. Design and Fabrication of Cold-Formed Shapes: "Specification for the Design of Cold-Formed Steel Structural Members", by the American Iron and Steel Institute (AISI Specification).
 - 2. Welding: "Structural Welding Code - Steel, AWS D1.1", or "Structural Welding Code - Sheet Steel, AWS D1.3", by the American Welding Society (AWS Codes).

1.05 Submittals

- A. Shop Drawings: Provide complete shop drawings based on Contractors field investigation. Shop drawings shall be sealed and signed by a professional structural engineer in New York State,

1. Locate anchor bolts required for installation in other Work; furnish setting drawings and templates for required anchors.
 2. Indicate shop and field welds by standard AWS welding symbols in accordance with AWS A2.4.
- B. Product Data: Catalog sheets, specifications, and installation instructions for each fabricated item specified, except submit data for fasteners only when indicated.
- 1.06 Quality Assurance
- A. Galvanizing: Stamp galvanized items with galvanizer's name, weight of coating, and applicable ASTM number.
- 1.07 Delivery and Storage
- A. Coordinate delivery of anchor bolts and other anchorage devices to be built into other construction to avoid delay.
- B. Promptly cover and protect steel items delivered to the site.

PART TWO - MATERIALS

2.01 Materials

- A. Steel Shapes, Plates, and Bars: ASTM A 36.
- B. Stainless Steel: Type 302/304; ASTM A 666 for plate, sheet and strip; ASTM A 276 for bars and shapes; ASTM A 269 for tubing.
- C. Anchors:
1. Threaded-Type Concrete Inserts: Galvanized ferrous casting, internally threaded to receive 3/4 inch diameter machine bolt; either malleable iron or cast steel.
 2. Wedge-Type Concrete Inserts: Galvanized box-type ferrous casting, designed to accept 3/4 inch diameter bolt having special wedge-shaped head; either malleable iron or cast steel.
 - a. Bolts: Carbon steel bolts having special wedge-shaped heads, nuts, washers and shims.
 3. Slotted-Type Concrete Inserts: Galvanized 1/8 inch thick pressed steel plate complying with ASTM A 283; box-type welded construction with slot designed to receive 3/4 inch diameter square head bolt and with knockout cover.
 4. Externally Threaded Expansion Bolt Anchors: FS FF-S-325, Group II, Type 4, Class 1.
- D. Fasteners: Except where shown or specified, select fasteners of type, size, style, grade, and class required for secure installation of metal fabrications. For exterior use and where built into exterior walls, fasteners shall be galvanized.

1. Standard Bolts and Nuts: ASTM A 307, Grade A, regular hexagon head.
2. Plain Washers: FS FF-W-92, round, general assembly grade, carbon steel.
3. Stainless Steel Fasteners: ASTM A 666; Type 302/304 for interior Work; Type 316 for exterior Work; Phillips flathead (countersunk) screws and bolts for exposed Work unless otherwise specified.

E. Shop Paint (General): Steel primer selected from the following:

1. TNEMEC 10-99 (Red), 10-99G (Green) or 10-1009 (Gray).
2. Rust-Oleum 769.
3. Valspar 13-R-53.
4. Sherwin-Williams "Kromik".

2.02 Miscellaneous Framing and Supports

- A. Fabricate metal framing and supports, which are not a part of the structural steel framework, to support related items required by the Work.
- B. Fabricate units to the sizes, shapes, and profiles indicated or, if not indicated, of required dimensions to receive adjacent Work to be retained by the framing. Except as otherwise indicated, fabricate from structural steel shapes, plates, and bars, of all welded construction, with mitered corners, necessary brackets and splice plates, and a minimum number of joints for field connection. Punch, drill, and tap units to receive hardware and similar items to be anchored to the Work.
- C. When required to be built into masonry or cast-in-place concrete, equip units with integrally welded anchor straps. Unless otherwise indicated, anchors shall be minimum 1-1/4 x 1/4 x 8 inch steel straps, spaced 2 feet oc.

2.03 Miscellaneous Steel Trim

- A. Fabricate trim of shapes, sizes, and profiles shown. Fabricate units from steel shapes, plates, and bars, with continuously welded joints and smooth exposed edges, unless otherwise indicated. Use concealed field splices wherever possible. Furnish cutouts, fittings, and anchorages as required for assembly and installation.

2.04 Fabrication

- A. Use materials of the sizes and thicknesses indicated on the Drawings. If not indicated, use material of required size and thickness to produce adequate strength and durability for the intended use of the finished product.
- B. Fabricate items to be exposed to view of material entirely free of surface blemish, including pitting, roller and seam marks, rolled trade names, and roughness. Remove surface blemishes by grinding or by welding and grinding prior to cleaning, treating, and finishing.
- C. Form metal true to line, with accurate angles, surfaces, and straight edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise shown. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing the metal.

- D. Weld corners and seams continuously. Grind exposed welds smooth and flush, to match and blend with adjoining surfaces.
- E. Form exposed connections with flush, smooth, hairline joints. Use concealed fasteners wherever possible. Use Phillips flathead (countersunk) screws or bolts for exposed fasteners, unless otherwise shown or specified.
- F. Prepare fabricated items for anchorage of the type indicated, coordinated with the supporting structure. Fabricate and space anchoring devices as indicated or, if not indicated, as required to produce adequate support for the intended use of the item.
- G. Punch, reinforce, drill, and tap fabricated items as required to receive hardware and other appurtenant items.
- H. Shop Painting:
 - 1. Cleaning Steel: Thoroughly clean all steel surfaces. Remove oil, grease, and similar contaminants in accordance with SSPC SP-1 "Solvent Cleaning". Remove loose mill scale, loose rust, weld slag and spatter, and other detrimental material in accordance with SSPC SP-2 "Hand Tool Cleaning", SSPC SP-3 "Power Tool Cleaning", or SSPC SP-7 "Brush-Off Blast Cleaning".
 - 2. Apply one coat of shop paint to all steel surfaces except as follows:
 - a. Do not shop paint steel surfaces to be field welded and steel to be encased in cast-in-place concrete.
 - b. Apply 2 coats of shop paint, before assembly, to steel surfaces inaccessible after assembly or erection, except surfaces in contact.
 - 3. Apply paint and compound on dry surfaces in accordance with the manufacturer's printed instructions, and to the following minimum thickness per coat:
 - a. Shop Paint (General): 4.0 mils wet film.

PART THREE - EXECUTION

3.01 Preparation

- A. Temporarily brace and secure items which are to be built into concrete, masonry, or similar construction.
- B. Isolate non-ferrous metal surfaces to be permanently fastened in contact with ferrous metal surfaces, concrete, or masonry by coating non-ferrous metal surface with bituminous mastic, prior to installation.

3.02 Installation

- A. Fit and set fabricated metal items accurately in designed locations, at proper elevation and alignment.

- B. Use anchorage devices and fasteners of required type, size, and number as required to provide a secure, rigid installation.
- C. Fit exposed connections accurately to form tight hairline joints. Weld connections which are not intended to be left as exposed joints, but cannot be shop welded because of size limitations. Grind welded joints smooth. Cut off exposed threaded portion of bolts flush with nut.
- D. Attached Work: Drill holes for fasteners with power tools to exact size required. Unless otherwise shown on the Drawings, fasten metal Work to concrete and solid masonry anchorage with expansion anchors. Fasten metal Work to hollow masonry and stud partitions with square head toggle bolts.
- E. Field Welding: Comply with AWS Codes for the procedures for shielded metal arc welding, for the appearance and quality of welds, and for the methods used in correcting welding Work.
- F. Railings: Adjust railings prior to securing in place to insure alignment and proper matching at joints. Plumb posts in each direction. Secure posts and rail ends to construction as follows:
 - 1. Anchor rail ends to concrete and masonry with round steel flanges. Weld flanges to rail ends, and anchor into the wall construction with expansion anchors.

END OF SECTION 05 50 00

END OF DIVISON FIVE

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

SECTION 071470 - CRYSTALLINE WATERPROOFING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide labor, materials, equipment, services to install crystalline waterproofing on walls, landing and window sill as indicated.

1.02 RELATED SECTIONS

- A. Concrete Repair.....Section 037300

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. International Concrete Repair Institute (ICRI)
- B. American Society of Testing and Materials (ASTM)
ASTM C109 Standard Test Methods for compressive Strength of Hydraulic Cements
- C. US Army Corp of Engineers
CRD-C 48-92 Method of Test for Water Permeability

1.04 SUBMITTALS

- A. Product Data
Provide manufacturer's information on the waterproofing material, including application instructions.
- B. Quality Control Submittals
 1. Certificates: Furnish manufacturer's certification that materials meet or exceed specification requirements.
 2. Procedure: Submit written description of water-proofing procedures and operations sequencing based on manufacturer's requirements prior to commencing the Work.
 3. Submit intent to warranty document from manufacturer of waterproofing with a performance guarantee against water penetration through waterproofing system for 5 years with any necessary replacement material and labor supplied at no cost to Authority.
 4. Contractor Qualifications: Provide proof of installer qualifications specified under "Quality Assurance".

C. Warranty

Submit manufacturer's warranty and installer's guarantee.

D. Mock-up

Provide mock-up as indicated under Quality Assurance.

1.05 QUALITY ASSURANCE

A. Qualifications

Waterproofing Installer: Company specializing in the installation of crystalline waterproofing shall have a minimum of five years successful experience and at least three similar installations of equal magnitude that have proven successful in all respects for a period of at least three years. Contractor shall be trained by the waterproofing manufacturer and shall have a certificate of training on file from the manufacturer.

B. Manufacturer's Representative

All work of this Section shall be performed under the supervision of the waterproofing material manufacturer's representative.

C. Job Mockups

Prior to performing the work of this Section, prepare a sample panel of not less than 25 sq. ft. of waterproofing work. Do not proceed further with the work until the sample panel has been approved by the Authority's representative. Sample shall be a portion of the area to be restored and may be kept if approved.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver the specified product in original, unopened containers with the manufacturer's name, labels, product identification and batch numbers.

B. Store and condition the specified product as recommended by the manufacturer.

C. Do not store liquid material in hot sun. Keep material from freezing.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Do not apply if the temperature unless surface temperature and ambient temperatures are 45-50°F and rising and below 85°F unless the material manufacturer is consulted for recommendations.

B. Do not use frozen materials or materials coated with ice or frost.

C. Protect from rain until material is completely dry.

1.08 WARRANTY

A. Furnish both manufacturer's and installer's warranty/guarantee in a form satisfactory to the Authority that guarantees all Work for a period of five (5) years from the date of the acceptance of the building by the Authority against any defects in workmanship or material and that this work will remain absolutely watertight for the entire period of the guarantee.

- B. Should any defects develop or any leaks occur in the Work within the guarantee period, such defects or leaks shall at once be remedied and made good without cost or expense to Battery Park City Authority.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Xypex Chemical Corporation, Richmond, BC, Canada
- B. Aquafin, Inc, **Elkton**, MD
- C. Kryton International, Inc, Vancouver, BC, Canada
- D. Vandex USA, Morrisville, PA

2.02 MATERIAL

- A. Crystalline Waterproofing
 - 1. Chemically reactive material that when placed on concrete creates a crystalline structure preventing the passage of water.
 - a. Compressive strength 3000 psi @ 28 days
ASTM C109
 - b. Permeability No measurable leakage
CRD-C48 or acceptable when tested at 65 psi
test by other agency Positive or negative
 - 2. Product
 - a. Xypex Concentrate by Xypex
 - b. Vandex Super White by Vandex Corp.
 - c. Aquafin IC by Aquafin
 - d. Krystol T1 and T2 by Kryton International

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Do not begin surface preparation and application of waterproofing compound until all cracks, joints, and surface defects are repaired. Verify that all reglets have been formed at joints to receive the material.

3.02 SURFACE PREPARATION

- A. All substrates shall be clean and sound, free of frost, dust, laitance, grease, curing compounds, waxes, impregnations, foreign particles, other coatings, and disintegrated materials. All projections, rough spots, etc., shall be dressed off.
- B. Rout out faulty joints or cracks exceeding .02" to ¾" wide by 1" deep minimum, as well as honey combs. Repair defects according to manufacturer's instructions with manufacturer's repair product, which shall be included in the written procedure.
- C. Roughen form tie holes.
- D. Mechanically prepare surface by high-pressure waterblasting, shot blasting, or mechanical means to clean surface and provide the required surface profile. Provide an ICRI CSP 3 surface preparation (light shot blasting).
- E. Do not damage previously repaired surfaces and cracks.
- F. Rinse surfaces to be waterproofed several times so that concrete is thoroughly saturated. Remove any standing water, as surface is to be surface-saturated dry.

3.03 APPLICATION

- A. At all reglets, tie holes, and prepared cracks, mix material to consistency required by manufacturer and fill out with manufacturer's waterproofing patch product flush with adjacent surface, leaving a brush finish. Apply a slurry coat of material around the joint if required. Entire procedure is to be included in the Contractor's submittal's. Follow manufacturer's instructions.
- B. Mix components in accordance with manufacturer's instructions and in correct proportions to a slurry consistency. Mixing of the components shall be done mechanically, using a low-speed (400-600 rpm) drill and jiffy paddle. Mix components in a clean, dry mixing container. Do not add water to mixture.
- C. Coating shall be applied only to approved prepared surfaces with trowels, high-quality brushes, rollers, or "hopper type" spray equipment. Immediately trowel the product level. Surface shall be saturated surface dry prior to application. For hot surfaces in direct sunlight, wet down surface with clean water then allow to surface dry prior to coating. Coating shall be applied at ambient and substrate temperatures between 45°F and 85°F.
- D. Apply material for slabs at a rate of 2 lb/sq.yd. (or as required by specific manufacturer) in one or two coats as recommended by manufacturer. For walls, apply in two coats. Base coat shall be applied at a rate of 1.25-1.4 lb/sq.yd (or as required by specific manufacturer). After initial set but while still "green", apply finish coat at a rate of 1.25-1.4 lb/sq.yd. Leave strokes in a parallel, uniform direction. Use light pre-watering between coats when rapid drying conditions occur.

3.04 TESTING

- A. After manufacturer's recommended curing period, fill tanks and pits with water and let stand for a week. Do not fill at a rate of greater than 6.5' in 24 hours. Should leakage occur, drain tanks and to perform repairs.
- B. Repair leaks by routing out large joints and cracks and installing manufacturer's water plug material. Apply additional applications of slurry at areas of fine cracks or seepage.

3.05 PROTECTION AND CLEANING

- A. Protect material from extreme heat and cold during the curing process using tarps or other means as recommended by the materials manufacturer.
- B. Clean material from adjacent surfaces not to be protected as well as residue from the protective measures (i.e. tape residue)
- C. Clean surface with 100 ppm chlorine water solution.

3.06 FIELD QUALITY CONTROL

- A. The Authority will inspect surfaces and reject any that contain cracks or other defects. These areas shall be fixed at Contractor's expense.
- B. Engage the services of the material manufacturer's representative to instruct in the proper usage of the material and to inspect the work throughout the project.

END OF SECTION

LIST OF SUBMITTALS

<u>SUBMITTAL</u>	<u>DATE SUBMITTED</u>	<u>DATE APPROVED</u>
Product Data:	_____	_____
1. Crystalline waterproofing		
Certificates:	_____	_____
1. Crystalline waterproofing		
Procedure:	_____	_____
1. Written installation procedure		
Intent to warranty:	_____	_____
1. Intent to warranty papers provided prior to application		
Qualifications	_____	_____
1. Installer		
Warranty & Guarantee:	_____	_____
1. Manufacturer's Warranty		
2. Contractor's Guarantee		
Mock Up:	_____	_____
1. Waterproofing		

* * *

SECTION 071500 - CHEMICAL RESIN INJECTION GROUTING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Seal wet and dry fine cracks and joints in concrete by pressure injecting chemical resin into the walls and floor of the area indicated to prevent water leakage into the areas. Work includes, but not limited to, the following:
 - 1. Removal of all deposits of chemicals, oil and other foreign materials from walls and floor by solvents and steam cleaning from areas to be waterproofed.
 - 2. Injection of chemical resin to seal all the cracks and joints in all the areas indicated. Inject construction joints between slabs and walls as well as all other cracks and joints in slab and walls. Inject chemical grout through the slab and walls to create a positive side water barrier where indicated. Include all associated dewatering needed to perform the work.
 - 3. Clean all the work areas after completion.

1.02 RELATED SECTIONS

- A. Selective Demolition.....Section 024119.13
- B. Concrete RepairSection 037300

1.03 REFERENCES

- A. New York City Board of Standard and Appeals (BSA)
- B. American Society for Testing and Materials (ASTM)
- C. American National Standard Institute (ANSI)

1.04 SUBMITTALS

- A. Product Data
 - 1. Provide manufacturer's information and technical data on the waterproofing materials.
- B. Samples
 - 1. Injection sealant materials, 1 each type.
 - 2. Packers
- C. Quality Control Submittals

1. Certificates: Furnish manufacturer's certification that materials meet or exceed Specification requirements, including certified test laboratory reports as necessary for compliance with the requirements.
2. Manufacturer's Instructions: Furnish manufacturer's literature, specifications, and application instructions.
3. Procedure: Submit written description of water-proofing procedures and operations sequencing based on manufacturer's requirements prior to commencing the Work.
4. Submit intent to guarantee document with a performance guarantee against water penetration through waterproofing system for 5 years with any necessary replacement material and labor supplied at no cost to Authority.

D. Guarantee

Submit applicators guarantee and manufacturer's warranty.

1.05 QUALITY ASSURANCE

- A. Qualifications: Company specializing in the waterproofing repair of cracks shall have a minimum of three years experience and at least five similar installations of equal magnitude that have proven successful in all respects for a period of at least three years. Contractor shall be trained by the waterproofing manufacturer and certified in order to obtain the manufacturer's warranty.

B. Manufacturer's Representative

All work of this Section shall be performed under the supervision of the waterproofing material manufacturer's representative. The representative shall attend pre-construction meetings and make regular visits during the course of construction to ensure that method of installation is acceptable so that warranty will be obtained.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver all materials in the manufacturer's sealed original container's bearing the manufacturer's name and product identification in a manner to prevent damage by breakage, water or moisture.
- B. Store and handle all products of this section in a strict compliance with the manufacturer's instructions.

1.07 PROJECT CONDITIONS

- A. Do not execute the Work of this section unless the Authority's Representative is present, or unless the Representative directs that the Work be performed during the Representative's absence.
- B. Execute the work of the section in presence of the product manufacturer's representative.

1.08 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.

1.09 GUARANTEE AND WARRANTY

A. Contractor's Guarantee

Two-year written guarantee covering defects in materials and workmanship. Maintenance Bond shall be provided for the entire two-year period and shall be equal to the original cost of installation.

B. Manufacturer's Warranty

In addition to the Contractor's guarantee, furnish the grout manufacturer's printed 5-year warranty for the Work of this Section. The warranty shall include but not be limited to, repair of leakage caused by defects in materials or workmanship at areas of repair. The monetary value of the warranty shall be at least equal to the original material cost of the installation.

C. Should any defects develop or any leaks occur in the Work within the guarantee/warranty period, such defects or leaks shall at once be remedied and made good without cost or expense to Battery Park City Authority.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. BBZ, USA, Greenstreak
3400 Treecourt Ind. Blvd.
St. Louis, MO 63129
(1-800-814-4498)
- B. DeNeef Construction Chemicals
5610 Brystone Dr
Houston Tx 77041
713-896-0123

2.02 MATERIALS

- A. General
 - 1. Chemical resins are to be used for sealing concrete cracks and joints to prevent current or future water seepage. The selection of a particular material for use at a specific location shall be based on the nature of the crack or joints in relation to the materials properties.
 - 2. The non-foaming polyurethane gel is intended for use in running water conditions or where moderate to large joints and cracks with active leakage are encountered, and otherwise as directed by the Engineer. They are injected prior to the installation of the acrylate-ester resin at the same location.
 - 3. The acrylate-ester water-swelling resin is intended for use in filling small to moderate sized cracks in concrete with little or minimal running water. It can also be used to create a positive side water barrier under slabs where numerous hairline cracks (40 mils or less) are present in a given area, making it impractical to inject into each individual hairline crack.

B. Products

1. Non-foaming polyurethane gel

- a. Two-component polyurethane resin capable of sealing large cracks and active leaks. Material shall be chemically resistant. Viscosity shall be less than 700 cp.
- b. Material shall be Duro-Rapid by BBZ or Flexseal 101 by DeNeef.

2. Acrylate-ester water-swelling resin

- a. Hydrophilic acrylate-ester resin, approximately 50% solids by weight prior to mixing, capable of infinite number of wet-dry cycles used for sealing small to moderate sized cracks with little or none active water. Viscosity shall be less than 5 cp.
- b. Material shall be Duroseal Inject 215 by BBZ or Superflex by DeNeef.

2.03 PRE-INJECTION GROUTING CONFERENCE

- A. Before the injection grouting Work is scheduled to commence, a conference will be called by the Authority's Representative at the site for the purpose of reviewing the Drawings and the Specifications and discussing requirements for the Work. The conference shall be attended by the Contractor, the injection applicator, the injection resin manufacturer's Company Field Advisor, the Authority's Project Manager, and the Architect of Record.

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.

3.02 SURFACE PREPARATION AND PROTECTION

- A. Remove paint, oil, and foreign material off all concrete surfaces of area to be waterproofed prior to injection using solvents and steam cleaning. Cleaning shall be to a degree acceptable to the waterproofing manufacturer.
- B. Protect adjacent areas from chemicals.
- C. Keep area dry by mopping and pumping in order to place material and determine crack location.
- D. Clean surface of injection area to locate crack.
- E. Preparatory Work
 - 1. Joint/Crack injection
 - a. Drill holes diagonally at a 45 ☐ angle to intersuit injection packer size. Injection packer shall be acceptable to the grout manufacturer.

- b. Distance from starting of hole to crack or joint shall be equal to one-half the thickness of the structural slab or wall. This will be usually determined by trial and error.
- c. If the repair is at a crack, holes should be spaced on both sides to ensure that at least one-half of the total number of holes shall intersect the crack.
- d. Spacing of holes shall be dependent upon crack width and chemical grout material viscosity to ensure continuity of seal within the crack or joint. Spacing of holes should not exceed 1'-6" on center, unless demonstrated to be effective at a greater spacing.

2. Barrier Injection

- a. Drill holes perpendicular to surface through the wall/slab.
- b. Spacing of holes should not exceed 1'-6" on center with each line of holes offset from those rows above and below by one half the distance between the holes. Wider spacing may only be used if it is demonstrated to be effective at producing port to port continuity.
- c. When injecting through masonry, install a tube through the wall to ensure that the resin is getting to the soil behind and not into the void spaces in the masonry.

3.03 INJECTION WORK

- A. Prepare components as per manufacturer's instructions. Add accelerator to suit field conditions, including, but not limited to, water flow, surface being injected, ambient temperature, crack or joint width, etc. Process chemical resin materials using appropriate protective gear including gloves, mask or goggles, and appropriate clothing. Follow manufacturer's recommendation for product safety guidelines.
- B. For cracks and construction/cold joints, flush the crack with clean water prior to injection of the resin. Typical pressure needed to flush a crack shall be between 200 and 300 psi. The flushing may reveal blind drill holes, voids, cavities, honeycombs that require special treatment. Modify application procedure as required. After flushing is completed at one injector, the Contractor shall repeat the procedure at the next injector until all have been flushed.
- C. Using suitable power stainless steel pumping equipment acceptable to the manufacturer, pump components through a suitable static mixer to ensure homogeneous blending of the components. Static mixer shall be firmly coupled to injection packer to make sure residue does not clog. During pumping operations, take proper precautions against loose or spalled concrete dislodging and falling.
- D. If injection packers have been left out of holes to verify material travels, once material is observed at the next hole, a packer shall be securely placed in that hole. Begin pumping at that next packer. If all packers have been installed prior to pumping, when material flow has been observed exiting crack or joint adjacent to another packer, begin pumping at that packer.
- E. If water is actively flowing, use the two-component polyurethane to prevent water from flowing. After the water is stopped, reinject the same crack/joint with the acrylate-ester resin or as recommended by

the manufacturer. Other cracks and joints shall be repaired by using the acrylate-ester resin to create a barrier.

- F. Should set time need to be hastened, accelerator may be added in accordance with manufacturer's recommendation and Injection Contractor's experience.
- G. When work is either complete or temporarily halted, flush static mixer with manufacturer's recommended solvent to prevent clogging.
- H. Injection pressures shall be kept as low as possible to allow material to thoroughly permeate the full depth of the crack or joint or to fill the interstitial void spaces in the soil behind the wall/slab.
- I. Inject all packers until no further chemical resin can be pumped.
- J. If the Injection Contractor suspects that a void exists behind and/or beneath the wall/slab substrate after pumping more than five (5) gallons of mixed injection resin into an injection port installed in a vertical wall and/or seven (7) gallons into a floor slab, he/she should cease all pumping activities and immediately notify the Authority's Representative and the Engineer of Record.
 - 1. This contact and notification must take place within 24 hours of the work stoppage.
 - 2. A jobsite meeting should be organized to include all parties involved, i.e., General Contractor, injection sub-contractor, Authorities Representative, Engineer of Record, and manufacturer's representative.
 - 3. During this meeting, the area in question should be identified and investigated. A detailed plan will be discussed and formulated to ascertain what steps may be necessary to remediate the problem. Remedial work may require the void space to be filled with a cement grout by injection to fill the void prior to injecting the area further. It may be decided to continue with the resin injection. The Contractor will be paid extra for the work in the area requiring the remedial cement grout injection work or the additional chemical resin material.
- K. If crack or joint continues to leak, drill hole(s) in accordance with above procedures at the leaking segment(s) and repeat procedures for injection.
- L. Remove the ports after work is complete. Remove at least 1" of resin material from the top 1" of the hole of resin material, and fill hole with hydraulic cement, matching the texture of the existing concrete surface.

3.04 CLEANING AND PROTECTION

- A. Clean all adjacent areas of excess material; powder, resin, and droppings.

3.05 FIELD QUALITY CONTROL

- A. The Architect will inspect surfaces and reject any that contain cracks or other defects. The repair will be tested for soundness and structural integrity. The grading of the surface shall be tested with water in the presence of the Project Officer to ensure that an even flow to the drains has been obtained prior to placement of waterproofing. Any defective areas shall be fixed at Contractor's expense.
- B. All work is to be done under the supervision of the manufacturer's representative.

END OF SECTION

LIST OF SUBMITTALS

<u>SUBMITTAL</u>	<u>DATE SUBMITTED</u>	<u>DATE APPROVED</u>
Product Data:	_____	_____
1. Each type of injection material		
Samples:	_____	_____
1. Each type of injection material.		
2. Injection packer		
Certificates:	_____	_____
1. Material certification		
2. Intent to warranty		
Manufacturer's Instructions:	_____	_____
1. Each type of waterproofing material		
Procedure:	_____	_____
1. Detailed written repair procedure		
Warranty:	_____	_____
1. Manufacturer's		
2. Applicator's		

* * *

SECTION 075600 - FLUID APPLIED WATERPROOFING SYSTEM

PART 1 GENERAL

1.1 SYSTEM DESCRIPTION

- A. The following specification outlines the requirements for a fully reinforced cold fluid-applied polyurethane liquid resin roofing and waterproofing membrane and flashing system, and all other ancillary waterproofing work including but not limited to installation of drainage layers, overburden, sealants and metal work as specified.

1.2 SECTION INCLUDES

- A. Adhered fully reinforced, cold fluid-applied, polyurethane liquid resin waterproofing membrane system including membrane, penetration flashings, base flashings, and expansion joints.
- B. Substrate preparation, cleaning, leveling and patching
- C. Temporary waterproofing and priming
- D. Waterproofing membrane installation
- E. Flashing installation and expansion joint installation
- F. Protective surfacing
- G. Alkalinity protection
- H. Preparation for overburden installation

1.3 RELATED SECTIONS

- A. Supplementary General Conditions
- B. Sheet Metal Flashing and Trim

1.4 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual.
- B. ACI-308 - Recommended Practice for Curing Concrete
- C. ASTM - D638 - Test Methods for Tensile Properties of Plastics
- D. ASTM - D4258 - Standard Practice for Surface Cleaning Concrete for Coatings
- E. ASTM - D4259 - Standard Practice for Abrading Concrete
- F. ASTM - D4541 - Method for Pull-Off Strength of Coatings using Portable Adhesion Tester
- G. ASTM - E96(A) - Test Methods of Moisture Transmission of Material
- H. ASTM E-108, ANSI/UL 790 for fire resistance.
- I. International Concrete Repair Institute Guideline 03732 Concrete Surface Preparation
- J. Steel Structures Painting Council (SSPC)
- K. Tile Council of North America (TCNA) ANSI - A118.10 Tile Adhesion Shear Test

1.5 SUBMITTALS FOR REVIEW

- A. Membrane System Product Data: Provide current standard printed product literature indicating characteristics of membrane materials, flashing materials, components, and accessories product specification and installation.
- B. Product Samples: Submit product samples of membrane and flashing materials showing color, texture, thickness and surfacing representative of the proposed system for review and approval by the Owners Representative.

- C. Submit sample copies of both the Manufacturer and Applicator warranties for the periods stipulated. Each specimen must be a preprinted representative sample of the issuing company's standard warranty for the system specified.
- D. Submit copies of current Material Safety Data Sheets (MSDS) for all components of the work.
- E. Membrane Shop Drawings: Submit shop drawings of cold fluid-applied reinforced polyurethane system showing all a project plan, size, flashing details, and attachment for review and approval by the Owners Representative and Membrane Manufacturer.

1.6 QUALITY ASSURANCE

- A. Membrane Manufacturer: Company specializing in manufacturing fully reinforced cold fluid applied liquid resin waterproofing membrane systems with a minimum of ten (10) years of documented applications in the United States. Membrane Manufacturer shall submit the following certifications for review:
 - 1. Substrates and conditions are acceptable for purpose of providing specified warranty.
 - 2. Materials supplied shall meet the specified requirements.
- B. Applicator: Company specializing in performing the work of this section with (3) years documented experience and **approved by system manufacturer for warranted membrane installation**. Applicator shall submit the following certification for review:
 - 1. Applicator shall submit documentation from the membrane manufacturer to verify contractor's status as an approved applicator for warranted installations.
- C. Evaluate moisture content of cementitious substrate materials. Contractor shall determine substrate moisture content throughout the work and record with Daily Inspection Reports or other form of reporting acceptable to the Owner or designated Representative, and Membrane Manufacturer.
- D. Evaluate surface moisture content by means of an Tramex Concrete Moisture Encounter Meter. A surface moisture content of under 5% is required to allow for proper primer penetration into the substrate.
- E. Frothing, bubbling, or pinholes within the primer indicates excessive moisture content within the substrate. Blistering of membrane may result from excessive substrate moisture. Primer application during late afternoon/early evening will reduce vapor pressure within the substrate and may alleviate these conditions.
- F. Continued frothing, bubbling, or pinholes indicates excessive moisture content that requires more substantial measures. Evaluate substrate moisture content by means of relative humidity (RH) probes in accordance with ASTM F2170. A relative moisture content of 75% or greater indicates the need for more extensive substrate priming and sealing. Contact Membrane Manufacturer for recommendations.
- G. Random tests to determine tensile bond strength of membrane to substrate shall be conducted by the Contractor at the job site using an Elcometer Adhesion Tester Model 106 or similar device, or by the performance of a manual pull test. Contractor shall perform tests at the beginning of the Work, and at intervals as required to assure specified adhesion with a minimum of three (3) tests per 5000 square feet. Smaller areas shall receive a minimum of three (3) tests. Test results shall be submitted to the Owner or his designated Representative and the Membrane Manufacturer. Contractor shall immediately notify the Owner or his designated Representative and Membrane Manufacturer in the event bond test results are below specified values.

1. Adequate surface preparation will be indicated by tensile bond strength of membrane to substrate greater than or equal to 220 psi (1.5 N/mm²), as determined by use of an adhesion tester.
 2. Adequate surface preparation will be indicated by 135° peel bond strength of membrane to substrate such that cohesive failure of substrate or membrane occurs before adhesive failure of membrane/substrate interface.
 3. In the event the bond strengths are less than the minimum specified, additional substrate preparation is required. Repeat testing to verify suitability of substrate preparation.
- H. Monitor quantities of installed materials. Monitor application of resin mixture, reinforcing fleece and flashing. Perform Work in accordance with manufacturer's instructions.
- I. Mock-up areas shall be used to determine required methods and tools to obtain degree of substrate preparation required by the membrane manufacturer. Conduct tests as required to verify that substrate preparation meets specified requirements. Tests shall include, but are not limited to, tensile bond strength and moisture content of substrate.
1. Prepare and clean a three (3) foot (0.9 m) by three (3) foot (0.9 m) area of each substrate material type.
 2. Submit findings in writing to Owner or his designated Representative and Membrane Manufacturer.
 3. Mock-up areas shall be maintained for quality control for the entire project.

1.7 REGULATORY REQUIREMENTS

- A. Conform to applicable building and jurisdictional codes for roofing/waterproofing assembly and fire resistance requirements.
- B. Comply with requirements of OSHA, NIOSH or local governing authority for work place safety.
- C. Comply with authority or agency "Confined Space Policy" during and throughout all work to be performed.

1.8 PRE-INSTALLATION MEETING

- A. Convene a pre-installation meeting at the job site (1) week before starting work of this section. Require attendance of parties directly affecting work of this section, including but not limited to, Roofing/Waterproofing Specifier, Owner's Representative, Roofing/Waterproofing Contractor, and Membrane Manufacturer's Representative. Review roofing/waterproofing preparation and installation procedures, coordination and scheduling required with related work, and condition and structural loading limitations of deck/substrate.

1.9 FIELD INSPECTION SERVICES

- A. Manufacturer's technical representative shall provide the following inspections of the membrane application:
 1. Jobstart inspection at the beginning of each phase of the project, to review special detailing conditions and substrate preparation.

2. Periodic in-progress inspections throughout duration of the project to evaluate membrane and flashing application.
3. Final punch-list inspection at the completion of each phase of the project prior to installation of any surfacing or overburden materials.
4. Warranty inspection to confirm completion of all punch list items, surfacing, and overburden application.

1.10 DELIVERY, STORAGE, AND PROTECTION

- A. The Contractor together with the Owner or his designated Representative shall define a storage area for all components. The area shall be cool, dry, out of direct sunlight, and in accordance with manufacturer's recommendations and relevant regulatory agencies. Materials shall not be stored in quantities that will exceed design loads, damage substrate materials, hinder installation or drainage.
- B. Store solvent-bearing solutions, resins, additives, inhibitors or adhesives in accordance with the MSDS and/or local fire authority. After partial use of materials replace lids promptly and tightly to prevent contamination.
- C. Roll goods shall be stored horizontally on platforms sufficiently elevated to prevent contact with water and other contaminants. DO NOT use rolls that are wet, dirty or have damaged ends.
- D. Roofing/waterproofing materials must be kept dry at all times. If stored outside, raise materials above ground or roof level on pallets and cover with a tarpaulin or other waterproof material. Plastic wrapping installed at the factory should **not** be used as outside storage covers.
- E. Follow manufacturer's directions for protection of materials prior to and during installation. Do not use materials that have been damaged to the point that they will not perform as specified. Fleece reinforcing materials must be clean, dry and free of all contaminants.
- F. Copies of all current MSDS for all components shall be kept on site. Provide any and all crew members with appropriate safety data information and training as it relates to the specific chemical compound he or she may be expected to deal with. Each crew member shall be fully aware of first-aid measures to be undertaken in case of incidents. Comply with requirements of OSHA, NIOSH or local governing authority for work place safety.

1.11 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply roofing/waterproofing membrane during or with the threat of inclement weather.
- B. Application of cold fluid-applied reinforced polyurethane roofing/waterproofing membrane may proceed while air temperature is between 40°F (5°C) and 85°F (30°C) providing the substrate is a minimum of 5°F above the dew point.
- C. When ambient temperatures are at or expected to fall below 50°F (10°C), or reach 85°F (30°C) or higher, follow Membrane System Manufacturer's recommendations for weather related additives and application procedures.
- D. Ensure that substrate materials are dry and free of contaminants. DO NOT commence with the application unless substrate conditions are suitable. Contractor shall demonstrate that substrate conditions are suitable for the application of the materials.

- E. Odor control and elimination measures are not typically necessary, but if required by the Owner or his designated Representative, Contractor shall implement odor control and elimination measures prior to and during the application of the roofing/waterproofing materials. Control/elimination measures shall be field tested at off-hours and typically consists of one (1) or a multiple of the following measures:
 - 1. Sealing of air intakes with activated carbon filters. Install filters in accordance with requirements and recommendations of the filter manufacturer. Seal filters at joints and against building exterior walls to prevent leakage of unfiltered air.
 - 2. Sealing of doorways, windows, and skylights with duct tape and polyethylene sheeting to prevent leakage of air into the building.
 - 3. Erection and use of moveable enclosure(s) sized to accommodate work area(s) and stationary enclosure for resin mixing station. Enclosure shall be field constructed or pre-manufactured of fire retardant materials in compliance with local code requirements in accordance with requirements of the Owner or his designated Representative. Equipment enclosure(s) with mechanical air intake/exhaust openings and Odor Control Air Cleaners, as required to clean enclosed air volume and to prevent odor migration outside the enclosure. Exhaust opening shall be sealed with activated carbon filter.
 - 4. Protection of Contractor personnel and occupants of the structure and surrounding buildings as necessary to comply with requirements of OSHA, NIOSH and/or governing local authority.
- F. When disposing of all refuse or unused materials, observe all EPA, OSHA or local disposal requirements.

1.12 COORDINATION & PROTECTION

- A. Coordinate the work with the installation of associated metal flashings, accessories, appurtenances, etc. as the work of this section proceeds.
- B. Building components shall be protected adequately (with tarp or other suitable material) from soil, stains, or spills at all hoisting points and areas of application. Contractor shall be responsible for preventing damage from any operation under its Contract. Any such damage shall be repaired at Contractor's expense to Owner's satisfaction or be restored to original condition.
- C. Provide barricades, retaining ropes, safety elements (active/passive) and any appropriate signage required by OSHA, NIOSH, and NSC and/or the Owner or designated Representative.
- D. Protect finished roofing/waterproofing membrane from damage by other trades by the use of a cushioning layer such as 1" thick expanded polystyrene insulation and an impact layer such as ½" thick exterior-grade plywood.
- E. Do not allow waste products containing petroleum, grease, acid, solvents, vegetable or mineral oil, animal oil, animal fat, etc. or direct steam venting to come into direct contact with the membrane unless approved by manufacturer's chemical resistance chart.

1.13 WARRANTY

- A. Manufacturer's Premier Warranty: Provide (20) year manufacturer's premier warranty under provisions of this section. This warranty provides for cost of labor and materials for loss of watertightness, limited to amounts necessary to effect repairs necessitated by either defective material or defects in related installation workmanship, with no dollar limitation ("NDL").

- B. Waterproofing Contractor's Warranty: Provide [(2) (5)] year "Applicator Maintenance Warranty" covering workmanship for all work of this section including installation of membrane, flashings, metal work, and roofing/waterproofing accessories.
- C. Submit (2) executed copies of both the manufacturer and applicator warranties for the periods stipulated, starting from the date of substantial completion. Each warranty must be signed by an authorized representative of the issuing company.

1.14 MATERIAL SUBSTITUTIONS

- A. Materials proposed for use in the performance of the work that are not specified herein must be submitted to the Owner/Owner's Representative for evaluation no later than ten days prior to bid.

PART 2 PRODUCTS

2.1 GENERAL

- A The products herein specified are totally pre-engineered products of the listed manufacturer and establish criteria for the approval of substitutions. Products must be part of a virtually odorless, pre-engineered, low VOC fully reinforced cold liquid applied polymeric resin waterproofing membrane system, equivalent in function, quality, composition and method of application to be considered for approval as an "Approved Substitute". Substitute materials must meet or exceed the physical performance characteristics of the specified materials. PMMA or single component primers or resin systems will not be accepted. A minimum 165 g/m² fleece reinforcement is required.

2.2 MEMBRANE

- A Membrane: Two-component, cold fluid-applied reinforced polyurethane waterproofing membrane with a 360 degree needle punched non-woven 165 g/m² polyester reinforcing fleece, for a finished dry film membrane thickness of .070 inch nominal per ply. Provide products manufactured and supplied by the following:
 - 1. Kemper System America's Kemperol 2K-PUR resin for use in an adhered waterproofing system.
 - 2. Kemperol BR/BRM and V210/V210M roofing and waterproofing system.
- B. Physical Properties:

Property	Value	Test Method
Color	Gray-Green	-
Physical state	Cures to solid	-
Nominal thickness (165 fleece)	70 mils	-
Tensile strength @ break	120 lb/in	ASTM D-751
Elongation	50%	ASTM D-751
Tearing strength	5.0 lbs	ASTM D-751
Puncture resistance	140 lbf	FTMS 101-2031
Dimensional stability	0.1%	ASTM D-1204
Water absorption	2.2%	ASTM D-471
Surface hardness	Shore A 85	ASTM D-2240
Water vapor transmission	0.04 perms	ASTM E-96
Usage time*	30 minutes	-
Rainproof after*	2 hours	-

Solid to walk on after*	24 hours	-
Solid to drive on with air rubber tires after*	48 hours	-
Surfacing to be applied between*	16-48 hours	
Overburden may be applied after	2 days	-
Completely hardened after	3 days	-
Crack spanning	2mm/0.08 inch	-
Resistance to temperatures up to (short term)	250°C/482°F	-
*all times are approximate and depend upon air flow, humidity and temperature.		

2.3 FLASHINGS

- A Membrane Flashings: A composite of the same resin material as field membrane with 165 g/m² fleece reinforcement.

2.4 SUBSTRATE PRIMERS AND RESIN ADDITIVES

- A Polyurethane Primer: Two-component, solvent-free polyurethane resin for use in improving adhesion of membrane to wood, metal and bituminous substrate surfaces, as provided by the following manufacturer:
1. Kemper System America, Inc.'s Kempertec D primer.
- B Epoxy Primer: Two-component, solvent-free epoxy resin for use in improving adhesion of membrane to cementitious/masonry substrate surfaces, as provided by the following manufacturer:
1. Kemper System America, Inc.'s Kempertec EP/EP5 primer.
- C Cold Weather Additive: Additive specifically designed to accelerate the resin reaction time at ambient temperatures below 50°F (10°C). Accelerator to be used with cream resin Component A prior to mixing of multi-component resin, as provided by the following manufacturer:
1. Kemper System America Inc.'s Kemperol 2K-PUR Accelerator.

2.5 ACCESSORIES

- A. Application Tools, Accessories, and Cleaners: Supplied and/or approved by membrane manufacturer for product installation.
- B. Solvent-Based Cleaner for Tools and Membrane Tie-Ins: Methyl Ethyl Ketone (MEK) or acetone.
- C. Water-Based Cleaner for Membrane: Simple Green HD.
- D. Topcoat Surfacing Aggregate: Silica sand, ceramic-coated quartz, or specialty aggregate shall be washed, kiln-dried, and dust-free with the following size specification:
- | | | |
|----|-------------------------------|--------------|
| 1 | Utility/Fire Rating: | 0.5 - 1.2 mm |
| 2. | Alkalinity/Adhesion Key: | 0.5 - 1.2 mm |
| 3. | Aesthetic/Pedestrian Traffic: | 0.4 - 1.0 mm |
| 4. | Light Vehicular Traffic: | 0.5 - 1.2 mm |
| 5. | Heavy Vehicular Traffic: | 0.8 - 1.5 mm |
- E. Leveling and Patching Aggregate: Silica sand shall be washed, kiln-dried, and dust-free, suitable for troweling or pourable self-leveling, round grain or angular with the following size specification:

- | | | |
|---|----------------------------------|--------------------|
| 1 | For voids less than 1" in depth: | #00 (0.3 - 0.6 mm) |
| 2 | For voids 1" to 2" in depth: | #0 (0.5 - 1.2 mm) |

Mixing Proportions shall be a ratio of resin to sand at 1:2 by volume for leveling, 1:4 by volume for patching, or as approved by membrane manufacturer.

- F. Backer Rod: Expanded, closed-cell polyethylene foam designed for use with cold-applied joint sealant.
- G. Caulking: Single component, non-sag elastomeric polyurethane sealant meeting ASTM C920, Type S, Grade NS, Class 35 for use in sealing cracks and joints, and making watertight seals where required.

2.6 DRAINAGE/PROTECTION BOARD

- A. Drainage Board (Enkadrain/W 3601): Entangled filament polypropylene core with nonwoven geotextile filtering fabric suitable for all overburden applications, with the following characteristics:

- | | | |
|----|----------------------|-------------------------------------|
| 1. | Minimum Core Weight: | 16 oz/sq.yd. |
| 2. | Core Thickness: | 0.30 in. |
| 3. | Minimum Flow Rate: | 9.7 gpm/ft @ 1000 psf, 1.0 gradient |

PART 3 EXECUTION

3.1 EXAMINATION

- A Verify that surfaces and site conditions are ready to receive work.
- B Verify deck/substrate openings, curbs, and protrusions through deck/substrate, wood cant strips and reglets are in place and solidly set.
- C Verify deck/substrate is structurally supported, secure and sound.

3.2 PREPARATION OF SUBSTRATE

- A. General: Surfaces to be prepared as a substrate for the new waterproofing system as follows:
 - 1 The contractor shall determine the condition of the existing structural deck/substrate. All defects in the deck or substrate shall be corrected before new waterproofing work commences. Areas of deteriorated deck/substrate, porous or other affected materials must be removed and replaced with new to match existing.
 - 2 Prepare flashing substrates as required for application of new waterproofing membrane flashings.
 - 3 Inspect substrates, and correct defects before application of new waterproofing. Fill all surface voids greater than 1/8 inch wide with an acceptable fill material.
 - 4 Remove all ponded water, snow, frost and/or ice from the work substrate prior to installing new waterproofing materials.
 - 5 The final substrate for waterproofing shall be clean, dry, free of loose, spalled or weak material including coatings, mineral aggregate, and flood coat/gravel surfacing, oil, grease, contaminants, abrupt changes in level, waterproofing agents, curing compounds, and free of projections which could damage membrane materials.

B. Concrete:

1. New concrete shall have cured a minimum of 28 days in accordance with ACI-308, or as approved by Waterproofing Manufacturer's Technical Department.
2. New or existing concrete shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, bituminous products and previous waterproofing materials.
3. New or existing concrete shall be dry with a maximum moisture content of five (5) percent. Determinations of moisture content shall be performed by the Contractor. Contractor shall be responsible to perform periodic evaluations of moisture content during the work. Moisture evaluation results shall be submitted in writing to the Owner or his designated Representative and Waterproofing manufacturer for acceptance.
4. Where required, concrete shall be abrasively cleaned in accordance with ASTM D4259 to provide a sound substrate free from laitance. Achieve an open concrete surface in accordance with ICRI surface profiles CSP 3-5. When using mechanical methods to remove existing waterproofing products or surface deterioration, the surface profile is not to exceed ¼ inch (peak to valley).
5. The substrate shall be sound and all spalls, voids and blow holes on vertical or horizontal surfaces must be repaired prior to placement of the primer coat. Spalls and other deterioration shall be repaired in accordance with the requirements of the Owner or his designated Representative and Membrane manufacturer.
6. Areas of minor surface deterioration of 0.25" (6 mm) or greater in depth shall be repaired to prevent possible pooling of the liquid applied materials, leading to excessive usage of primer and resin.
7. Hollow-core panels, T-panels, and Twin-T panels shall have grouted joints between panels and shall be provided with mechanical securement from panel to panel.
8. For concrete materials with a compressive strength of less than 3,000 psi contact Waterproofing Manufacturer's Technical Department for substrate preparation requirements.

C. Masonry:

1. Walls shall be built with hard kiln dried brick or waterproof concrete block construction.
2. Areas of soft or scaling brick or concrete, faulty mortar joints, or walls with broken, damaged or leaking coping shall be repaired in accordance with the requirements of the Owner or his designated Representative and Flashing Membrane Manufacturer.

D. Steel/Metal:

1. Clean and prepare metal surfaces to near white metal in accordance with SSPC - SP3 (power tool clean) or as required by membrane manufacturer. Extend preparation a minimum of one (1) inch beyond the termination of the membrane flashing materials.

2. In addition to cleaning, all metal surfaces shall be abraded to provide a rough open surface. A wire brush finish is not acceptable.
- E. Other Flashing Surfaces:
1. Remove all contaminants as required by membrane manufacturer. Surface preparation shall be performed by means approved by Owner or his designated Representative.
- F. Finish Leveling, Patching and Crack Preparation:
1. General: epoxy primer/sand mix is the preferred material for all concrete and masonry substrate finish leveling, crack and wall/deck preparation and patching. Epoxy primer/sand patching mix provides a set time of approximately twelve (12) hours and does not require surface grinding. Kemperol primer/sand mix is typically applied in conjunction with general surface priming.
 2. Concrete and Masonry Substrate Leveling & Patching: Substrate conditions are to be evaluated by the Contractor, the Owner, or his designated Representative, and Membrane manufacturer. Perform leveling and patching operations as follows:
 - a) Level uneven surfaces with a leveling mixture of primer and approved kiln-dried silica sand in a 1:2 primer to sand ratio by volume. Spread and plane this compound with a squeegee and trowel to achieve a flat surface.
 - b) Fill cavities with a patching mixture of primer and approved kiln-dried sand in a 1:4 primer to sand ratio by volume.
 - c) Silica sand must be kept absolutely dry during storage and handling.
 - d) Any surface to be leveled or filled must first be primed with an appropriate primer.
 3. Joint and Crack Preparation: Joints, cracks and fractures in the structural deck/substrate shall be prepared as defined below prior to installation of the waterproofing membrane. Note: Joints, cracks, and fractures may telegraph through the waterproofing membrane.
 - a) Non-Moving Cracks, Joints, and Voids: Determine that crack/joint is non-moving. Clean out crack/joint by brushing and oil-free compressed air. Fill crack/joint with polyurethane sealant. Voids require the installation of backer rod or other backing material prior to application of the polyurethane sealant. Allow for a minimum of twelve (12) hours cure or as required by sealant Manufacturer.
 - b) Moving Cracks: Determine that crack is moving. Clean out crack by brushing and oil-free compressed air. Fill crack with polyurethane sealant. Allow for a minimum of twelve (12) hours cure or as required by sealant Manufacturer. Following full curing of primer, apply waterproofing resin and 4 inch (10 cm) wide strip of membrane (resin and fleece) in strict accordance with Membrane manufacturer's written instructions.

3.3 PRIMER APPLICATION

A General:

1. Mix and apply single and two-component primer in strict accordance with written instructions of Membrane Manufacturer. Use only proprietary materials, as supplied by the membrane

manufacturer.

2. The substrate surface must be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth wipe or a combination of methods.
3. Do not install primer on any substrate containing newly applied and/or active asphalt, coal-tar pitch, creosote or penta-based materials unless approved in writing by Membrane Manufacturer. Some substrates may require additional preparation before applying primer.

B Mixing of Kempertec EP and Kempertec D Primers:

1. Premix primer Component A thoroughly with a spiral agitator or stir stick. Pour primer Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on slow speed or stir stick without creating any bubbles or streaks. DO NOT AERATE. The Primer solution should be a uniform color, with no light or dark streaks present.
2. Do not thin primer. Determine required primer coverage for each substrate material/condition and apply in strict accordance with written instructions of Membrane Manufacturer.
3. Mix only that amount of primer components A & B that can be used in 30 minutes.

C Mixing of Quick-Dry Kempertec EP5 Primer:

1. Premix primer Component A thoroughly with a spiral agitator or stir stick. Pour primer Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on slow speed or stir stick without creating any bubbles or streaks. DO NOT AERATE. The Primer solution should be a uniform color, with no light or dark streaks present.
2. Do not thin primer. Determine required primer coverage for each substrate material/condition and apply in strict accordance with written instructions of Membrane Manufacturer.
3. Mix only that amount of primer components A & B that can be used in 20 minutes.

D Application of Primer:

1. Roll or brush the primer evenly onto the surface to fully saturate the substrate in one application. Do not allow primer to pond or collect in low areas. Follow manufacturer's recommended application rates to ensure that a thin layer of cured primer remains on the substrate surface.
2. Apply primer only up to the edge of the membrane flashing terminations. Primer application past the membrane terminations requires surfacing with an approved material.
3. For EP/EP5 primer applications over cementitious substrates where protection from substrate wetness is required, apply primer coat at a heavier application rate until pore saturation is achieved.
4. For all EP/EP5 primer applications, apply kiln-dried sand into the final coat of EP/EP5 primer while still wet at the rate of 50 lbs. per 100 square feet.
5. Allow standard primers to cure for a minimum of twelve (12) hours before membrane application. Allow quick-dry primers to cure for a minimum of four (4) hours before membrane application. Membrane must be applied to primer only when completely dry and without tack.

6. Exposure of the primer in excess of eight (8) days or premature exposure to moisture may require removal and application of new primer. DO NOT apply new primer over exposed primer older than eight (8) days, primer prematurely exposed to moisture, or primer used as temporary waterproofing, unless approved in writing by the Membrane Manufacturer.

E Disposal of Primer:

1. Cured primer may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components.
2. Uncured primer is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulation. Do not through uncured resin away.

3.4 MEMBRANE APPLICATION

A General:

1. It is recommended to apply the waterproofing membrane immediately following full curing of the primer in order to obtain the best bond between primer and membrane.
2. Mix and apply cold fluid-applied reinforced polyurethane waterproofing membrane in strict accordance with written instructions of Membrane Manufacturer. Use only proprietary membrane resins and materials, as supplied by the membrane manufacturer.
3. The primed substrate surface shall be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth-wipe or a combination.
4. Protect all areas where membrane has been installed. Do not work off installed membrane during application of remaining work before forty-eight (48) hours of curing. Movement of materials and equipment across installed membrane is not acceptable. If movement is necessary, provide complete protection of affected areas.
5. Closely follow the Membrane Manufacturer's recommendation for hot and cold weather application. Monitor surface and ambient temperatures, including the effects of wind chill.

B Mixing of Kemperol 2K-PUR Resin:

1. Mix resin Component A (cream formulation) with a spiral agitator until the liquid is a uniform cream color. If the ambient temperature is below 50°F (10°C), then a weather related additive should be combined and mixed into the Component A.
 - a) Accelerator should be added to resin Component A when the ambient temperature is 50°F (10°C) and below. The accelerator should be mixed with the spiral agitator for 2 minutes or until both liquids are thoroughly blended.
2. Pour resin Component B into Component A at a 4:1 ratio (by weight) and thoroughly mix the components with a clean spiral agitator. The Resin solution should be a uniform color, with no light or dark streaks present.
3. Mix only that amount of resin components A & B that can be used in 30 minutes.

C Application of Resin/Fleece:

1. Apply mixed resin to the prepared surface at the manufacturer's recommended application rate. The resin should be rolled or brushed liberally and evenly onto the surface using a broad, even stroke. Cover one working area at a time, between 15 – 20 ft.² (1.4 – 1.9 m²).
2. Roll out dry polyester fleece onto the liquid resin mix, making sure the SMOOTH SIDE IS FACING UP (natural unrolling procedure), avoiding any folds and wrinkles. The fleece will begin to rapidly saturate with the liquid resin mix. Use a medium nap roller or brush to work the resin into the fleece, saturating from the bottom up, and eliminating air bubbles, wrinkles, etc. The appearance of the saturated fleece should be light opaque amber with no white spots. White spots are indications of unsaturated fleece or lack of adhesion. It is important to correct these faults before the resin cures.
3. Apply additional liquid resin mix on top of fleece at the manufacturer's recommended application rate to finish the saturation of the fleece. Roll this final coating into the fleece, which will result in a glossy appearance. The fleece can only hold so much resin and all excess should be rolled forward to the unsaturated fleece, eliminating ponding or excessive build-up of the resin. The correct amount of resin will leave no whiteness in fleece and there will be a slightly fibrous surface texture. The final resin coating should be smooth and uniform.
4. Approximately 2/3 of the total resin should be applied to the substrate below the fleece reinforcement, and 1/3 of the total resin should be applied over the fleece reinforcement.
5. Prevent contact between mixed/unmixed resin and new/existing membrane. If any unmixed resin contacts membrane surface remove immediately and clean thoroughly with a cloth rag.
6. At all fleece seams, allow a 2" (5 cm) overlap for all side joints and a 4" (10 cm) overlap for all end joints.
7. At membrane tie-offs, clean in-place membrane with MEK (methyl ethyl ketone) solvent or acetone once resin has cured. Allow solvents to fully evaporate before application of new resin.

D Disposal of Resin:

1. Cured resin may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components.
2. Uncured resin is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulation. Do not throw uncured resin away.

3.5 FLASHING APPLICATION

A. General:

1. Install flashing system in accordance with the requirements/recommendations of the Membrane manufacturer and as depicted on standard drawings and details. Provide system with base flashing, edge flashing, penetration flashing, counter flashing, and all other flashings required for a complete watertight system.
2. Wherever possible, install the flashings before installing the field membrane to minimize foot

traffic over newly installed field membrane.

3. All membrane flashings shall be installed concurrently with the waterproofing membrane as the job progresses. Temporary flashings are not allowed without prior written approval from the Membrane manufacturer. Should any water penetrate the new waterproofing membrane because of incomplete flashings, the affected area shall be removed and replaced at the contractor's expense.
4. Provide a minimum vertical height of 8" for all flashing terminations. Flashing height shall be at least as high as the potential water level that could be reached as a result of a deluging rain and/or poor slope. Do not flash over existing through-wall flashings, weep holes and overflow scuppers.
5. All flashings shall be terminated as required by the Membrane Manufacturer.
6. Alkalinity surface protection consisting of one application of EP primer and one application of approved broadcast mineral aggregate surfacing shall be applied wherever stone, concrete, or masonry elements will be placed directly over the flashing.

B. Metal Flashing – General:

1. Metal flashings shall be fabricated in accordance with the current recommendations of SMACNA and in accordance with standard drawings and project details.
2. Metal flashing flanges to which membrane is to be bonded shall be a minimum of four (4) inches in width, and secured to the substrate or wood nailers six (6) inches on center staggered with fasteners appropriate to the substrate type. The flanges shall be provided with a roughened surface that has been cleaned of all oil and other residue.
3. Metal edges that will be overlaid with membrane shall be provided with a 1/4" min. hemmed edge.
4. Apply primer, resin and fleece to metal flange, extending membrane to outside face of metal edging, and to vertical face of metal base/curb flashing.

C. Membrane Flashing – General:

1. Membrane flashings shall be fabricated with primer appropriate for the substrate surface, resin of the same base chemical type as the field membrane, and fleece of the same weight as the field membrane unless specified otherwise.
2. Primer, resin, and fleece mixing and application methods as specified for field membranes are also suitable for membrane flashing.
3. Fleece shall overlap 2" (5 cm) minimum for all joints. Fleece shall be cut neatly to fit all flashing conditions without a buildup of multiple fleece layers. Work wet membrane with a brush or roller to eliminate blisters, openings, or lifting at corners, junctions, and transitions.

D. Pipes, Conduits, and Unusually Shaped Penetrations:

1. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

E. Drains and Scuppers:

1. Acceptable drain and scupper materials are cast iron, cast aluminum, and copper.
2. Connect new drains and scuppers to existing storm sewer system.
3. Alternatively, replace all broken or damaged parts of existing drains and scuppers.
4. Flashing material shall extend four (4) inches minimum onto drain or scupper flange and into drain/scupper body.
5. Install clamping ring if provided as part of the drain or scupper design. Install a strainer basket to prevent debris from clogging the drainage line.

F. Hot Stacks:

1. Protect the membrane components from direct contact with steam or heat sources when the in-service temperature exceeds 170 degrees F. In all such cases flash to an intermediate "cool" sleeve.
2. Fabricate "cool" sleeve in the form of a flanged metal cone using galvanized metal, mechanically attached to the structure or wood nailers.
3. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

G. Flexible Penetrations:

1. Provide a weathertight gooseneck of round cross-section for each penetration or group of penetrations. Set in water cut-off mastic and secure to the structural substrate.
2. Acceptable gooseneck material is copper, of a sheet weight appropriate for the application.
3. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

H. Walls, Curbs and Base Flashings:

1. Wall, curb and base flashings shall be installed to solid substrate surfaces only. Adhering to gypsum-based panels, cementitious stucco, synthetic stucco, wood or metal siding, and other similar materials is not acceptable.
2. Reinforce all transition locations and other potential wear areas with a four (4) inch wide membrane strip evenly positioned over the transition prior to installing the exposed flashing layer.
3. Reinforce all inside and outside corners with a four (4) inch diameter conical piece of membrane prior to installing the exposed flashing layer.
4. All pins, dowels and other fixation elements shall be flashed separately with a vertical flashing component prior to installing the exposed flashing layer.

5. Extend flashing a minimum of four (4) inches onto the field substrate surface.

I. Drip Edges and Gravel Stops:

1. Metal drip edges and gravel stops shall be installed to solid substrate surfaces or wood nailers only. Securement to gypsum-based panels, cementitious stucco, synthetic stucco, wood or metal siding or coping, and other similar materials is not acceptable.
2. Flash all drip edges and gravel stops by extending the field membrane all the way to the edge of the exposed face prior to installing the metal edging. Strip in the metal flange with a separate 8 inch wide strip of membrane adhered to both the securement flange and to the field membrane.
3. For conditions where water infiltration behind the exposed drip edge or gravel stop face is possible, install a separate membrane layer positioned behind the face area and extending a minimum of four (4) inches past the securement flange onto the field substrate prior to installing the drip edge or gravel stop.

J. Field Fabricated Control or Expansion Joint Flashing:

1. Control or expansion joints in excess of two (2) inches in width and all expansion joints subject to vehicular traffic require the use of a separate engineered joint system.
2. Grind or otherwise bevel the inside edges of the joint opening to provide a smooth transition edge for the fleece.
3. Flashing typically consists of a fully saturated membrane bottom layer looped into the joint as a cradle, a compressible foam or rubber insert at 25% compression fitted into the joint, and a membrane top layer applied over the joint. Extend both fleece layers four (4) inches minimum onto the field substrate on both sides of the joint.
4. Apply the field membrane over the entire joint area.

K. Electrical Conduit, Gas Lines and Lightning Protection

1. Supports for electrical conduit and gas lines greater than one (1) inch in diameter require the use of a separate engineered support system.
2. Supports for electrical conduit and gas lines one (1) inch or less in diameter, and bases for lightning protection rods and cable, can be adhered directly to the membrane surface with a single-component, high quality polyurethane sealant.

3.6 MEMBRANE PREPARATION FOR SURFACINGS AND COATINGS

- A. Membrane must be clean and dry, and free of all contaminants that may interfere with the adhesion of the surfacing and coating to the membrane surface.
- B. Membrane exposed less than 48 hours prior to application of surfacing and coating materials does not require special surface preparation. It is highly recommended that all surfacing and coating materials be applied to the membrane surface within 48 hours.
- C. Membrane exposed longer than 48 hours will require sanding/scuffing of the surface to remove the hard gloss finish, followed by an MEK or acetone solvent wipe.

3.7 SURFACING

A. Alkalinity Protection

1. Where placement of concrete, mortar or adhesive setting beds are required over sections of the waterproofing membrane or flashing, apply manufacturer's epoxy primer/coating at the manufacturer's recommended coverage rate, with broadcast to excess of kiln-dried silica sand into wet primer/coating.
2. Protection shall extend a minimum of one (1) foot (0.3m) past the concrete form on all sides.
3. Provide continuous cleaning with water and brush to eliminate settlement of concrete residues on in-place waterproofing membrane adjacent to area of concrete placement.

3.8 TEMPORARY CLOSURES & WATERSTOPS

- A. Contractor shall be responsible to ensure that moisture does not damage any completed section of the new waterproofing system. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition. All temporary closures shall be made as recommended or required by the membrane manufacturer.

3.9 PROTECTION

- A. Upon completion of waterproofing and flashings (including all associated work), institute appropriate procedures for surveillance and protection of waterproofing during remainder of construction period. Protect all areas where membrane has been installed.

3.10 FLOOD TEST

- A. A flood test of the completed membrane and flashing system shall be conducted prior to the installation of any overburden/surfacing. The flood test shall be of a 24 hr. minimum duration, and shall apply a water head of 2" over the entire application area. Any incidents of water entry shall be evaluated and all necessary repairs conducted, followed by an additional flood test.

3.11 DRAINAGE/PROTECTION MAT INSTALLATION

- A. Place the drainage mat fabric side up on top of the finished waterproofing membrane. Secure the drainage mat in place by placing temporary ballast on top of the drainage mat.
- B. Connect adjacent panels at the longitudinal edge by pulling the filter fabric back to expose the flange. Butt one panel edge to the edge of the adjacent panel. Panel ends are to be butted in the same manner. Tape the fabric overlaps, and seal the butt joints with tape as well. Overlap fabric in the direction of water flow. Cover all terminal edges with the filter fabric flap by tucking the fabric behind the core.
- C. The drainage mat should be channeled into an internal drain or perimeter drain system. Create openings in the drainage core to correspond with all discharge holes in the drain at the structural deck level. Fabric must be left intact at these holes to prevent intrusion of soil, grout, sand, or concrete into the drainage core.

- D. At roof penetrations, cut the drainage core around the protrusion, cut an X in the fabric, and tape the fabric around the protrusion to prevent intrusion of overburden materials into the core.

3.12 SOLID ADHERED OVERBURDEN APPLICATION

- A. General: Paving stones and tiles shall be installed in accordance with the overburden manufacturer's current published specifications and recommendations for use in an above-membrane plaza application.
- B. Membrane Preparation: Install adhered overburden to waterproofing membrane that has been provided with alkalinity/adhesion key surfacing. Utilize adhesives/mortars approved by the membrane manufacturer. Tile adhesive shall meet and exceed ANSI requirements for adhesion shear strength.
- C. Install Overburden: Install overburden neatly, level and even. Cracked, broken or otherwise damaged overburden materials must be removed and discarded. Fit overburden neatly around all penetrations and projections, and at the perimeter. Ensure that overburden is properly supported to provide even weight distribution to underlying assembly.

3.13 CLOSEOUT

- A. Correction of Work:
 - 1. Work that does not conform to specified requirements including tolerances, slopes, and finishes shall be corrected and/or replaced. Any deficiencies of membrane application, termination and/or protection as noted during the Membrane Manufacturer's inspections shall be corrected and/or replaced at Contractor's expense.
- B. Clean-Up:
 - 1. Site clean-up, including both interior and exterior building areas that have been affected by construction, shall be restored to preconstruction condition.

Kemperol BR/BRM and V210/V210M Roofing & Waterproofing System Master Guide Specification

PART 1 – GENERAL

1.1 SYSTEM DESCRIPTION

- A. The following specification outlines the requirements for a fully reinforced cold fluid-applied unsaturated polyester liquid resin roofing and waterproofing membrane and flashing system, and all other ancillary waterproofing work including but not limited to installation of insulation, cover boards, overburden, sealants and metal work as specified.

1.2 SECTION INCLUDES

- A. Adhered fully reinforced, cold fluid-applied, unsaturated polyester liquid resin waterproofing membrane system including membrane, penetration flashings, base flashings, and expansion joints.
- B. Substrate preparation, cleaning, leveling and patching

- C. Insulation/cover board/cap sheet installation
- D. Temporary waterproofing and priming
- E. Waterproofing membrane installation
- F. Flashing installation and expansion joint installation
- G. Protective surfacing
- H. Alkalinity protection
- I. Preparation for overburden installation

1.3 RELATED SECTIONS

- A. Supplementary General Conditions
- B. Basic Requirements
- C. Wood Blocking and Nailers
- D. Sheet Metal Flashing and Trim
- E. Overburden Installation

1.4 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual.
- B. ACI-308 - Recommended Practice for Curing Concrete
- C. ASTM - D638 - Test Methods for Tensile Properties of Plastics
- D. ASTM - D4258 - Standard Practice for Surface Cleaning Concrete for Coatings
- E. ASTM - D4259 - Standard Practice for Abrading Concrete
- F. ASTM - D4541 - Method for Pull-Off Strength of Coatings using Portable Adhesion Tester
- G. ASTM - E96(A) - Test Methods of Moisture Transmission of Material
- H. ASTM E-108, ANSI/UL 790 for fire resistance.
- I. International Concrete Repair Institute Guideline 03732 Concrete Surface Preparation
- J. Steel Structures Painting Council (SSPC)

1.5 SUBMITTALS FOR REVIEW

- A. Membrane System Product Data: Provide current standard printed product literature indicating characteristics of membrane materials, flashing materials, components, and accessories product specification and installation.
- B. Product Samples: Submit product samples of membrane and flashing materials showing color, texture, thickness and surfacing representative of the proposed system for review and approval by the Owners Representative.
- C. Submit sample copies of both the Manufacturer and Applicator warranties for the periods stipulated. Each specimen must be a preprinted representative sample of the issuing company's standard warranty for the system specified.
- D. Submit copies of current Material Safety Data Sheets (MSDS) for all components of the work.
- E. Membrane Shop Drawings: Submit shop drawings of cold fluid-applied reinforced unsaturated polyester system showing all a project plan, size, flashing details, and attachment for review and approval by the Owners Representative and Membrane Manufacturer.

1.6 QUALITY ASSURANCE REQUIREMENTS

- A. Membrane Manufacturer: Company specializing in manufacturing fully reinforced cold fluid applied liquid resin waterproofing membrane systems with a minimum of ten (10) years of documented applications in the United States. Membrane Manufacturer shall submit the following certifications for review:
 - 1. Substrates and conditions are acceptable for purpose of providing specified warranty.
 - 2. Materials supplied shall meet the specified requirements.

- B. Applicator: Company specializing in performing the work of this section with (3) years documented experience and approved by system manufacturer for warranted membrane installation. Applicator shall submit the following certification for review:
1. Applicator shall submit documentation from the membrane manufacturer to verify contractor's status as an approved applicator for warranted installations.
- C. Evaluate moisture content of substrate materials. Contractor shall determine substrate moisture content throughout the work and record with Daily Inspection Reports or other form of reporting acceptable to the Owner or designated Representative, and Membrane Manufacturer.
- D. Random tests to determine tensile bond strength of membrane to substrate shall be conducted by the Contractor at the job site using an Elcometer Adhesion Tester Model 106 or similar device, or by the performance of a manual pull test. Contractor shall perform tests at the beginning of the Work, and at intervals as required to assure specified adhesion with a minimum of three (3) tests per 5000 square feet. Smaller areas shall receive a minimum of three (3) tests. Test results shall be submitted to the Owner or his designated Representative and the Membrane Manufacturer. Contractor shall immediately notify the Owner or his designated Representative and Membrane Manufacturer in the event bond test results are below specified values.
1. Adequate surface preparation will be indicated by tensile bond strength of membrane to substrate greater than or equal to 220 psi (1.5 N/mm²), as determined by use of an adhesion tester.
 2. Adequate surface preparation will be indicated by 135° peel bond strength of membrane to substrate such that cohesive failure of substrate or membrane occurs before adhesive failure of membrane/ substrate interface.
 3. In the event the bond strengths are less than the minimum specified, additional substrate preparation is required. Repeat testing to verify suitability of substrate preparation.
- E. Monitor quantities of installed materials. Monitor application of resin mixture, reinforcing fleece and flashing. Perform Work in accordance with manufacturer's instructions.

***** **[DELETE MOCK UP REQUIREMENT IF UNNECESSARY]** *****

- F. Mock-up areas shall be used to determine required methods and tools to obtain degree of substrate preparation required by the membrane manufacturer. Conduct tests as required to verify that substrate preparation meets specified requirements. Tests shall include, but are not limited to, tensile bond strength and moisture content of substrate.
1. Prepare and clean a three (3) foot (0.9 m) by three (3) foot (0.9 m) area of each substrate material type.
 2. Submit findings in writing to Owner or his designated Representative and Membrane Manufacturer.
 3. Mock-up areas shall be maintained for quality control for the entire project.
- G. Mock-up areas shall be used to determine required methods and tools to obtain degree of substrate preparation required by the membrane manufacturer. Conduct tests as required to verify that substrate preparation meets specified requirements. Tests shall include, but are not limited to, tensile bond strength and moisture content of substrate.

1.7 REGULATORY REQUIREMENTS

- A. Conform to applicable building and jurisdictional codes for roofing/waterproofing assembly and fire resistance requirements.
- B. Comply with requirements of OSHA, OISH or local governing authority for work place safety.

- C. Comply with authority or agency "Confined Space Policy" during and throughout all work to be performed.

1.8 PRE-INSTALLATION MEETING

- A. Convene a pre-installation meeting at the job site (1) week before starting work of this section. Require attendance of parties directly affecting work of this section, including but not limited to, Roofing/Waterproofing Specifier, Owner's Representative, Roofing/Waterproofing Contractor, and Membrane Manufacturer's Representative. Review roofing/waterproofing preparation and installation procedures, coordination and scheduling required with related work, and condition and structural loading limitations of deck/substrate.

1.9 FIELD INSPECTION SERVICES

- A. Manufacturer's technical representative shall provide the following inspections of the membrane application:
 - 1. Jobstart inspection at the beginning of each phase of the project, to review special detailing conditions and substrate preparation.
 - 2. Periodic in-progress inspections throughout duration of the project to evaluate membrane and flashing application.
 - 3. Final punch-list inspection at the completion of each phase of the project prior to installation of any surfacing or overburden materials.
 - 4. Warranty inspection to confirm completion of all punch list items, surfacing, and overburden application.

1.10 DELIVERY, STORAGE, AND PROTECTION

- A. The Contractor together with the Owner or his designated Representative shall define a storage area for all components. The area shall be cool, dry, out of direct sunlight, and in accordance with manufacturer's recommendations and relevant regulatory agencies. Materials shall not be stored in quantities that will exceed design loads, damage substrate materials, hinder installation or drainage.
- B. Store solvent-bearing solutions, resins, additives, inhibitors or adhesives in accordance with the MSDS and/or local fire authority. After partial use of materials replace lids promptly and tightly to prevent contamination.
- C. Roll goods shall be stored horizontally on platforms sufficiently elevated to prevent contact with water and other contaminants. DO NOT use rolls that are wet, dirty or have damaged ends.
- D. Roofing/waterproofing materials must be kept dry at all times. If stored outside, raise materials above ground or roof level on pallets and cover with a tarpaulin or other waterproof material. Plastic wrapping installed at the factory should not be used as outside storage covers.
- E. Follow manufacturer's directions for protection of materials prior to and during installation. Do not use materials that have been damaged to the point that they will not perform as specified. Fleece reinforcing materials must be clean, dry and free of all contaminants.
- F. Copies of all current MSDS for all components shall be kept on site. Provide any and all crew members with appropriate safety data information and training as it relates to the specific chemical compound he or she may be expected to deal with. Each crew member shall be fully aware of first-aid measures to be undertaken in case of incidents. Comply with requirements of OSHA, NIOSH or local governing authority for work place safety.

1.11 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply roofing/waterproofing membrane during or with the threat of inclement weather.
- B. Application of cold fluid-applied reinforced unsaturated polyester roofing/waterproofing membrane may proceed while air temperature is between 35°F (2°C) and 105°F (40°C) providing the substrate is a minimum of 5°F above the dew point.
- C. When ambient temperatures are at or expected to fall below 50°F (10°C), or reach 75°F (24°C) or higher, follow Membrane System Manufacturer's recommendations for weather related additives and application procedures.
- D. Ensure that substrate materials are dry and free of contaminants. DO NOT commence with the application unless substrate conditions are suitable. Contractor shall demonstrate that substrate conditions are suitable for the application of the materials.
- E. Where required by the Owner or his designated Representative, Contractor shall implement odor control and elimination measures prior to and during the application of the roofing/waterproofing materials. Control/elimination measures shall be field tested at off-hours and typically consists of one (1) or a multiple of the following measures:
 - 1. Sealing of air intakes with activated carbon filters. Install filters in accordance with requirements and recommendations of the filter manufacturer. Seal filters at joints and against building exterior walls to prevent leakage of unfiltered air.
 - 2. Sealing of doorways, windows, and skylights with duct tape and polyethylene sheeting to prevent leakage of air into the building.
 - 3. Erection and use of moveable enclosure(s) sized to accommodate work area(s) and stationary enclosure for resin mixing station. Enclosure shall be field constructed or pre-manufactured of fire retardant materials in compliance with local code requirements in accordance with requirements of the Owner or his designated Representative. Equipment enclosure(s) with mechanical air intake/ exhaust openings and Odor Control Air Cleaners, as required to clean enclosed air volume and to prevent odor migration outside the enclosure. Exhaust opening shall be sealed with activated carbon filter.
 - 4. Protection of Contractor personnel and occupants of the structure and surrounding buildings as necessary to comply with requirements of OSHA, NIOSH and/or governing local authority.
- F. When disposing of all refuse or unused materials, observe all EPA, OSHA or local disposal requirements.

1.12 COORDINATION & PROTECTION

- A. Coordinate the work with the installation of associated metal flashings, accessories, appurtenances, etc. as the work of this section proceeds.
- B. Building components shall be protected adequately (with tarp or other suitable material) from soil, stains, or spills at all hoisting points and areas of application. Contractor shall be responsible for preventing damage from any operation under its Contract. Any such damage shall be repaired at Contractor's expense to Owner's satisfaction or be restored to original condition.
- C. Provide barricades, retaining ropes, safety elements (active/passive) and any appropriate signage required by OSHA, NIOSH, and NSC and/or the Owner or designated Representative.
- D. Protect finished roofing/waterproofing membrane from damage by other trades by the use of a cushioning layer such as 1" thick expanded polystyrene insulation and an impact layer such as ½" thick exterior-grade plywood.

- E. Do not allow waste products containing petroleum, grease, acid, solvents, vegetable or mineral oil, animal oil, animal fat, etc. or direct steam venting to come into direct contact with the membrane unless approved by manufacturer's chemical resistance chart.

******* [SELECT ONE MANUFACTURER'S WARRANTY] *******

1.13 WARRANTY

- A. Manufacturer's Material Warranty: Provide [(5) (10)] year manufacturer's material only warranty under provisions of this section. This warranty provides for supply of membrane only, limited to amounts necessary to effect repairs necessitated solely by material defective in content and composition.
- B. Manufacturer's Select Labor and Material Warranty: Provide [(10) (20)] year manufacturer's select warranty under provisions of this section. This warranty provides for cost of labor and materials required to address loss of watertightness, limited to amounts necessary to affect repairs necessitated by defective material, with total expenditure limited to the original cost to the Owner of Kemperol materials.
- C. Manufacturer's Standard Warranty: Provide [(10) (15) (20)] year manufacturer's standard warranty under provisions of this section. This warranty provides for cost of labor and materials for loss of watertightness, limited to amounts necessary to effect repairs necessitated by either defective material or defects in related installation workmanship, with total expenditure limited to the original cost to the Owner of Kemperol materials.
- D. Manufacturer's Premier Warranty: Provide [(10) (15) (20)] year manufacturer's premier warranty under provisions of this section. This warranty provides for cost of labor and materials for loss of watertightness, limited to amounts necessary to effect repairs necessitated by either defective material or defects in related installation workmanship, with no dollar limitation ("NDL").
- E. Manufacturer's Full Assembly Premier Warranty: Provide [(10) (15) (20)] year manufacturer's premier warranty under provisions of this section. This warranty provides for cost of labor and materials for loss of watertightness, limited to amounts necessary to effect repairs necessitated by either defective material or defects in related installation workmanship, with no dollar limitation ("NDL"). Removal and reinstallation of insulation, pavers, ballast, and vegetated overburden is included in warranty coverage.
- F. Manufacturer's Vehicular and Pedestrian Traffic System Warranty: Provide [(10)] year manufacturer's premier warranty under provisions of this section. This warranty provides for cost of labor and materials for loss of watertightness, limited to amounts necessary to effect repairs necessitated by either defective material or defects in related installation workmanship, with no dollar limitation ("NDL"). Functional deterioration of the traffic-bearing surfacing is included in warranty coverage.
- G. Waterproofing Contractor's Warranty: Provide [(2) (5)] year "Applicator Maintenance Warranty" covering workmanship for all work of this section including installation of membrane, flashings, metal work, and roofing/waterproofing accessories.
- H. Submit (2) executed copies of both the manufacturer and applicator warranties for the periods stipulated, starting from the date of substantial completion. Each warranty must be signed by an authorized representative of the issuing company.

1.14 MATERIAL SUBSTITUTIONS

- A. Materials proposed for use in the performance of the work that are not specified herein must be submitted to the Owner/Owner's Representative for evaluation no later than ten days prior to bid.

PART 2 – PRODUCTS

2.1 GENERAL

- A. The products herein specified are totally pre-engineered products of the listed manufacturer and establish criteria for the approval of substitutions. Products must be part of a pre-engineered, low VOC fully reinforced cold liquid applied polymeric resin waterproofing membrane system, equivalent in function, quality, composition and method of application to be considered for approval as an "Approved Substitute". Substitute materials must meet or exceed the physical performance characteristics of the specified materials. PMMA or single component primers or resin systems will not be accepted. A minimum [165] [200] g/m2 fleece reinforcement is required.

2.2 MEMBRANE

***** [SELECT ONE MEMBRANE TYPE] *****

- A. Membrane: Two- or three-component with catalyst, cold fluid-applied reinforced unsaturated polyester waterproofing membrane with a 360 degree needle punched non-woven [165] [200] g/m2 polyester reinforcing fleece, for a finished dry film membrane thickness of .070 [.080] inch nominal per ply. Provide products manufactured and supplied by the following:
1. Kemper System America, Inc.'s Kemperol BR resin (three-component) for use in an adhered waterproofing system.
 2. Kemper System America, Inc.'s Kemperol BRM resin (two-component) for use in an adhered waterproofing system.
 3. Kemper System America, Inc.'s Kemperol V210 resin (three-component) for use in an adhered waterproofing system.
 4. Kemper System America, Inc.'s Kemperol V210M resin (two-component) for use in an adhered waterproofing system.

- B. Physical Properties:

Physical Property	Test Method	Typical Values
Color	-	Amber/Gray
Physical state	-	Cures to solid
Thickness (165 fleece)	-	70 mils/80 mils
Tensile strength @ break	ASTM D-751	90 lb/in
Elongation	ASTM D-751	55%
Tearing resistance	ASTM D-751	3.7 lbs
Puncture resistance	FTMS 101-2031	145 lbf
Dimensional stability	ASTM D-1204	0.1%
Water absorption	ASTM D-471	2.2%
Surface hardness	ASTM D-2240	Shore A 75
Water vapor transmission	ASTM E-96	0.27 perms
Usage time*	-	15 minutes
Water resistant after*	-	30 minutes
Solid to walk on after*	-	4-6 hours
Can be driven on after*	-	24 hours
Surfacing to be applied between*	-	2 days
Apply overburden after	-	2 days
Completely hardened	-	3 days
Crack spanning	-	2mm/0.08 inch
Short-term temperature resistance*	-	250°C/482°F

* values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.

2.3 FLASHINGS

- A. Membrane Flashings: A composite of the same resin material as field membrane with 165 g/m² fleece reinforcement.

2.4 SUBSTRATE PRIMERS AND RESIN ADDITIVES

- A. Polyurethane Primer: Two-component, solvent-free polyurethane resin for use in improving adhesion of membrane to wood, metal and bituminous substrate surfaces, as provided by the following manufacturer:
 - 1. Kemper System's Kempertec D/R primer.
- B. Epoxy Primer: Two-component, solvent-free epoxy resin for use in improving adhesion of membrane to cementitious/masonry substrate surfaces, as provided by the following manufacturer:
 - 1. Kemper System's Kempertec EP/EP5 primer.
- C. Acrylic Primer: Single-component, water-borne copolymerisates-based resin for use in improving adhesion of membrane to existing asphaltic bituminous roofing substrate surfaces and coated glass-faced polyisocyanurate foam insulation, as provided by the following manufacturer:
 - 1. Kemper System's Kempertec BSF-R primer.
- D. PMMA Primer: Two-component, quick-dry reactive cure methyl methacrylate resin for use in improving adhesion of membrane to wood, metal, and cementitious/masonry substrate surfaces, as provided by the following manufacturer:
 - 1. Kemper System's Kempertec AC primer.
- A. Hot Weather Additive: Additive specifically designed to slow resin catalyzation process at ambient temperatures above 75°F (24°C). Do not use inhibitor at ambient temperatures of 75°F (24°C) or less. Inhibitor to be used with white resin prior to mixing of multi-component resin, as provided by the following manufacturer:
 - 1. Kemper System's Kemperol UP-I Inhibitor.
- D. Cold Weather Additive: Additive specifically designed to increase resin catalyzation process at ambient temperatures below 50°F (10°C). Cold activator to be used with white resin prior to mixing of multi-component resin, as provided by the following manufacturer:
 - 1. Kemper System's Kemperol UP-A Cold Activator.

2.5 SURFACINGS AND COATINGS

- A. Aggregate Finish Coating Resin: Two-component methyl methacrylate-based coating suitable for use to both bond and seal aggregate, as provided by the following Manufacturer:
 - 1. Kemper System America, Inc.'s Kemperdur AC Finish.
- B. Color Coating: Single-component, water-borne acrylic-based coating suitable for use as a colored coating, as provided by the following Manufacturer:
 - 1. Kemper System America, Inc.'s Kemperdur BSF-R Primer/Sealant.
- C. Color Coating: Two-component methyl methacrylate-based coating suitable for use as a colored coating, as provided by the following Manufacturer:
 - 1. Kemper System America, Inc.'s Kemperdur AC Finish.

2.6 TRAFFIC-BEARING AGGREGATE SURFACING

- A. Coating: Two-component methyl methacrylate-based resin with graded mineral filler, as provided by the following Manufacturer:
 - 1. Kemper System America, Inc.'s Kemperdur AC Traffic Coating, Components A, B and C.
- B. Sealer: Two-component methyl methacrylate-based sealer, as provided by the following Manufacturer:
 - 1. Kemper System America, Inc.'s Kemperdur AC Finish.

2.7 ACCESSORIES

- A. Application Tools, Accessories, and Cleaners: Supplied and/or approved by membrane manufacturer for product installation.
- B. Solvent-Based Cleaner for Tools and Membrane Tie-Ins: Methyl Ethyl Ketone (MEK) or acetone.
- C. Water-Based Cleaner for Membrane: Simple Green HD.
- D. Topcoat Surfacing Aggregate: Silica sand, ceramic-coated quartz, or specialty aggregate shall be washed, kiln-dried, and dust-free with the following size specification:
 - 1. Utility/Fire Rating: 0.5 - 1.2 mm
 - 2. Alkalinity/Adhesion Key: 0.5 - 1.2 mm
 - 3. Aesthetic/Pedestrian Traffic: 0.4 - 1.0 mm
 - 4. Light Vehicular Traffic: 0.5 - 1.2 mm
 - 5. Heavy Vehicular Traffic: 0.8 - 1.5 mm
- E. Leveling and Patching Aggregate: Silica sand shall be washed, kiln-dried, and dust-free, suitable for troweling or pourable self-leveling, round grain or angular with the following size specification:
 - 1. For voids less than 1" in depth: #00 (0.3 - 0.6 mm)
 - 2. For voids 1" to 2" in depth: #0 (0.5 - 1.2 mm)

Mixing Proportions shall be a ratio of resin to sand at 1:2 by volume for leveling, 1:4 by volume for patching, or as approved by membrane manufacturer.
- F. Backer Rod: Expanded, closed-cell polyethylene foam designed for use with cold-applied joint sealant.
- G. Caulking: Single component, non-sag elastomeric polyurethane sealant meeting ASTM C920, Type S, Grade NS, Class 35 for use in sealing cracks and joints, and making watertight seals where required.
- H. Wood Nailers and Cant Strips: New wood nailers and cant strips shall be pressure treated for rot resistance (e.g., "Wolmanized" or "Osiose K-33"), #2 or better lumber. Asphaltic or creosote treated lumber is not acceptable.

***** [DELETE FOLLOWING SECTION IF NOT SPECIFIED] *****

***** [CAP SHEETS ARE TYPICALLY USED AS TEMPORARY ROOFING/VAPOR RETARDERS] *****

2.8 CAP SHEET

***** [SELECT ONE CAP SHEET TYPE IF SPECIFIED] *****

- A. SBS Cap Sheet: Mineral-surfaced fiberglass or polyester-reinforced SBS-modified bitumen cap sheet conforming to ASTM D-6163 (fiberglass) or ASTM D-6164 (polyester), suitable for torch, hot asphalt, or self-adhered application.

- B. APP Cap Sheet: Mineral-surfaced polyester-reinforced APP-modified bitumen cap sheet conforming to ASTM D-6222, suitable for torch application.

***** [DELETE FOLLOWING SECTION IF NOT SPECIFIED] *****

2.9 INSULATION COVER BOARD

- A. Cementitious Cover Board (Permabase): High compressive strength underlayment board consisting of aggregated portland cement slurry with polymer-coated glass-fiber mesh, with the following characteristics:

1. Board Weight	2.5 lb/sq. ft
2. Board Size	[48 x 96] inches
3. Board Thickness	1/2 inch
4. Thermal Conductivity	R-value of 0.39 as determined by ASTM C518
5. Board Edges	square

- B. Polyisocyanurate Insulation Cover Board (H-Shield HD): High compressive strength (100 psi) underlayment board with heavy-duty coated glass non-perforated facers with the following characteristics:

1. Board Weight	0.34 lb/sq. ft
2. Board Size	[48 x 96] inches
3. Board Thickness	1/2 inch
4. Thermal Conductivity	R-value of 2.5 as determined by ASTM C518
5. Board Edges	square

- C. Plywood Cover Board (APA-rated C-C Plugged): Exterior-grade plywood sheathing board, installed plugged side up, with the following characteristics:

1. Board Weight	2.1 lb/sq. ft
2. Board Size	[48 x 96] inches
3. Board Thickness	5/8 inch
4. Thermal Conductivity	R-value of 0.77 as determined by ASTM C518
5. Board Edges	tongue & groove

- D. Oriented-Strand Cover Board (AdvanTech): Exterior-grade oriented-strand sheathing board, with the following characteristics:

1. Board Weight	2.4 lb/sq. ft
2. Board Size	[48 x 96] inches
3. Board Thickness	5/8 inch
4. Thermal Conductivity	R-value of 0.74 as determined by ASTM C518
5. Board Edges	tongue & groove

***** [DELETE FOLLOWING SECTION IF NOT SPECIFIED] *****

***** [INSULATION WITHOUT COATED GLASS FACER REQUIRES COVER BOARD] *****

2.10 INSULATION

- A. Polyisocyanurate Insulation with Coated Glass Facers: With heavy-duty coated glass non-perforated facers meeting or exceeding the requirements for ASTM C1289-06, Type II, Class 2, [Grade 2 (20 psi)] [Grade 3 (25 psi)], 1.5 inch minimum thickness, with the following characteristics:

1. Board Density	2.0 lb/cu ft
2. Board Size	[48x48][48 x 96] inches
3. Board Thickness	[] inches
4. Thermal Conductivity	K factor of [0.17] [] as determined by ASTM C177,

- aged 12 months at 75 degrees F
5. Board Edges square
- B. Polyisocyanurate Insulation with Nonasphaltic Facers: With nonasphaltic facers meeting or exceeding the requirements for ASTM C1289-06, Type II, Class 1, [Grade 2 (20 psi)] [Grade 3 (25 psi)], 1.5 inch minimum thickness, with the following characteristics:
1. Board Density 2.0 lb/cu ft
 2. Board Size [48x48][48 x 96] inches
 3. Board Thickness [] inches
 4. Thermal Conductivity K factor of [0.17] [] as determined by ASTM C177, aged 12 months at 75 degrees F
 5. Board Edges square
- C. Extruded Polystyrene Insulation: Meeting ASTM C578, Type [IV] [VI] [VII] physical properties with natural skin surfaces; 1.5 inch minimum thickness, with the following characteristics:
1. Board Density [] lb/cu ft
 2. Board Size [x] inches
 3. Board Thickness [] inches
 4. Thermal Conductivity K factor of [0.20] [] as determined by ASTM C177
 5. Board Edges square

***** [DELETE FOLLOWING SECTION IF NOT SPECIFIED] *****

***** [INSULATION WITHOUT COATED GLASS FACER REQUIRES COVER BOARD] *****

2.11 TAPERED INSULATION

- A. Tapered Polyisocyanurate Insulation with Coated Glass Facers: With heavy-duty coated glass non-perforated facers meeting or exceeding the requirements for ASTM C1289-06, Type II, Class 2, [Grade 2 (20 psi)] [Grade 3 (25 psi)], 1.0 inch minimum thickness, with the following characteristics:
1. Board Density 2.0 lb/cu ft
 2. Board Size [48x48] inches
 3. Board Taper [] inch per foot
 4. Total Thickness [] inches minimum [As required to achieve an average R value of [] for tapered insulation system].
 5. Thermal Conductivity K factor of [0.17] [] as determined by ASTM C177, aged 12 months at 75 degrees F
 6. Board Edges square
- B. Tapered Polyisocyanurate Insulation with Nonasphaltic Facers: With nonasphaltic facers meeting or exceeding the requirements for ASTM C1289-06, Type II, Class 1, [Grade 2 (20 psi)] [Grade 3 (25 psi)], 1.0 inch minimum thickness, with the following characteristics:
7. Board Density 2.0 lb/cu ft
 8. Board Size [48x48][48 x 96] inches
 9. Board Taper [] inch per foot
 10. Total Thickness [] inches minimum [As required to achieve an average R value of [] for tapered insulation system].
 11. Thermal Conductivity K factor of [0.17] [] as determined by ASTM C177, aged 12 months at 75 degrees F
 12. Board Edges square
- C. Tapered Extruded Polystyrene Insulation: Meeting ASTM C578, Types [IV] [VI] [VII] physical properties with natural skin surfaces; 1.0 inch minimum thickness, with the following characteristics:
1. Board Density [] lb/cu ft

2. Board Size [x] inches
3. Board Taper [] inch per foot
4. Total Thickness [] inches minimum [As required to achieve an average R value of [] for tapered insulation system].
5. Thermal Conductivity K factor of [0.20] [] as determined by ASTM C177
6. Board Edges square

***** [DELETE FOLLOWING SECTION IF NOT SPECIFIED] *****

***** [SELECT ONE OR MORE ATTACHMENT METHODS. HOT ASPHALT ATTACHMENT NOT ACCEPT- ABLE WITH EXTRUDED POLYSTYRENE OR COVER BOARDS] *****

2.12 INSULATION AND COVER BOARD SECUREMENT

- A. Mechanical Fasteners: FM-approved corrosion resistant insulation fasteners of appropriate length with plates. Securement pattern shall be in accordance with specific wind uplift rating for system application. Roof fasteners shall be a type approved by membrane and insulation manufacturer.
- B. Polyurethane Adhesive: FM-approved single component moisture-cured, or two component reactive-cured polyurethane adhesive. Adhesive application rate shall be in accordance with specific wind uplift rating for system application. Roof adhesive shall be a type approved by membrane and insulation manufacturer.
- C. Asphalt Adhesive: FM-approved steep roof asphalt conforming to ASTM D-312, Type III. Provide label on each container indicating fl point, fiblowing temperature, softening point, and equiviscous temperature. Asphalt primer, cutback solvent type, conforming to ASTM D-41, is required for concrete, masonry, and metal surfaces.

***** [DELETE FOLLOWING SECTION IF NOT SPECIFIED] *****

***** [DRAINAGE/PROTECTION BOARD IS TYPICALLY INSTALLED UNDER MOST OVERBURDEN AS- SEMBLIES DIRECTLY ON TOP OF WATERPROOFING MEMBRANE, AND OVER EXTRUDED POLYSTYRENE INSULATION IN VEGETATED ROOF ASSEMBLIES] *****

2.13 DRAINAGE/PROTECTION BOARD

- A. Drainage Board (Enkadrain/W 3601): Entangled fi polypropylene core with nonwoven geotextile fi fabric suitable for all overburden applications, with the following characteristics:
 1. Minimum Core Weight: 16 oz/sq.yd.
 2. Core Thickness: 0.30 in.
 3. Minimum Flow Rate: 9.7 gpm/ft @ 1000 psf, 1.0 gradient

***** [DELETE FOLLOWING SECTION IF NOT SPECIFIED] *****

***** [WATER RETENTION/PROTECTION BOARD IS TYPICALLY INSTALLED UNDER NON-TRAY VEG- ETATED ROOF ASSEMBLIES DIRECTLY ON TOP OF WATERPROOFING MEMBRANE] *****

2.14 WATER RETENTION/PROTECTION BOARD

- A. Water Retention Board (EnkaRetain & Drain 3111): Entangled fi polypropylene core with synthetic water absorbent mat and nonwoven geotextile fifabric suitable for all overburden applications, with the following characteristics:
 1. Minimum Core Weight: 16 oz/sq.yd.
 2. Core Thickness: 0.40 in.
 3. Total Thickness: 0.60 in.
 4. Water Storage Capacity: 0.11 gal/sf
 5. Minimum Flow Rate: 23.0 gpm/ft @ 1000 psf, 1.0 gradient

***** [DELETE FOLLOWING SECTION IF NOT SPECIFIED] *****

***** [OVERBURDEN INSULATION IS TYPICALLY INSTALLED AS PART OF PROTECTED MEMBRANE, PLAZA DECK, AND VEGETATED ROOF ASSEMBLIES] *****

2.15 OVERBURDEN INSULATION

- A. Insulation: Extruded polystyrene board meeting ASTM C578, Type [VI] [VII] [V] physical properties with natural skin surfaces; 1.5 inch minimum thickness, with the following characteristics:
1. Board Density [] lb/cu ft
 2. Board Size [x] inches
 3. Board Thickness [] inches
 4. Thermal Conductivity K factor of [0.20] [] as determined by ASTM C177
 5. Board Edges square

***** [DELETE FOLLOWING SECTION IF NOT SPECIFIED] *****

2.16 FILTER FABRIC

- A. Plaza Assembly Filter Fabric: Non-woven polyester fabric, minimum 4.0 oz/sq.yd., for use under stone ballast, sand setting bed, and similar overburden; as supplied or approved by membrane manufacturer.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck/substrate openings, curbs, and protrusions through deck/substrate, wood cant strips and reglets are in place and solidly set.
- C. Verify deck/substrate is structurally supported, secure and sound.

3.2 PREPARATION OF SUBSTRATE

- A. General: Surfaces to be prepared as a substrate for the new waterproofing system as follows:
1. The contractor shall determine the condition of the existing structural deck/substrate. All defects in the deck or substrate shall be corrected before new waterproofing work commences. Areas of deteriorated deck/substrate, porous or other affected materials must be removed and replaced with new to match existing.
 2. Prepare flashing substrates as required for application of new waterproofing membrane flashings.
 3. Inspect substrates, and correct defects before application of new waterproofing. Fill all surface voids greater than 1/8 inch wide with an acceptable fill material.
 4. Remove all ponded water, snow, frost and/or ice from the work substrate prior to installing new waterproofing materials.
 5. The fi substrate for waterproofing shall be clean, dry, free of loose, spalled or weak material including coatings, mineral aggregate, and flood coat/gravel surfacing, oil, grease, contaminants, abrupt changes in level, waterproofing agents, curing compounds, and free of projections which could damage membrane materials.

***** [SELECT REQUIRED SUBSTRATE PREPARATION METHOD(S)] *****

- B. Existing Asphaltic Bituminous Waterproofing

1. Existing flashings shall be removed down to the structural substrate/penetration at all flashing areas.
 2. Damaged/saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced, or repaired in kind.
 3. Smooth-surfaced membrane with applied coating shall have all loose coating removed, and an adhesion test performed by Waterproofing. Manufacturer's Technical representative to confirm acceptable adhesion.
 4. Granule-surfaced membrane shall have all loose granules removed from the surface by vacuuming and power brooming.
 5. Gravel-surfaced membrane shall have all loose gravel removed and the roof surface thoroughly cleaned with all ridges and high points removed. A layer of coated glass-faced polyisocyanurate foam insulation (R=6 min.) shall be adhered in urethane foam roof adhesive over the roof surface, or mechanically attached through the existing roof assembly into the structural deck.
- C. Existing Coal Tar Pitch Bituminous Waterproofing
1. Existing flashings shall be removed down to the structural substrate/penetration at all flashing areas.
 2. Damaged/saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced, or repaired in kind.
 3. Gravel-surfaced membrane shall have all loose gravel removed and the roof surface thoroughly cleaned with all ridges and high points removed. A layer of coated glass-faced polyisocyanurate foam insulation (R=20 min. or greater as required to prevent the pitch from reaching 85°F) shall be adhered in urethane foam roof adhesive over the roof surface.
- D. Existing Polymeric Single Ply Waterproofing
1. Existing flashings shall be removed down to the structural substrate/penetration at all flashing areas.
 2. Damaged/saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced, or repaired in kind.
 3. A layer of coated glass-faced polyisocyanurate foam insulation (R=6 min.) shall be adhered in urethane foam roof adhesive over the roof surface, or mechanically attached through the existing roof assembly into the structural deck.
- E. Structural Concrete:
1. New concrete shall have cured a minimum of 28 days in accordance with ACI-308, or as approved by Waterproofing. Manufacturer's Technical Department.
 2. New or existing concrete shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, bituminous products and previous waterproofing materials.
 3. New or existing concrete shall be dry with a maximum moisture content of five (5) percent. Determinations of moisture content shall be performed by the Contractor. Contractor shall be responsible to perform periodic evaluations of moisture content during the work. Moisture evaluation results shall be submitted in writing to the Owner or his designated Representative and Waterproofing manufacturer for acceptance.
 4. Where required, concrete shall be abrasively cleaned in accordance with ASTM D4259 to provide a sound substrate free from laitance. Achieve an open concrete surface in accordance with ICRI surface profiles CSP 3-5. When using mechanical methods to remove existing waterproofing products or surface deterioration, the surface profile is not to exceed ¼ inch (peak to valley).
 5. The substrate shall be sound and all spalls, voids and blow holes on vertical or horizontal surfaces must be repaired prior to placement of the primer coat. Spalls and other deterioration shall be repaired in accordance with the requirements of the Owner or his designated Representative and Membrane manufacturer.

6. Areas of minor surface deterioration of 0.25" (6 mm) or greater in depth shall be repaired to prevent possible pooling of the liquid applied materials, leading to excessive usage of primer and resin.
 7. Hollow-core panels, T-panels, and Twin-T panels shall have grouted joints between panels and shall be provided with mechanical securement from panel to panel.
 8. For concrete materials with a compressive strength of less than 3,000 psi contact Waterproofing Manufacturer's Technical Department for substrate preparation requirements.
- F. Masonry:
1. Walls shall be built with hard kiln dried brick or waterproof concrete block construction.
 2. Areas of soft or scaling brick or concrete, faulty mortar joints, or walls with broken, damaged or leaking coping shall be repaired in accordance with the requirements of the Owner or his designated Representative and Flashing Membrane Manufacturer.
- G. Steel/Metal:
1. Clean and prepare metal surfaces to near white metal in accordance with SSPC - SP3 (power tool clean) or as required by membrane manufacturer. Extend preparation a minimum of one (1) inch beyond the termination of the membrane flashing materials.
 2. In addition to cleaning, all metal surfaces shall be abraded to provide a rough open surface. A wire brush fi is not acceptable.
- H. Wood/Plywood:
1. Plywood shall be identified with American Plywood Association (APA) grade trademarks and shall meet the requirements of product standard PS1. Strip plywood joints with four inch (4") wide strip of flashing membrane. Cover knot holes or cracks with strips of flashing membrane.
- I. Other Flashing Surfaces:
1. Remove all contaminants as required by membrane manufacturer. Surface preparation shall be performed by means approved by Owner or his designated Representative.
- J. Finish Leveling, Patching and Crack Preparation:
1. General: epoxy primer/sand mix is the preferred material for all concrete and masonry substrate fi leveling, crack and wall/deck preparation and patching. Epoxy primer/sand patching mix provides a set time of approximately twelve (12) hours and does not require surface grinding. Kemperol primer/sand mix is typically applied in conjunction with general surface priming.
 2. Concrete and Masonry Substrate Leveling & Patching: Substrate conditions are to be evaluated by the Contractor, the Owner, or his designated Representative, and Membrane manufacturer. Perform leveling and patching operations as follows:
 - a) Level uneven surfaces with a leveling mixture of primer and approved kiln-dried silica sand in a 1:2 primer to sand ratio by volume. Spread and plane this compound with a squeegee and trowel to achieve a flat surface.
 - b) Fill cavities with a patching mixture of primer and approved kiln-dried sand in a 1:4 primer to sand ratio by volume.
 - c) Silica sand must be kept absolutely dry during storage and handling.
 - d) Any surface to be leveled or fi must fi be primed with an appropriate primer.
 3. Joint and Crack Preparation: Joints, cracks and fractures in the structural deck/substrate shall be prepared as defined below prior to installation of the waterproofing membrane. Note: Joints, cracks, and fractures may telegraph through the waterproofing membrane.
 - a) Non-Moving Cracks, Joints, and Voids: Determine that crack/joint is non-moving. Clean out crack/joint by brushing and oil-free compressed air. Fill crack/joint with polyurethane sealant. Voids require the installation of backer rod or other backing material prior to

application of the polyurethane sealant. Allow for a minimum of twelve (12) hours cure or as required by sealant Manufacturer.

- b) Moving Cracks: Determine that crack is moving. Clean out crack by brushing and oil-free compressed air. Fill crack with polyurethane sealant. Allow for a minimum of twelve (12) hours cure or as required by sealant Manufacturer. Following full curing of primer, apply waterproofing resin and 4 inch (10 cm) wide strip of membrane (resin and fleece) in strict accordance with Membrane manufacturer's written instructions.

3.3 WOOD NAILER LOCATION AND INSTALLATION

- A. Install pressure-treated wood nailers as specified and as required by the Membrane manufacturer. Wood nailers are required to match the thickness of insulation and cover board, and are to be secured directly to the structural deck. Wood nailers shall be installed at all roof edges and on either side of expansion joints, as well as beneath any equipment flanges.
- B. Secure Wood Nailer: Wood nailers shall be fastened to the deck. The wood nailer attachment must be able to resist a minimum force of 200 lbs. per lineal foot, in any direction. Mechanically fasten wood nailers as required to resist a force of 200 lbs per lineal foot, but with no less than 5 fasteners per 8 foot or 6 fasteners per 10 foot length of nailer. Refer to current FM Loss Prevention Bulletin 1-49 for additional attachment recommendations.

***** [DELETE FOLLOWING SECTION IF NOT SPECIFIED] *****

3.4 CAP SHEET TEMPORARY ROOF/VAPOR RETARDER INSTALLATION

- A. Install Cap Sheet: Install mineral-surfaced cap sheet in accordance with sheet manufacturer's current published specifications and recommendations for use with adhered roofing.
 - 1. Mineral Surfaced Cap Sheet Torch-Applied Attachment: Follow cap sheet manufacturer's recommendations for the appropriate application procedure. Roll each cap sheet into molten bitumen. Limit bitumen bleed-out at laps to 1/4" or less.
 - 2. Mineral Surfaced Cap Sheet Solid-Adhered Attachment: Follow cap sheet manufacturer's recommendations for the appropriate asphalt application rate and application procedure. Roll each cap sheet into a full mopping of hot steep asphalt (Type III) at the recommended EVT range. Broom in the cap sheet to spread the roofing asphalt for maximum contact. Limit bitumen bleed-out at laps to 1/4" or less.
 - 3. Mineral Surfaced Cap Sheet Self-Adhered Attachment: Follow cap sheet manufacturer's recommendations for the appropriate application procedure.
- B. Fit Cap Sheet: Neatly fit cap sheet to all penetrations, projections, curbs, and walls. Extend over all nailers. Cap sheet shall be overlapped a minimum of 3" for side laps and 6" for end laps. Seal at penetrations, projections, curbs and walls with urethane-based sealant. Do not use asphaltic flashing cement.

***** [DELETE FOLLOWING SECTION IF NOT SPECIFIED] *****

3.5 INSULATION/COVER BOARD INSTALLATION

- A. General: Insulation and cover board shall be installed in accordance with the insulation/cover board manufacturer's current published specifications and recommendations for use with adhered roofing.
- B. Install Insulation/Cover Board: Install only as much insulation and cover board as can be primed, sealed, and protected before the end of the day's work or before the onset of inclement weather.

- C. Fit Insulation/Cover Board: Neatly fit insulation/cover board to all penetrations, projections, and nailers. Insulation shall be loosely butted, with gaps not greater than 1/4". All gaps greater than 1/4" shall be filled with acceptable insulation. Cover board shall be loosely butted, with gaps not greater than 1/4". All gaps greater than 1/8" shall be filled with primer; all gaps greater than 1/4" shall be filled with polyurethane sealant.
- D. Strip In Insulation/Cover Board Joints: Strip all insulation/cover board joints with four inch (4") wide strip of flashing membrane. Under no circumstances shall the membrane be left unsupported over a space greater than 1/4".
- E. Stagger Insulation/Cover Board Joints: When installing multiple layers of insulation, all joints between succeeding layers shall be staggered a minimum of 6" in each direction.
- F. Steel Deck Substrates: Place boards perpendicular to steel deck flutes with edges over flute surface for bearing support. Edges shall be checked so that no edges are left substantially unsupported along the flutes.
- G. Drain Sumps: Insulation shall be feathered or tapered to provide a sump area a minimum of 36" x 36" where possible at all drains. Taper insulation around roof drains so as to provide proper slope for drainage. In areas where feathered or tapered insulation leaves insulation core exposed, cover with an appropriate cover board or base sheet/cap sheet assembly to provide a sound and smooth substrate surface.
- H. Tapered Insulation: Place the constant thickness first layer and the tapered thickness insulation to the required slope pattern in accordance with insulation manufacturer's instructions.
- I. Mechanical Attachment: Follow insulation/cover board and fastener manufacturers' recommendations for the appropriate fastener and plate type, size and length. Reference FM approvals for fastening patterns that satisfy FM wind uplift requirements. Typical application is one fastener and plate per 2 square feet of insulation/cover board to be attached. Note: additional fasteners are required in the corner and perimeter regions of the roof. Secure insulation/cover board in accordance with approval requirements.
- J. Polyurethane Adhesive Attachment: Follow insulation/cover board and adhesive manufacturers' recommendations for the appropriate adhesive application rate and application procedure. Under normal application rate, dispense the fibead 3" inside the outside edges of the insulation/cover board to be attached, with sequential beads equidistant. Place the boards onto the roofing adhesive beads. Walk on the boards to spread the roofing adhesive for maximum contact. Periodically walk on the boards until fi attached. Reference FM approvals for adhesive application patterns that satisfy FM wind uplift requirements. Typical application is a 3/4" bead of roofing adhesive at a rate of one lineal foot per square foot of insulation/ cover board to be attached. Note: additional adhesive is required in the corner and perimeter regions of the roof. Secure insulation/cover board in accordance with approval requirements.
- K. Asphalt Adhesive Attachment: Follow insulation manufacturer's recommendations for the appropriate asphalt application rate and application procedure. Set each insulation panel layer in a full mopping of hot steep asphalt (Type III) at the recommended EVT range. Walk on the boards to spread the roofing adhesive for maximum contact. Periodically walk on the insulation boards until fi attached. Reference FM approvals for asphalt application rates that satisfy FM wind uplift requirements. Typical application is 25 lbs. per 100 square feet of insulation board to be attached. Secure insulation in accordance with approval requirements.

***** [SELECT PRIMER(S) AS REQUIRED FOR SUBSTRATE(S)] *****

3.6 PRIMER APPLICATION

A. General

1. Mix and apply single and two-component primer in strict accordance with written instructions of Membrane Manufacturer. Use only proprietary materials, as supplied by the membrane manufacturer.
2. The substrate surface must be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth wipe or a combination of methods.
3. Do not install primer on any substrate containing newly applied and/or active asphalt, coal-tar pitch, creosote or penta-based materials unless approved in writing by Membrane Manufacturer. Some substrates may require additional preparation before applying primer.

B. Mixing of Kempertec EP and Kempertec D Primers:

1. Premix primer Component A thoroughly with a spiral agitator or stir stick. Pour primer Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on slow speed or stir stick without creating any bubbles or streaks. DO NOT AERATE. The Primer solution should be a uniform color, with no light or dark streaks present.
2. Do not thin primer. Determine required primer coverage for each substrate material/condition and apply in strict accordance with written instructions of Membrane Manufacturer.
3. Mix only that amount of primer components A & B that can be used in 30 minutes.

C. Mixing of Quick-Dry Kempertec EP5 Primer:

1. Premix primer Component A thoroughly with a spiral agitator or stir stick. Pour primer Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on slow speed or stir stick without creating any bubbles or streaks. DO NOT AERATE. The Primer solution should be a uniform color, with no light or dark streaks present.
2. Do not thin primer. Determine required primer coverage for each substrate material/condition and apply in strict accordance with written instructions of Membrane Manufacturer.
3. Mix only that amount of primer components A & B that can be used in 20 minutes.

D. Mixing of Quick-Dry Kempertec R Primer:

1. Premix primer Component A within clear pouch to obtain consistent appearance. Remove separation cord. Knead primer Component B into Component A and mix the components for approximately 1 minute. The Primer solution should be a uniform color, with no light or dark streaks present.
2. Do not thin primer. Determine required primer coverage for each substrate material/condition and apply in strict accordance with written instructions of Membrane Manufacturer.
3. Primer must be applied within 5 minutes of mixing.

E. Mixing of Kempertec BSF-R Primer:

1. Mix primer thoroughly for approximately 2 minutes with a clean spiral agitator on slow speed or stir stick without creating any bubbles or streaks. DO NOT AERATE. The Primer solution should be a uniform color, with no light or dark streaks present.

F. Mixing of Kempertec AC Primer:

1. Premix primer Component A thoroughly with a spiral agitator or stir stick.
2. Determine the correct amount of catalyst Component B based upon ambient temperature in accordance with written instructions of Membrane Manufacturer.

3. Add primer catalyst Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on slow speed or stir stick without creating any bubbles or streaks. DO NOT AERATE. The Primer solution should be a uniform color, with no light or dark streaks present.
4. Do not thin primer. Determine required primer coverage for each substrate material/condition and apply in strict accordance with written instructions of Membrane Manufacturer.
5. Mix only that amount of primer components A & B that can be used in 15 minutes.

G. Application of Primer:

1. Roll or brush the primer evenly onto the surface to fully saturate the substrate in one application. Do not allow primer to pond or collect in low areas. Follow manufacturer's recommended application rates to ensure that a thin layer of cured primer remains on the substrate surface.
2. Apply primer only up to the edge of the membrane flashing terminations. Primer application past the membrane terminations requires surfacing with an approved material.
3. For EP/EP5 and AC primer applications over cementitious substrates where protection from substrate wetness is required, apply primer coat at a heavier application rate until pore saturation is achieved.
4. For all EP/EP5 primer applications, apply kiln-dried sand into the final coat of EP/EP5 primer while still wet at the rate of 50 lbs. per 100 square feet.
5. Allow standard primers to cure for a minimum of twelve (12) hours before membrane application. Allow quick-dry and water-borne primers to cure for a minimum of four (4) hours before membrane application. Allow PMMA primer to cure for a minimum of one (1) hour before membrane application. Membrane must be applied to primer only when completely dry and without tack.
6. Exposure of the primer in excess of eight (8) days or premature exposure to moisture may require removal and application of new primer. DO NOT apply new primer over exposed primer older than eight (8) days, primer prematurely exposed to moisture, or primer used as temporary waterproofing unless approved in writing by the Membrane Manufacturer.

H. Disposal of Primer:

1. Cured primer may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components.
2. Uncured primer is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulation. Do not through uncured resin away.

3.7 MEMBRANE APPLICATION

A. General:

1. It is recommended to apply the waterproofing membrane immediately following full curing of the primer in order to obtain the best bond between primer and membrane.
2. Mix and apply cold fluid-applied reinforced unsaturated polyester waterproofing membrane in strict accordance with written instructions of Membrane Manufacturer. Use only proprietary membrane resins and materials, as supplied by the membrane manufacturer.
3. The primed substrate surface shall be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth-wipe or a combination.
4. Protect all areas where membrane has been installed. Do not work off installed membrane during application of remaining work before forty-eight (48) hours of curing. Movement of materials and equipment across installed membrane is not acceptable. If movement is necessary, provide complete protection of affected areas.
5. Closely follow the Membrane Manufacturer's recommendation for hot and cold weather application. Monitor surface and ambient temperatures, including the effects of wind chill.

B. Mixing of Kemperol BR and V210 Resin:

1. Mix resin Component A (black formulation) with a spiral agitator until the liquid is a uniform black color.
 2. Add the Catalyst Powder to resin Component A and mix with the same agitator for 5 minutes or until the powder is completely mixed. The dissolving time is 20 minutes to 2 hours, depending on the ambient temperature. The catalyst is completely dissolved when there are no white specs remaining.
 3. Mix resin Component B (white formulation) with a separate spiral agitator until the color is a uniform white. If the ambient temperature is below 50°F (10°C) or above 75°F (24°C), then a weather related additive should be combined and mixed into the Component B.
 - a) Cold Activator should be added to resin Component B when the ambient temperature is 50°F (10°C) and below. The activator should be mixed with the spiral agitator for 5 minutes or until both liquids are thoroughly blended.
 - b) Inhibitor should be added to resin Component B when the temperature is 75°F (24°C) and above. The inhibitor should be mixed with the spiral agitator for 5 minutes or until both liquids are thoroughly blended.
 4. Pour resin Component A and Component B into a third clean bucket at a 1:1 ratio (equal parts) and thoroughly mix the components with a clean spiral agitator. The Resin solution should be a uniform color, with no light or dark streaks present.
 5. Mix only that amount of resin components A & B that can be used in 20 minutes.
- C. Mixing of Kemperol BRM and V210M Resin:
1. Mix the liquid resin with a spiral agitator until the liquid is a uniform color, with no light or dark streaks present.
 2. If the ambient temperature is below 50°F (10°C) or above 75°F (24°C), then a weather related additive should be combined and mixed into the liquid resin.
 - a) Cold Activator should be added to the liquid resin when the ambient temperature is 50°F (10°C) and below. The activator should be mixed with the spiral agitator for 5 minutes or until both liquids are thoroughly blended.
 - b) Inhibitor should be added to the liquid resin when the temperature is 75°F (24°C) and above. The inhibitor should be mixed with the spiral agitator for 5 minutes or until both liquids are thoroughly blended.
 3. Add the Catalyst Powder to the mixed liquid resin and mix with the same agitator for 5 minutes or until the powder is completely mixed. It is not necessary to wait for the catalyst powder to dissolve before using the resin.
 4. Mix only that amount of resin that can be used in 20 minutes.
- D. Application of Resin/Fleece:
1. Apply mixed resin to the prepared surface at the manufacturer's recommended application rate. The resin should be rolled or brushed liberally and evenly onto the surface using a broad, even stroke. Cover one working area at a time, between 15 – 20 ft.2 (1.4 – 1.9 m2).
 2. Roll out dry polyester fleece onto the liquid resin mix, making sure the SMOOTH SIDE IS FACING UP (natural unrolling procedure), avoiding any folds and wrinkles. The fleece will begin to rapidly saturate with the liquid resin mix. Use a medium nap roller or brush to work the resin into the fleece, saturating from the bottom up, and eliminating air bubbles, wrinkles, etc. The appearance of the saturated fleece should be light opaque amber with no white spots. White spots are indications of unsaturated fleece or lack of adhesion. It is important to correct these faults before the resin cures.
 3. Apply additional liquid resin mix on top of fleece at the manufacturer's recommended application rate to fi the saturation of the fleece. Roll this fi coating into the fleece, which will result in a glossy appearance. The fleece can only hold so much resin and all excess should be rolled forward to the unsaturated fleece eliminating ponding or excessive build-up of the resin. The correct amount of

resin will leave no whiteness in fleece and there will be a slightly fibrous surface texture. The final resin coating should be smooth and uniform.

4. Approximately 2/3 of the total resin should be applied to the substrate below the fleece reinforcement, and 1/3 of the total resin should be applied over the fleece reinforcement.
5. Prevent contact between mixed/unmixed resin and new/existing membrane. If any unmixed resin contacts membrane surface remove immediately and clean thoroughly with a cloth rag.
6. At all fleece seams, allow a 2" (5 cm) overlap for all side joints and a 4" (10 cm) overlap for all end joints.
7. At membrane tie-offs, clean in-place membrane with MEK (methyl ethyl ketone) solvent or acetone once resin has cured. Allow solvents to fully evaporate before application of new resin.

E. Disposal of Resin:

1. Cured resin may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components.
2. Uncured resin is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulation. Do not throw uncured resin away.

3.8 FLASHING APPLICATION

A. General:

1. Install flashing system in accordance with the requirements/recommendations of the Membrane manufacturer and as depicted on standard drawings and details. Provide system with base flashing, edge flashing, penetration flashing, counter flashing and all other flashings required for a complete watertight system.
2. Wherever possible, install the flashings before installing the fi membrane to minimize foot traffic over newly installed fi membrane.
3. All membrane flashings shall be installed concurrently with the waterproofing membrane as the job progresses. Temporary flashings are not allowed without prior written approval from the Membrane manufacturer. Should any water penetrate the new waterproofing membrane because of incomplete flashings, the affected area shall be removed and replaced at the contractor's expense.
4. Provide a minimum vertical height of 8" for all flashing terminations. Flashing height shall be at least as high as the potential water level that could be reached as a result of a deluging rain and/or poor slope. Do not flash over existing through-wall flashing, weep holes and overflow scuppers.
5. All flashings shall be terminated as required by the Membrane Manufacturer.
6. Alkalinity surface protection consisting of one application of AC primer and one application of approved broadcast mineral aggregate surfacing shall be applied wherever stone, concrete, or masonry elements will be placed directly over the flashing.

B. Metal Flashing – General:

1. Metal flashing shall be fabricated in accordance with the current recommendations of SMACNA and in accordance with standard drawings and project details.
2. Metal flashing flanges to which membrane is to be bonded shall be a minimum of four (4) inches in width, and secured to the substrate or wood nailers six (6) inches on center staggered with fasteners appropriate to the substrate type. The flanges shall be provided with a roughened surface that has been cleaned of all oil and other residue.
3. Metal edges that will be overlaid with membrane shall be provided with a 1/4" min. hemmed edge.
4. Apply primer, resin and fleece to metal flange extending membrane to outside face of metal edging, and to vertical face of metal base/curb flashing.

C. Membrane Flashing – General:

1. Membrane flashings shall be fabricated with primer appropriate for the substrate surface, resin of the same base chemical type as the fi membrane, and fleece of the same weight as the field membrane unless specified otherwise.
 2. Primer, resin, and fleece mixing and application methods as specified for fi membranes are also suitable for membrane flashing.
 3. Fleece shall overlap 2" (5 cm) minimum for all joints. Fleece shall be cut neatly to fi all flashing conditions without a buildup of multiple fleece layers. Work wet membrane with a brush or roller to eliminate blisters, openings, or lifting at corners, junctions, and transitions.
- D. Pipes, Conduits, and Unusually Shaped Penetrations:
1. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.
- E. Drains and Scuppers:
1. Acceptable drain and scupper materials are cast iron, cast aluminum, and copper.
 2. Connect new drains and scuppers to existing storm sewer system.
 3. Alternatively, replace all broken or damaged parts of existing drains and scuppers.
 4. Flashing material shall extend four (4) inches minimum onto drain or scupper flange and into drain/scupper body.
 5. Install clamping ring if provided as part of the drain or scupper design. Install a strainer basket to prevent debris from clogging the drainage line.
- F. Hot Stacks:
1. Protect the membrane components from direct contact with steam or heat sources when the in-service temperature exceeds 170 degrees F. In all such cases flash to an intermediate "cool" sleeve.
 2. Fabricate "cool" sleeve in the form of a flanged metal cone using galvanized metal, mechanically attached to the structure or wood nailers.
 3. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.
- G. Flexible Penetrations:
1. Provide a weathertight gooseneck of round cross-section for each penetration or group of penetrations. Set in water cut-off mastic and secure to the structural substrate.
 2. Acceptable gooseneck material is copper, of a sheet weight appropriate for the application.
 3. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.
- H. Walls, Curbs and Base Flashings:
1. Wall, curb and base flashings shall be installed to solid substrate surfaces only. Adhering to gypsum-based panels, cementitious stucco, synthetic stucco, wood or metal siding, and other similar materials is not acceptable.
 2. Reinforce all transition locations and other potential wear areas with a four (4) inch wide membrane strip evenly positioned over the transition prior to installing the exposed flashing layer.
 3. Reinforce all inside and outside corners with a four (4) inch diameter conical piece of membrane prior to installing the exposed flashing layer.
 4. All pins, dowels and other fixation elements shall be flashed separately with a vertical flashing component prior to installing the exposed flashing layer.
 5. Extend flashing a minimum of four (4) inches onto the field substrate surface.

- I. Drip Edges and Gravel Stops:
 - 1. Metal drip edges and gravel stops shall be installed to solid substrate surfaces or wood nailers only. Securement to gypsum-based panels, cementitious stucco, synthetic stucco, wood or metal siding or coping, and other similar materials is not acceptable.
 - 2. Flash all drip edges and gravel stops by extending the fi membrane all the way to the edge of the exposed face prior to installing the metal edging. Strip in the metal flange with a separate 8 inch wide strip of membrane adhered to both the securement flange and to the fi membrane.
 - 3. For conditions where water in fi behind the exposed drip edge or gravel stop face is possible, install a separate membrane layer positioned behind the face area and extending a minimum of four (4) inches past the securement flange onto the fi substrate prior to installing the drip edge or gravel stop.
- J. Field Fabricated Control or Expansion Joint Flashing:
 - 1. Control or expansion joints in excess of two (2) inches in width and all expansion joints subject to vehicular traffic require the use of a separate engineered joint system.
 - 2. Grind or otherwise bevel the inside edges of the joint opening to provide a smooth transition edge for the fleece.
 - 3. Flashing typically consists of a fully saturated membrane bottom layer looped into the joint as a cradle, a compressible foam or rubber insert at 25% compression fi into the joint, and a membrane top layer applied over the joint. Extend both fleece layers four (4) inches minimum onto the fi substrate on both sides of the joint.
 - 4. Apply the fi membrane over the entire joint area.
- K. Electrical Conduit, Gas Lines and Lightning Protection
 - 1. Supports for electrical conduit and gas lines greater than one (1) inch in diameter require the use of a separate engineered support system.
 - 2. Supports for electrical conduit and gas lines one (1) inch or less in diameter, and bases for lightning protection rods and cable, can be adhered directly to the membrane surface with a single-component, high quality polyurethane sealant.

3.9 MEMBRANE PREPARATION FOR SURFACINGS AND COATINGS

- A. Membrane must be clean and dry, and free of all contaminants that may interfere with the adhesion of the surfacing and coating to the membrane surface. This includes the waxy, sticky paraffin film that develops on the membrane surface as a byproduct of curing.
- B. Membrane exposed less than 48 hours prior to application of surfacing and coating materials should not be coated.
- C. Membrane exposed longer than 48 hours will require surface preparation. The membrane surface must not evidence the paraffin curing byproduct in order to achieve the desired bond of the surfacing or coating to the membrane. Removal of any remaining paraffin residue by means of an MEK solvent wipe, or by power washing with an approved cleaner and a thorough rinsing, is required.

***** [SELECT SURFACING METHOD(S) AS SPECIFIED] *****

3.10 SURFACING AND FINISHES

- A. Aggregate Finish Surfacing
 - 1. Where specified provide and install approved kiln-dried silica sand, or other approved mineral surfacing to achieve an aesthetic and/or non-skid surface.

2. Pre-mix single-component and two-component coatings prior to application to achieve an even consistency.
3. Broadcast specified and approved sand or aggregate in excess into a bonding coat application of Membrane Manufacturer's approved methyl methacrylate-based aggregate coating system applied over clean, cured membrane at the manufacturer's recommended application rate. Aggregate shall be applied to excess to obtain uniform and full coverage.
4. Following minimum 2 hour cure time remove loose/un-embedded mineral aggregate by blowing with oil- free compressed air or with a vacuum. Re-broadcast clean mineral aggregate as required to provide full embedment and coverage of membrane.
5. Seal aggregate surface with a sealing coat application of Membrane Manufacturer's approved aggregate coating, applied at the manufacturer's recommended application rate. After completion of surfacing, avoid any traffic for a minimum of three (3) hours to allow for surfacing to cure.

B. Coating-Type Finish Surfacing

1. Where specified provide and install Membrane Manufacturer's approved methyl methacrylate-based or acrylic-based coating applied over clean, fully cured membrane at the manufacturer's recommended application rate.
2. Pre-mix single-component and two-component coatings prior to application to achieve an even consistency and color. Mix thoroughly for approximately 2 minutes with a clean spiral agitator or stir stick without creating any bubbles or streaks. DO NOT AERATE.
3. Apply coating at the manufacturer's recommended application rate. Two coating applications are recommended for best coverage and appearance. After completion of coating, avoid any traffic for a minimum of two (2) hours to allow for surfacing to cure.

C. Alkalinity Protection

1. Where placement of concrete, mortar or adhesive setting beds are required over sections of the waterproofing membrane or flashing, apply manufacturer's methyl methacrylate primer/coating at the manufacturer's recommended coverage rate, with broadcast to excess of kiln-dried silica sand into wet primer/coating.
2. Protection shall extend a minimum of one (1) foot (0.3m) past the concrete form on all sides.
3. Provide continuous cleaning with water and brush to eliminate settlement of concrete residues on in-place waterproofing membrane adjacent to area of concrete placement.

D. Adhesion Key:

1. Where placement of non-cementitious material such as asphalt pavement is required over sections of the waterproofing membrane or flashing, apply manufacturer's methyl methacrylate primer/coating at the manufacturer's recommended coverage rate, with broadcast to excess of kiln-dried silica sand into wet primer/coating.

***** [DELETE FOLLOWING SECTION IF NOT REQUIRED] *****
 ***** [TRAFFIC SURFACING IS NOT SUITABLE FOR FLASHINGS] *****

3.11 TRAFFIC SURFACING

A. Mixing of Kemperdur AC Traffic Coating

1. Mix Component A (light brown formulation) and Component B (white formulation) in a separate clean mixing bucket with a spiral Kemperol agitator for 15-20 seconds, until the liquid is an uniform beige color.
2. Gradually add Component C (white graded fi to the liquid while mixing continues for an additional 30-40 seconds until a smooth, lump free mix is produced.
3. Mix only that amount of surfacing that can be used in 10 minutes. Do not exceed mixing times.

B. Application of Surfacing and Aggregate

1. Empty mixing bucket of all Kemperdur AC mix onto the prepared surface and spread with a 1/4" x 1/4" x 1/4" notched metal trowel at the manufacturer's specified coverage rate.
2. Allow the surfacing mix to self-level and reach an initial set for 5 minutes until material will retain a peak after being touched by a finger.
3. Broadcast aggregate to excess into surfacing until a uniform dry aggregate layer has been achieved. Aggregate will initially sink into surfacing, requiring the application of additional aggregate.
4. Allow the aggregate-fisurfacing to cure for approximately 2 hours, then remove excess aggregate by brooming and vacuuming.

C. Sealing

1. Apply Kemperdur AC Finish sealer at the manufacturer's specified coverage rate to provide a sealed, maintainable surface fi
2. After completion of mineral aggregate surfacing, avoid any traffic for a minimum of three (3) hours.

3.12 TEMPORARY CLOSURES & WATERSTOPS

- A. Contractor shall be responsible to ensure that moisture does not damage any completed section of the new waterproofing system. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition. All temporary closures shall be made as recommended or required by the membrane manufacturer.

3.13 PROTECTION

- A. Upon completion of waterproofing and flashings (including all associated work), institute appropriate procedures for surveillance and protection of roofing during remainder of construction period. Protect all areas where membrane has been installed.

3.14 FLOOD TEST

- A. A fl test of the completed membrane and flashing system shall be conducted prior to the installation of any overburden/surfacing. The flood test shall be of a 24 hr. minimum duration, and shall apply a water head of 2" over the entire application area. Any incidents of water entry shall be evaluated and all necessary repairs conducted, followed by an additional flood test.

*****[DELETE FOLLOWING SECTION IF NOT REQUIRED]*****

3.15 DRAINAGE/PROTECTION MAT INSTALLATION

- A. Place the drainage mat fabric side up on top of the fi waterproofing membrane. Secure the drainage mat in place by placing temporary ballast on top of the drainage mat.
- B. Connect adjacent panels at the longitudinal edge by pulling the filter fabric back to expose the flange. Butt one panel edge to the edge of the adjacent panel. Panel ends are to be butted in the same manner. Tape the fabric overlaps, and seal the butt joints with tape as well. Overlap fabric in the direction of water fl. Cover all terminal edges with the filter fabric flap by tucking the fabric behind the core.
- C. The drainage mat should be channeled into an internal drain or perimeter drain system. Create openings in the drainage core to correspond with all discharge holes in the drain at the structural deck level. Fabric must be left intact at these holes to prevent intrusion of soil, grout, sand, or concrete into the drainage core.

- D. At roof penetrations, cut the drainage core around the protrusion, cut an X in the fabric, and tape the fabric around the protrusion to prevent intrusion of overburden materials into the core.

*****[DELETE FOLLOWING SECTION IF NOT REQUIRED]*****

3.16 WATER RETENTION/PROTECTION MAT INSTALLTION

- A. Place the drainage mat fabric side up on top of the fi waterproofing membrane. Secure the drainage mat in place by placing temporary ballast on top of the drainage mat. Dimple openings must be facing up.
- B. Connect adjacent panels at the longitudinal edge by pulling the fi fabric back to expose the flap Butt one panel edge to the edge of the adjacent panel. Panel ends are to be butted in the same manner. Tape the fabric overlaps, and seal the butt joints with tape as well. Overlap fabric in the direction of water fl. Cover all terminal edges with the fi fabric flby tucking the fabric behind the core.
- C. The water retention mat should be channeled into an internal drain or perimeter drain system. Create openings in the drainage core to correspond with all discharge holes in the drain at the structural deck level. Fabric must be left intact at these holes to prevent intrusion of soil, grout, sand, or concrete into the drainage core.
- D. At roof penetrations, cut the drainage core around the protrusion, cut an X in the fabric, and tape the fabric around the protrusion to prevent intrusion of overburden materials into the core.

*****[DELETE FOLLOWING SECTION IF NOT REQUIRED]*****

3.17 EXTRUDED POLYSTYRENE INSULATION INSTALLTION

- A. General: Insulation shall be installed in accordance with the insulation manufacturer's current published specified and recommendations for use in an above-membrane application.
- B. Install Insulation: Install only as much insulation as can be covered with overburden or otherwise secured in place before the end of the day's work or before the onset of inclement weather.
- C. Fit Insulation: Neatly fi insulation to all penetrations and projections. Insulation shall be loosely butted, with gaps not greater than 1/4".

*****[DELETE FOLLOWING SECTION IF NOT REQUIRED]*****

3.18 FILTER FABRIC INSTALLATION

- A. Roll out fifabric over the extruded polystyrene insulation, avoiding wrinkles. Overlap all side and end laps by 12".
- B. Cut fi fabric neatly around all penetrations and projections.

***** [EXPAND OR DELETE SPECIFIC OVERBURDEN SECTION AS REQUIRED] *****

3.19 SOLID OVERBURDED APPLICATION

- A. General: Pavers, tiles, stone ballast, or wood decking shall be installed in accordance with the overburden manufacturer's current published specified and recommendations for use in an above-membrane plaza application.

- B. Install Overburden: Install overburden neatly, level and even. Cracked, broken or otherwise damaged overburden materials must be removed and discarded. Fit overburden neatly around all penetrations and projections, and at the perimeter. Ensure that overburden is properly supported to provide even weight distribution to underlying assembly.

***** **[EXPAND OR DELETE SPECIFIC OVERBURDEN SECTION AS REQUIRED]** *****

3.20 VEGETATIVE OVERBURDEN APPLICATION

- A. General: Irrigation systems, dirt or other growing media, and plantings shall be installed in accordance with the irrigation system manufacturer's current published specified and recommendations for use in an above-membrane garden application.
- B. Install Overburden: Install overburden neatly, level and even. Dead, broken or otherwise damaged overburden materials must be removed and discarded. Fit overburden neatly around all penetrations and projections, and at the perimeter. Protect plantings from damage and provide with sufficient water until entire installation is complete.

3.21 CLOSEOUT

- A. Correction of Work:
 - 1. Work that does not conform to specified requirements including tolerances, slopes, and fi shall be corrected and/or replaced. Any deficiencies of membrane application, termination and/or protection as noted during the Membrane Manufacturer's inspections shall be corrected and/or replaced at Contractor's expense.
- B. Clean-Up:
 - 1. Site clean-up, including both interior and exterior building areas that have been affected by construction, shall be restored to preconstruction condition.

END OF SECTION

SECTION 07 62 00 - FLASHING AND SHEET METAL

PART ONE - GENERAL

1.1 Description of Work

Extent of each type of flashing and sheet metal work is indicated on the Drawings.

Waterproofing flashing and accessories which are installed integrally with waterproofing membrane are specified in Fluid-Applied Waterproofing System section.

1.2 Related Documents

Refer also to the following section of these Specifications:

1. **Section 075600 Fluid-Applied Waterproofing System**

1.3 Submittals and Samples

Product Data: Submit manufacturer's product data and installation instructions for each product.

Samples:

Submit 12" long, completely finished units of pre-formed or fabricated sheet metal products.

PART TWO - PRODUCTS

2.1 Sheet Metal for Flashing

Item	Standard
Stainless Steel	AISI Type 302/304. ASTM A167 2D annealed finish, soft, except where harder temper is required for forming or performance..

2.2 Pre-Formed Sheet Metal Flashing

Item	Acceptable Product	Manufacturer
Pre-Formed Sheet Metal Flashing (Stainless Steel)	Brake formed stainless steel, 24 gage unless otherwise indicated	Contractor's fabricator, approved in advance in writing by Architect
Interlocking Sheet Metal Flashing (Stainless Steel)	Dovetail Flashing (0.015" thick)	Cheney Flashing Company
	Three Way Interlocking Thruwall Flashing (0.015" thick)	Keystone Flashing Co.

2.3 Sheet Metal Counterflashing

Item	Acceptable Product	Manufacturer
Counterflashing (New / 2 Piece)	XT-1W-16	ExTech
Counterflashing (Imbedded / 2 Piece)	XT-1WW-16	ExTech
Counterflashing (Retrofit / 2 Piece)		ExTech
Counterflashing (at Cavity Wall / 2 Piece)	XT-1WA-16	ExTech
Counterflashing (Surface Mount / 2 Piece)	XT-X1-16	ExTech
Snap-In Cap Flashing		
Reglet		

2.4 Fluid-Applied Membrane Flashing

Item	Acceptable Product	Manufacturer
Modified Bitumen Fabric Flashing	2K PUR	Kemper

2.5 Accessories

Item	Standard
Solder (for stainless steel)	60 - 40 tin / lead solder (ASTM B 32), with acid chloride flux
Masonry Nails	1" long non-corrosive metal, with 1" diameter neoprene washers
Fasteners (Sheet Metal)	Same metal as flashing/ sheet metal or other non-corrosive metal. For manufactured products, use fasteners recommended by manufacturer
Epoxy Seam Sealer	2-part non corrosive metal seam cementing compound, recommended by metal manufacturer for exterior / interior non-moving joints
Bituminous Coating	FS TT-C-494 or SSPC-paint 12, solvent type bituminous mastic, normally free of sulfur, compounded for 15-mil dry film thickness per coat
Mastic Sealant	Polyisobutylene; non hardening, non skinning, nondrying, non migrating sealant
Adhesives	Type recommended by flashing sheet manufacturer for waterproof / weather-resistant seaming and adhesive application of flashing sheet.
Flashing Lap Tape	Sure-Lap Seam Tape by York
Metal Accessories	Sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being installed, non corrosive, size and gage required for performance
Clamp Assembly	Sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being

	installed, non corrosive, size and gage required for performance
Termination Bar	Sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being installed, non corrosive, size and gage required for performance

* Use either G185 (min.) zinc coated hot-dipped galvanized steel, type 304/316 stainless steel, or copper for fasteners/metal flashing in contact with ACQ wood. Do not combine stainless & galvanized steel.

2.6 Fabricated Units

General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather-resistant performance; with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work. Form work to fit substrates. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true at line and levels indicated, with exposed edges folded back to form hems.

Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams. For metal, tin edges to be seamed, form seams, and solder.

Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used, or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant (concealed within joints).

Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.

PART THREE - EXECUTION

3.1 Installation Requirements

General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations, and with SMACNA "Architectural Sheet Metal Manual".

Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units. Conceal fasteners where possible.

Install membrane flashing in accordance with manufacturer's recommendations. Seam adjacent flashing sheets with adhesive, seal and anchor edges in accordance with manufacturer's recommendations.

Nail flanges of expansion joint units to curb nailers, at maximum spacing of 6". Fabricate seams at joints between units with minimum 3" overlap, to form a continuous waterproof system.

3.2 Cleaning and Protection

Clean exposed metal surfaces, removing substances which might cause corrosion of metal or deterioration of finish.

Protection: Ensure that work will be without damage or deterioration, other than natural weathering, at time of substantial completion.

3.3 ENCLOSURES

- n Cheney Flashing (Dovetail)
- n Keystone Three - Way Interlocking Thruwall Flashing
- n Springlok Flashing System Type MA
- n Springlok Flashing System Type MA-4
- n Springlok Flashing System Type SM
- n York Copper Fabric Flashing
- n AFCO Copper Fabric Flashing
- n W.R. Grace Bituthene 4000
- n W.R. Grace Bituthene Mastic
- n Johns Manville MBR Utility Mastic
- n Zero International Door Saddles

END OF SECTION 07 62 00

SECTION 07 92 02 – EXTERIOR JOINT SEALANTS

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Work: Joint sealing work described herein includes the following:
 - 1. Joint preparation.
 - 2. Backer rod installation.
 - 3. Sealant installation.
- B. Extent and Location: Sealant shall be applied where necessary to achieve water-tightness and at the following specific components:
 - 1. All horizontal top edges of termination bars along masonry wall flashing.
 - 2. All horizontal top edges of termination bars at new membrane flashing of exposed steel lintels.
 - 3. In conjunction with aluminum thru-wall flashing.
 - 4. As required for the installation of railings.
 - 5. At new metal wall panels.
 - 6. At double-hung window restoration
 - 7. At stained-glass window restoration
 - 8. At restoration of wood elements including louvers

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. See Section 01 33 00, Submittals
- B. See Section 04 01 20.91, Unit Masonry Restoration
- C. See Section 05 50 00, Metal Fabrications
- D. See Section 07 56 00, Fluid-Applied Waterproofing
- E. See Section 07 62 00, Flashing and Sheet Metal
- F. See Section 09 90 13, Paints

1.04 SUBMITTALS

- A. Product Data: Product Data from manufacturers for each joint-sealer product required, including instructions for joint preparation and joint-sealer application.
- B. Samples: Submit samples of all materials that will contact or affect joint sealers to joint-sealer manufacturers for compatibility and adhesion testing.
- C. In-Place Samples: Provide 2'-0" long in-place samples of each type of joint sealer for Architect's review and approval.
- D. Pre-Construction Test: Perform pre-construction test to ensure compatibility with substrate. Identify existing sealants scheduled to be replaced.

- E. Elastomeric-Sealant Testing: The Contractor shall conduct periodic testing at a frequency of every 2,000 LF.
 - 1. Adhesion-in-Peel of Elastomeric Joint Sealants, as per ASTM C 794.
 - 2. Recovery Test using a durometer, as described in ASTM C 794.
 - 3. Test Method of Adhesion and Cohesion of Elastomeric Joint Sealants under Cyclical Movement, per ASTM C 719.
 - a. Contractor shall arrange for independent testing laboratory to be present to administer tests. The Contractor shall submit for Architect's review the results of the testing. If the results of the tests are unsatisfactory, the Contractor shall remove and restore defective joints at no additional cost to the Owner.
- F. Provide letter from sealant manufacturer that joint sealers, joint fillers and other related materials are totally compatible with one another and with joint substrates under conditions of service and application.

1.05 QUALITY ASSURANCE

- A. Installers Qualifications: Engage an installer who has successfully completed within the last five (5) years at least three (3) joint-sealer applications of each type as required for this project.
- B. Single-Source Responsibility for Joint-Sealer Materials: Obtain joint-sealer materials from a single manufacturer for each different product required.
- C. Standards: Sealant installation shall comply with ASTM C 962-86 "Standard Guide for Use of Elastomeric Sealants".

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials to project site in original unopened containers or bundles with labels informing about manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.
- B. Storage: Store and handle materials in compliance with manufacturers' recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.07 PROJECT CONDITIONS

- A. Environmental Conditions: Do not proceed with installation of joint sealers under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside the limits permitted by joint-sealer manufacturer.
 - 2. When joint substrates are wet due to rain, frost, condensation, or other causes.
- B. Joint-Width Conditions: Do not proceed with installation of joint sealers where joint widths are less than allowed by joint sealer manufacturer for application indicated.

- C. Joint-Substrate Conditions: Do not proceed with installation of joint sealers until contaminants capable of interfering with their adhesion are removed from joint substrates.

1.08 WARRANTY

- A. Contractor shall obtain and provide for Owner's and Architect's review, the manufacturers' 10-year Service Agreement, Limited-Material Warranty and Product Warranty.
- B. Include coverage for replacement of sealant materials which fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Joint Sealants:
 - 1. Skylight Perimeter, Expansion Joints, and Copings: ASTM C 920, Grade NS, Class 25, Uses NT, M, A, G, and O; single component.
 - a) Color: Standard colors matching finished surfaces.
 - b) Product: Sonolastic 150, as manufactured by Sonneborn, BASF Construction Chemicals-Building Systems; or Sikaflex 15-LM, as manufactured by Sika Corp.
 - 2. Skylight Frames:
 - a) Color: Standard colors matching finished surfaces.
 - b) Product: 895 NST by Pecora Corp.
- C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width. Sonolastic closed-cell backer rod as manufactured by Sonneborn, (612) 835-3434, and as approved by sealant manufacturer.
- D. Joint Primer: Provide type recommended by joint-sealer manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from pre-construction joint sealer/substrate tests and field tests.
 - 1. Metal Finishes: Sonneborn "Primer 733"; solvent based.
 - 2. Porous Surfaces: Sonneborn "Primer 2000".
- E. Bond-Breaker Tape: Polyethylene pressure-sensitive tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.
- F. Cleaners for Non-Porous Surfaces: Provide non-staining, non-corrosive chemical cleaners compatible with joint forming materials of type which are acceptable to manufacturers of sealants and sealant backing materials, which are not harmful to substrates and adjacent non-porous materials, and which do not leave oily residues or otherwise have a detrimental effect on sealant adhesion or in-service performance.
 - a) Sonneborn "Reducer 990"

G. MANUFACTURERS

1. Weathercap, Inc., P.O. Box 1776, Slidell, LA 70459-1776, (985) 649-4000.
2. Use size of strips as recommended by sealant manufacturer and compatible with style and configuration of existing. Strips should be of sufficient size to cover the joint width, plus a percentage allowance for anticipated joint movement, plus 1/4".

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify that joint backing and release tapes are compatible with sealant.
- C. Conduct pre-application inspection of site verification with an authorized manufacturer's representative.

3.02 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealers to comply with recommendations of joint-sealer manufacturers and the following requirements:
 1. Remove all foreign material from joint substrates which could interfere with adhesion of joint sealer, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealers, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 2. Clean masonry, unglazed surfaces of ceramic tile and similar porous joint substrate surfaces, by brushing, or mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealers. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
 3. Clean metal, glazed surfaces of brick and other non-porous surfaces by chemical cleaners or other means, which are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealers.
 4. Cleaning of all surfaces shall be performed on the same day in which the sealant is applied. Use only solvents recommended by the manufacturer. Cleaning solvents shall not be allowed to air dry or evaporate without wiping. Solvents, when used, shall be wiped dry with a clean cloth or lintless paper towels.
- B. Joint Priming: Prime joint substrates where indicated or where recommended by joint-sealer manufacturer based on pre-construction joint-sealer substrate tests or prior experience. Apply primer to comply with joint-sealer manufacturer's recommendations. Confine primers to areas of joint sealer bond, do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces which otherwise would be permanently stained or damaged by such contact, or by cleaning methods required to remove sealant smears. Masking tape is also recommended where appropriate to ensure a

neat job. Remove tape immediately after tooling and before the sealant begins to cure without disturbing joint seal.

3.03 INSTALLATION PROCEDURES

- A. General: Comply with joint-sealer manufacturers' printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- B. Elastomeric-Sealant Installation Standard: Comply with recommendations of ASTM C 962 for use of joint sealants as applicable to materials, applications and conditions indicated.
- C. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
 - 1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths which allow optimum sealant-movement capability.
 - 2. Do not leave gaps between ends of joint fillers.
 - 3. Do not stretch, twist, puncture, or tear joint fillers.
 - 4. Remove absorbent joint fillers, which have become wet prior to sealant application and replace with dry material.
 - 5. Install bond-breaker tape between sealants and joint fillers, compression seals, or back of joints where adhesion of sealant to surfaces at back of joints would result in sealant failure.
 - 6. Install compressible seals serving as sealant backings to comply with requirements indicated above for joint fillers.
- D. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths which allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents which discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
- F. Masking Tape: Use masking tape to protect adjacent surfaces of recessed tooled joints.

3.04 NOT USED

3.04 CLEANING

- A. Excess Sealant: Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealers and of products in which joints occur.

3.05 PROTECTION

- A. Contamination: Protect joint sealers during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealers immediately and installations with repaired areas indistinguishable from original work.

END OF SECTION 07 92 02

END OF DIVISION 07

DIVISION 08 – OPENINGS

SECTION 08413 ALUMINUM DOOR RESTORATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. The General Contract Provisions and Sections of Division 1 apply to the work of this Section.

1.02 WORK INCLUDED

- A. Provide all labor, materials, tools, and services to install aluminum doors and related components as shown on drawings and specified herein.
- B. Related Sections:
 - 1. Division 7, Section "Joint Sealants".

1.03 QUALITY ASSURANCE

A. General

- 1. Provide certified independent laboratory test reports in full accordance with Section 1.03, Paragraph C.
- 2. Doors and component structural tests shall conform to Voluntary Specifications for Aluminum Doors; AAMA 101, meeting the performance requirements of class SWD-HC-50, unless other requirements are specified herein.
- 3. Note Well: All doors incorporated into this project shall be identical in manufacture, including hardware and gaskets, to those represented in manufacturer's test reports.

B. Performance Requirements:

- 1. Condensation Resistance Factor: Test in accordance with AAMA 1502 standards and tests of thermal performance resulting in a CRF of no less than 50 using Clear-Clear insulating glass (or no less than 50 if job specific glass is tested).
- 2. "U" Value Tests: (Co-efficient of Heat Transfer): Thermal Transmittance of Conduction with a 15 mph perpendicular dynamic wind: 0.50 BTU/hr/ft²/F using insulating glass with a low-E coating.
- 3. Thermal Movements: Provide aluminum doors, including anchorage, that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - a. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C) material surfaces.

C. Test Units

1. Perform all tests on full-size units with dimensions required for the project, unless otherwise noted in the applicable AAMA testing protocol.

D. Test Procedures

1. Air Infiltration Test

- a. Air infiltration maximum for door or frame 0.15 cfm per foot of crack length at 6.24 psf pressure differential when tested in accordance with ASTM E283.

2. Water Resistance Test

- a. No uncontrolled water leakage at 6.75 psf pressure differential with water rate of 5 gallons/hr./s.f. when tested in accordance with ASTM E331.

3. Uniform Load Deflection Test

- a. No glass breakage, permanent damage to fasteners, hardware parts, or damage to make door inoperable or deflection of any unsupported span (meeting rails, muntins, frames, mullions, etc.) in excess of L/175 at both a positive and a negative load of 50 psf (design wind pressure) when tested in accordance with ASTM E330.

4. Uniform Load Structural Test

- a. Unit to be tested at 1.5 x design wind pressure both positive and negative, acting normal to plan of wall in accordance with ASTM E330.
- b. No glass breakage, permanent damage to fasteners, hardware parts, or damage to make door inoperable or permanent deflection of any main frame or ventilator section in excess of 0.2% of its span.

1.04 SUBMITTALS

A. Bid Submittal Requirements: The following are to be submitted at the time of bid:

1. Name and address of all door manufacturers whose products are proposed to be installed.
2. Model number, catalog cuts and other relevant product literature for each window/door type required by the contract documents.
3. Certification by each manufacturer showing that each type, grade and size of door unit has been tested in accordance with specified tests and meets performance requirements specified. Ensure that test certificates are current and that no certifications are due to expire during the anticipated duration of the contract.
4. A complete list of any and all differences between proposed products and contract document requirements.
5. Name and address of installing subcontractor (if different from bidder), and list of 5 installations completed within the last two years. Information for each reference shall include contract amount and Owner and/or Architect/Engineer contact person's name and telephone number.
6. At the Owner's option, prior to awarding the contract, bidders may be required, either at the time of bid opening or within some specified time thereafter, to submit a working sample (minimum size 18" x 32")

for each door function type required for the project. Samples meeting contract requirements must be submitted prior to the execution of the construction contract.

B. Test Reports/Calculations

1. Certified independent laboratory test reports verifying compliance with all test requirements of Section 1.03, Paragraph D, and structural calculations prepared by a registered Structural Engineer for compliance with load requirements as specified in Section 1.03, Paragraph D.3 & 4 for doors and window members.
2. Structural calculations prepared by a registered Structural Engineer for compliance with applicable building codes for anchorage.

C. Product Data: Submit manufacturer's specifications, recommendations and standard details for aluminum door units.

D. Shop Drawings: Submit shop drawings, including location floor plans or exterior wall elevations showing all door openings, typical unit elevations at 1/4 inch scale, and half size detail sections of every typical composite member. Show anchors, hardware, operators and other components as appropriate if not included in manufacturer's standard data. Include glazing details and standards for factory glazed units.

E. Samples:

1. Submit one sample of each required aluminum finish, on 3 x 3 inch long sections of extrusion shapes or aluminum sheets as required for door units.
2. Submit the following samples for review by the Owner and Architect prior to fabrication:

ITEM#	QUANT.	SIZE	DESCRIPTION
S1	4	6" x 6"	Door aluminum with finish
S2	4	12" x 12"	Insulating glass
S3	4	6" long	Weather-stripping
S4	4	Actual	Door hardware, each type
S5	4	6" long	Glazing gasket
S6	4	6' long	Snap Trim

3. Submit additional samples, if and as directed by Architect, to show fabrication techniques, workmanship of component parts, and design of hardware and other exposed auxiliary items.

F. Shop drawing showing fabrication and installation of each type of door required including information not fully detailed in manufacturer's standard Product data and the following:

1. Layout and installation details, including anchors.
2. Elevations at 1/4 inch = 1 foot scale and typical door unit elevations at 3/4 inch = 1 foot scale.
3. Full-size section details of typical composite members, including reinforcement and stiffeners.
4. Location of weep holes.
5. Trim details.
6. Hardware, including operators.

7. Door cleaning provisions.
 8. Glazing details.
 9. Accessories.
- G. Certifications: Submit certified test laboratory reports by independent laboratory substantiating performance of system. Include other supportive data as required or as necessary including AAMA certification.
1. Certification test reports from an AAMA-recognized independent testing laboratory shall be submitted by each manufacturer showing compliance with the performance standards specified.
 2. Test reports shall be no more than four years old.
 3. Sample submitted for tests shall represent the manufacturer's standard construction.
- 1.05 QUALITY ASSURANCE:
- A. Installer Qualifications: Installer shall be employed by or authorized representative of the manufacturer. Installer must be experienced have completed installation of aluminum doors similar in material, design, and extent to those required for this Project and with a record of ten (10) years successful in services performance.
- B. Manufacturer Qualifications: Must be a member of AAMA and Subscribes to AAMA certification program and complies with requirements thereof.
1. Provided aluminum doors certified under AAMA Quality Certification program.
- C. Safety Glass Standard: Where safety glass is indicated or required by authorities having jurisdiction, provide the type of products indicated that comply ANSI Z97.1 and testing requirement of 16 CFR for Category II materials.
- D. Glazing Standards: Comply with recommendations of the Flat Glass Marketing Associates (FGMA) "Glazing Manual" and "Sealant Manual", except where more stringent requirements are indicated. Refer to those publications of glass and glazing terms not otherwise defined in this Section or referenced standards.
- E. Insulating Glass Certification Program: Provide insulating glass units permanently marked either on spacer or at least one component pane of units with the certification label of the Insulating Glass Certification Council (IGCC) and having a CBA rating.
- F. Single-Source Responsibility: Obtain aluminum doors from one source and by a single manufacturer.
- G. Mockups: At Owner's option, prior to installing aluminum doors, furnish and install one full-size sample of each door type as required to verify selections made under Sample submittals and to demonstrate aesthetic effects as well as qualities of material and execution. Build mock-ups to comply with the following requirement, using materials indicated for final unit of Work.
1. Locate mockups on-site in the location and of the size indicated or, if not indicated, as directed by Architect.

2. Notify Construction Manager one week in advance of the dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic and workmanship.
4. Obtain Architect's approval of mockups before state of final unit of Work.
5. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

- a. Approved mockups in an undisturbed condition at the time of Substantial Completion may become part of the complete Work.

H. Design Concept: The Drawings indicate sizes, profiles, dimensional requirement, and aesthetic effects of aluminum doors and are based on the specific door types and models indicated. Other aluminum door manufacturers whose products have equal performance characteristics may be considered provided deviations in size, profile, and dimensions are minor and do not alter the aesthetic effect. The burden of proving equality rest with the Contractor.

1.06 PROJECT CONDITIONS

- A. Field Measurements: Check actual door openings in construction work by accurate field measurement before fabrication. Show recorded measurements on final shop drawings.
1. The Drawings are finished to guide the Contractor and do not necessarily represent actual field conditions. The Contractor is responsible for accurate door count and corresponding field dimensions.
 2. Coordinate fabrication schedule with construction progress to avoid delay. Where necessary, proceed with fabrication without field measurements and coordinate tolerance to ensure properly fitting of all door units.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Protect materials from damage before installation per instructions.
1. Materials shall be packed, loaded, shipped, unloaded, stored and protected in a manner which will avoid abuse, damage, and defacement in accordance with AAMA CW-10.
 2. Store inside if possible in a clean, well drained area free of dust and corrosive fumes.
 3. Stack vertically or on edge so that water cannot accumulate on or within materials.
 4. Cover materials with tarpaulins or plastic hung on frames to provide air circulation and prevent contaminants and condensation from contacting aluminum.
 5. Keep water away from stored assemblies

1.08 PRE-INSTALLATION MEETINGS

- A. Pre-installation Conference: Conduct conference at the project site.

1. Retain subparagraphs below if required. If retaining, revise to include product-specific requirements.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review and discuss the finishing of aluminum doors that is required to be coordinated with the finishing of other aluminum work for color and finish matching.
4. Review, discuss, and coordinate the interrelationship of aluminum doors with other exterior and interior wall components. Include provisions for anchorage, flashing, sealing perimeters, and protecting finishes.
5. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.
6. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

1.09 GUARANTEES AND WARRANTIES

A. Manufacturer's Warranties: Submit written warranties from door manufacturer for the following:

1. Doors: Doors furnished are certified as fully warranted against any defects in material or workmanship under normal use and service for a period of ten (10) years from date of Substantial Completion. Failure includes, but are not necessarily limited to the following:
 - a. Structural failures including excessive deflection, water leakage, air infiltration, or condensation.
 - b. Faulty operation of sash and hardware.
 - c. Deterioration of metal, metal finishes, and other materials beyond normal weathering
2. Finish: The pigmented organic finishes on exposed surfaces of doors and component parts (such as panning, trim, mullions and the like) are certified as complying fully with requirements of AAMA 2603 and AAMA 2604 for pigmented organic coating and fully warranted against chipping, peeling, cracking or blistering for a period of ten (10) years from date of installation. Warrant finishes meeting AAMA 2604 against fading beyond AAMA standards.
3. Insulated Glass: Warranted from visual obstruction due to internal moisture for a period of ten (10) years after date of Substantial Completion.
4. The warranty shall not deprive the Owner of other rights or remedies that the Owner may have under other provisions of the Contract Documents and shall be in addition to and run concurrent with other warranties by the Contractor under requirement of the Contract Documents.

B. Installation Guarantee: Submit written warranties from door manufacturer for the following:

1. Installation labor shall be guaranteed by the installer for, but not limited to, leaking around site applied sealants, poor anchorage of materials into existing conditions, and other installation applicable workmanship for period of five (5) years from the date of acceptance.

PART 2 : PRODUCTS

2.01 ACCEPTABLE DOOR MANUFACTURERS

- A. Basis of Design: Subject to compliance with requirements, provide Series 1500 as manufactured by Skyline Windows, Bronx, NY or comparable product by one of the following:
 - 1. Wausau Window and Wall Systems.
 - 2. Moduline Window Systems Inc.
 - 3. YKK AP America, Inc.
- B. Other manufacturers desiring approval to bid must furnish certified test reports indicating full compliance with Section 1.03, Paragraphs A, B, and C, and all other requirements of this specification 14 days prior to bid date.
- C. Manufacturers shall have been engaged in the manufacture of aluminum doors of monumental grade not less than five years.

2.02 MATERIALS

- A. Aluminum door/frame and components
 - 4. Extruded aluminum prime billet 6063T5, aluminum sheet 5005 H32 (Anodic) or 3003 H14.
 - 5. Minimum principal door member wall thickness .080".
 - 6. Minimum frame depth front to back 2.5"
 - 4. All vent and frame sections to be double tubular sections except threshold.
- B. Weatherstrip
 - 1. Ethylene Propylene Diene Monomer (EPDM).
- C. Sealants
 - 1. Materials used between components and moving perimeter joints to be high range type; i.e. silicones, polysulfides, polyurethanes, etc., dependent upon specific application and manufacturer's recommendations.
- D. Thermal-Break
 - 1. Frame and Vent: shall be poured in place polyurethane into a prefinished cavity providing minimum .250" separation except threshold.
- E. Glass and Glazing
 - 1. Glass size, type and materials as indicated on architectural drawings and as specified in Section 08800 with size, type and strength to meet load requirements in accordance with Section 1.03, Paragraph C. 3 & 4. Glazing to be in accordance with FGMA Glazing Manual. Glazing shall be held in place by extruded aluminum glazing beads. Glazing shall be set in minimum 5/8 inch glazing rabbet. All glazing shall have glazing tape applied to exterior extruded glazing leg, interiors to have neoprene glazing rubber.
- F. Hardware-General

1. All aluminum components 6063T5 (T6) or 6105T6.
2. Lever handles and cases, die-cast aluminum or stainless steel with aluminum or stainless steel keepers.
3. Door shall be mounted to the frame with three extruded hinges. Hinges shall have a .250" diameter stainless steel pin and nylon separators.
4. Hardware members bridging frame or vent thermal barrier to be suitable low conductivity, nonmetallic material.

2.03 FABRICATION

A. General

1. Finish, fabricate and shop assemble frame and door members into complete units and door/frame systems under responsibility of one manufacturer.
2. No bolts, screws or fasteners to bridge thermal barriers or independent frame movement.
3. Fabricate to allow for thermal movement of materials when subject to a temperature differential from – 30 degrees F to +180 degrees F.

B. Frame and Sash

1. Jambs to head; miter corners and mechanically stake over aluminum corner key, (2 per sash and 2 per frame), corner key to have minimum .250' thickness, set and sealed in structural silicone, or epoxy leaving hairline weathertight joint. Joint to sill; cope butt and mechanically fasten sill to jamb. Joinery methods must not result in discoloration of finish or damage to the corner.

C. Weatherstripping

1. EPDM sweep-type weatherstripping in extruded race at center of frame continues around perimeter of frame contacting sash to create a primary weather seal. EPDM weatherstripping shall be uninterrupted all 4 sides of main frame, heads, jambs, and sills.
2. Fin type EPDM weatherstripping in extruded race about perimeter of sash.

D. Glass Drainage

1. Provision shall be made to insure that water will not accumulate and remain in contact with the perimeter areas of insulating glass.

E. Hardware

1. Provide concealed perimeter slide rails which automatically activate compression locks at 3 points of jamb, head and sill, as required for door sizing. Perimeter rails shall be activated by way of a lever handle. Lever handle to have cylinder keyed lock.
2. Lever handle shall be mounted on door interior without exposed screws. Handle shall allow operation of door unit. Handle shall be finished to match door finish.
3. Door/frame shall be equipped with a friction/hold open door closer or similar device spanning the head of door leaf.

- a. Friction-type swing-restriction arm shall allow for a 90-degree opening.
- 4. Hinges shall have stainless steel pins, .250 inches in diameter. Hinge shall be attached to main frame by means of stainless steel machine screw.
- 2.04 ALUMINUM DOOR FINISHES
- A. General: Comply with NAAMM "Metal Finishes Manual" for recommendations relative to finish applications and designations.
- B. Finish Designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.
 - 2. The finish for the aluminum doors, including trim shall be electrostatically baked-on acrylic enamel with chromate pre-treatment. Finish coatings shall meet AAMA performance requirements specified in article 2.04.C below (Duracron, Polycron, or equal).
 - 3. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
 - 4. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
 - 5. Interior and exterior color and gloss shall match the exiting door finish. Match Architect's samples for custom color and other characteristics. Actual color samples on metal backing shall be submitted for approval by Owner.
 - 6. Metal Preparation: Material Preparation should be done in accordance with ASTM D 1730, Type B, Method & Amorphous Chromate Pre treatment minimum 40 mg/sft.
 - 7. Warranty: Provide a Warranty for the backed-on coating for 10 years after date of substantial completion.
- C. Finish Schedule:
 - 1. AAMA 2603 AT INTERIOR
 - a. Provide manufacturer's standard acrylic or polyester, baked-on, electrostatically applied enamel coating. Color as selected by the Architect, applied over manufacturer's standard substrate preparation including cleaning, degreasing, and chromate conversion coating.
 - b. Finish shall meet or exceed AAMA 2603 (formerly AAMA 603).
 - 1. AAMA 605 AT EXTERIOR
 - a. Provide manufacturer's standard 2 coat 50% Fluoropolymer or Silicone Polyester, baked on, electrostatically applied enamel coating. Color as selected by the Architect, applied over manufacturer's standard substrate preparation including cleaning, degreasing, and chromate conversion coating. Finish shall meet or exceed AAMA 2604 (formerly AAMA 605).

PART 3: EXECUTION

3.01 INSPECTION

- A. Verify that all openings into which doors are to be installed are the correct size to permit the proper installation according to the manufacture's installation instructions.
- B. Do not install doors until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install doors with skilled tradesman in exact accordance with approved shop drawings and Specification.
- B. Aluminum that is not organically coated shall be insulated from direct contact with steel, masonry concrete or non-compatible materials by bituminous paint, zinc chromate primer or other suitable insulating material.
- C. Plumb and align door faces in a single plane for each wall plane. Erect square and true. Anchor to maintain position when subjected to normal thermal and building movement, and specified wind loads.
- D. Erection Tolerances:
 - 1. Dimensional variation in the building frame and/or work surrounding or supporting the work of this Section are as determined in the field by field measurement by the Contractor of the existing work in place.
 - 2. All parts of the work, when complete, shall be within the following tolerances and shall remain so during the life of the building.
 - 3. Maximum variation from plane or location shown on approved shop drawings 1/8" per 12 feet of length or 1/2" in any total length of building surface.
 - 4. Maximum offset from true alignment between two members abutting end-to-end, edge-to-edge in line or separated by less than 3": 1/32" (shop and/or field joints). This limiting condition shall prevail under both no load and full load conditions.

3.03 PERIMETER SEALING

- A. Seal joints at opening perimeters in accordance with approved shop drawings to provide watertight installation.
- B. Joints and surfaces to receive sealants shall be clean, free from loose material, free of efflorescence or mortar leaking, and dry. Sealants shall not be applied when temperature is below manufacturer's recommendations.
- C. Clean joints and surfaces before sealing or priming, then prime joints in accordance with manufacturer's instructions.
- D. Provide joint backing in all joints where a suitable backer to receive sealant is otherwise not available. Joint depth shall be equal to 1/2 of width.
- E. Caulk joint width shall not be less than 1/4" nor more than 1/2" unless otherwise recommended by manufacturer. Wipe off excess material and leave exposed surfaces and joints clean and smooth.

3.04 ADJUSTING AND CLEANING

- A. After installation, doors and glazing shall be inspected, adjusted, and left clean and free of temporary labels and dirt. Protect finished installation against damage.

3.05 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

- 8. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements.

- B. Testing Services: Testing and inspecting of installed doors shall take place as follows:

- 9. Testing Methodology: Testing of doors for air infiltration and water resistance shall be performed according to AAMA 502-08. The Contractor shall repair to match existing any interior or exterior finish damaged by the field testing.

- 10. Air-Infiltration Testing:

- a. Test Pressure: That required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance class indicated.
 - b. Allowable Air-Leakage Rate: 1.5 times the applicable AAMA/WDMA/CSA 101/I.S.2/A440 rate for product type and performance class rounded down to one decimal place.

- 11. Water-Resistance Testing:

- a. Test Pressure: Two-thirds times test pressure required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance grade indicated.
 - b. Allowable Water Infiltration: No water penetration.

- 12. Test Reports: Prepared according to AAMA 502.

- 13. Testing Extent: Test a minimum of three doors of each type as selected by Architect and a qualified independent testing and inspecting agency. Doors shall be tested after perimeter sealants have cured.

- a. On site tests of installed windows and doors are required as follows: one percent (1%) of the number of each type of fenestration product being replaced, or a minimum of one test for 100 fenestration products or less.
 - b. On-site tests shall be conducted at appropriate times during the project with the door manufacturer's representative and the door installer present. Field testing shall take place early enough in the installation process so as to create a minimum disruption of work if it is found that changes to the windows/doors or installation method is required. The Architect and the Owner are to be promptly notified when testing is scheduled, so that, at their option, they may attend.
 - c. Tested doors or doors that fail to meet specified performance requirements and units found to have deficiencies shall be corrected and retested at no cost to the Owner or HCR. Field tests are to be scheduled early enough in the installation sequence so that, in case of unsuccessful test performance, a minimum number of modified doors or doors will have to be reinstalled.
 - d. If any window or door fails to meet specified performance requirements, the contractor and door manufacturer shall make any modifications necessary to meet specified test criteria at all installed

windows or doors of that type. Retesting of the original test sample, as well as at least one additional previously installed sample of that type, shall be conducted at no additional cost to the Owner.

- e. The required performance of field test specimens shall be based upon the specified performance class and grade, even when the products provided exceed those performance classes and grades.
 - f. The Owner shall reserve the right to conduct additional testing, at their own expense. Any deficiencies discovered as a result of such testing must be corrected by the Contractor, and such corrections verified via further testing at the Contractor's expense.
 - g. Test samples are to be randomly selected, and tested as typically installed. No special preparation of the test samples shall be permitted.
- C. Remove and replace non-complying doors and retest as specified above.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- E. Prepare test and inspection reports.
- F. Test at least three units representative of each door type used in the project.
- G. Conduct on-site tests for air and water infiltration with door manufacturer's representative present. The Architect will select units to be tested. Tests not meeting specified requirements and units having similar deficiencies shall be corrected at no cost to the Owner. Testing shall be performed by a qualified independent testing agency selected by the Architect.
14. Air-Infiltration Tests: Conduct tests according to requirements of ASTM E 783. Allowable infiltration shall not exceed 1.5 times the amount indicated.
15. Water-Resistance Tests: Conduct tests according to requirements of ASTM E 1105. No water leakage is permitted.

END OF SECTION

DIVISION 09 - FINISHES

SECTION 09 23 00 – GYPSUM PLASTERING

PART 1 - GENERAL

1.1 Summary

- A. Extent of interior plaster patch restoration work is indicated on the Drawings and by provisions of this Section including but not limited to the following:
 - 1. Flat wall and ceiling plaster
- B. The work also include installation of galvanized metal lath, galvanized metal accessories and beads, gypsum plaster and all other necessary items required for plaster patch restoration.

1.2 Submittals

- A. Product Data: Obtain from manufacturer and submit technical data and installation instructions for each product specified in Part 2 - Products.
- B. Plaster and Samples: 12" square of the self furred galvanized metal lath
- C. Mock-up Sample: Fabricate 2' x 2' mock-up panel of three-coat plaster (scratch, brown, and finish), stepped or "cut-away" to show construction and thickness of each coat including galvanized metal lath.

1.3 Quality Assurance

- A. All plaster replication work shall be performed by a plaster fabricator/ installer with experience in plaster replication. The fabricator/ installer must have a minimum of five (5) years of experience and adequate facilities and capacity to furnish the quality, size and quantity of units required. Fabricator must demonstrate three projects similar in scope and type to the required work in the New York City metropolitan region
- B. Contractor shall maintain a steady work crew consisting of skilled mechanics who are experienced with the materials and methods specified, and are familiar with the design requirements.
- C. Contractor shall replace all broken, lost, and damaged plaster ornament, adjacent materials, or new plaster ornament with major defects such as blemishes, incorrect size, finishes, chips, or flaws at no additional cost to the Owner.
- D. All ornamental plaster work shall match the original in all respects, including profile, texture, dimensions, etc.
- E. Pre-Application Conference: Prior to beginning Plaster work, the Contractor shall hold an on-site conference to review the detailed requirements of the Work. Attendees shall include Contractor's project manager and foreman, Architect's project manager and BPCA Project Manager shall send a conference notification and pre-installation agenda to all attendees 7 working days prior to the date of the conference. Conference agenda shall include:
 - 1. documentation
 - 2. condition of substrate
 - 3. preparation of materials for application
 - 4. installation of work
 - 5. curing and protection of work

6. inspection schedule
7. preparation of mock-up (to occur during conference)

1.4 Delivery, Storage and Handling

Deliver to the jobsite all materials in their original manufacturers' packages bearing manufacturer's name and brand. Store materials and protect from all weather elements.

PART 2 - PRODUCTS

2.1 General

- A. It is the Commissioner's intention that the contractor uses the products specified in this section. Materials are listed in this section as a warranted system and/or for establishing a standard of quality. Use systems and materials as defined, or an approved equal authorized in writing by the Commissioner.

B. Plaster Materials:

1. Gypsum: ASTM C 28, white for finish coat.
2. Sand Aggregate: ASTM C 897, manufactured or natural sand, white for finish coat.
3. Hydrated Lime: pressure hydrated, shall comply with ASTM-C206.
4. Molding Plaster: white, shall comply with ASTM-C28
5. Patching Plaster: white, shall comply with ASTM-C28.
6. Bonding Agent: shall comply with ASTM-C631.
7. Water: Potable, free of materials capable of affecting plaster, lath and/or accessories.

C. Templates:

1. Custom galvanized sheet metal templates are to be fabricated on site to allow for accurate replication of historic profiles.
2. Paint and coatings on the original samples shall be removed completely prior to creating templates.
3. Accurate molding profiles (cross-sections) and measurements should be taken on-site. Templates made from these measurements shall be reviewed for accuracy by the Architect prior to running replication moldings.

D. Retarding Agents:

1. The use of retarding agents in plaster mixes will not be permitted.

E. Bonding Agents:

1. If bonding agent is used it shall be a material producing a permanent bond and not affected by freezing, heat, acids, alkalis, dampness and producing no discoloration to finished plaster surfaces.

2.2 Plaster

Scratch Coat

1. Mix Proportions: 1 part Gypsum neat plaster with 2 parts sand.

Brown Coat

1. Mix Proportions: 1 part Gypsum neat plaster with 3 parts sand.

Finish Coat

1. Mix Proportions: 1 part Gypsum gauging plaster with 8 parts sand for float finish.

For repairs being made to the historic lime plaster where identified by Architect during construction, apply a smooth-troweled finish coat of gauged lime in lieu of gypsum gauging plaster.

2.3 Metal Support System

Self-Furred Metal lath

1. ASTM C 847, fabricated from galvanized steel sheet of type and configuration indicated. Diamond Mesh Lath: 3.4 lb. per sq. yd.

2.4 Accessories

- A. Provide Accessories as shown or as recommended by the manufacturer, including galvanized metal corner beads, casing beads, base screed and control joints. Coordinate with depth of plaster indicated.
- B. Wire for Ties: ASTM A 641, Class 1 zinc coating, soft temper

PART 3 - EXECUTION

3.1 Temporary Protection

- A. Cover adjacent surfaces and adjacent decorative features with protective sheeting to contain plaster fragments and dust during removal and preparation, and to contain plaster droppings during the application of respective scratch, brown and finish coats.

3.2 Inspection

- A. The Contractor shall examine substrate and conditions under which this work is to be performed and notify the Commissioner in writing of conditions detrimental to the proper completion of the work. Do not proceed until unsatisfactory conditions are corrected. Commencement of work indicates that Contractor accepts substrate and conditions.
- B. Correct any conditions that are detrimental to the successful completion of the work. Sequencing of work should be scheduled to ensure that completed work will match existing.

3.3 Preparation

- A. Removals: Carefully remove loose plaster, loose or deteriorated lath, and other materials necessary to achieve a sound substrate and adjacent keying surfaces.
- B. Preparing void: All effected areas of plasterwork shall be removed. Depth of removal will vary between locations due to degree of repair necessary.

- C. Damaged Lath: All damaged or deteriorated lath shall be removed and replaced with galvanized metal diamond lath.
- D. Missing Lath: If no lath is present and will be required for proper plaster attachment and keying, attach galvanized metal diamond mesh lath using galvanized nails. Lath should be mounted through existing plaster or onto existing lath to hold it securely in place.

3.4 Installation of Metal Lath

- A. Provide galvanized metal lath and secure to substrate. Lap metal lath ½" at the sides and 1" at the ends. Lap minimum 1" new lath to existing.
- B. Provide galvanized metal control joint bead between the new stucco and the adjacent existing found to be in a sound condition, if required.

3.5 Mixing

- A. Comply with ASTM C 842 and manufacturer's directions for gypsum plaster base coat proportions. Proportion material by volume (parts in dry weight). Adjust mix proportions within the limits specified to attain workability.

3.6 Plaster Application

- A. Schedule application of plaster to precede application of other finishes which could be damaged by operations incidental to plastering.
- B. Apply the appropriate thickness for each specific application according to the National Plasterer's Association guidelines.
- C. Scratch and moist cure base coat. Apply finish coat as per sample accepted by the Commissioner.

3.7 Clean Up

- A. Upon completion of all other work of this Section, inspect all plaster surfaces and correct conditions which do not meet specified requirements.
- B. Remove protective materials and plaster materials from adjacent surfaces.
- C. Clean all areas of plaster droppings and splatter restoring affected areas to clean and neat conditions at no cost to the owner.

END OF SECTION 09 23 00

SECTION 09 91 23 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 Summary

- A. This section includes surface preparation and the application of paint systems on the following interior substrates:
 - 1. Gypsum plaster finish walls and ceilings

1.2 Quality Assurance

- A. Single Source Responsibility: Provide primers and undercoat material produced by the same manufacturer as the finish coats. Use only thinners recommended by the manufacturer, and only within recommended limits.

1.3 Submittals

- A. Product Data: Obtain from manufacturer and submit latest technical data and installation instructions for each product specified in Part 2 - Products.

1.4 Delivery, Storage and Handling

- A. Deliver materials to the job site in the manufacturer's original, unopened containers bearing manufacturer's name, trade name and label analysis.
- B. Store where directed in accordance with the manufacturer's instructions.

PART 2 - PRODUCTS

2.1 General

- A. It is the Commissioner's intention that the contractor uses the products specified in this section. Materials are listed in this section as a warranted system and/or for establishing a standard of quality. Use systems and materials as defined, or an approved equal authorized in writing by the BPCA.
- B. Provide products for use within each paint system that are compatible with one another and with substrates indicated.
- C. VOC Content to comply with the New York City limits for VOC Content.
- D. Acceptable Manufacturers of Paint Products are as follows:
 - 1. Benjamin Moore Co.
 - 2. Dutch Boy Paints
 - 3. Sherwin Williams
 - 4. OR approved equal

2.2 Primers/Sealers

- A. Interior Latex primers and sealers (see acceptable manufacturers)

2.3 Base and Top Coats

- A. Institutional Low-Odor VOC Latex Semi-gloss (see acceptable manufacturers)

PART 3 - EXECUTION

3.1 Preparation

- A. Surface Preparation: Perform surface preparation and cleaning in compliance with the manufacturer's instructions for the particular substrate conditions.

3.2 Application

- A. Coating Type: Apply coating systems and manufacturers as described above.
- B. Comply with manufacturer's directions regarding temperature and humidity restrictions, safety precautions, applicators, spreading rate, and dry film thickness.
- C. Protect work of other trades, whether to be coated or not, against damage from coating operations. Correct damage by cleaning, repairing or replacing, or re-coating, as accepted in writing by the Commissioner. At completion of the work of other trades, touch up and restore damaged or defaced coated surfaces.

END OF SECTION 09 91 23

SECTION 09 91 23 – STEEL COATINGS

PART 1 - GENERAL

1.1 Summary

- A. Extent of surface preparation and coating of structural steel and ornamental iron element is indicated on the Drawings and herein.
- B. Finished metal surfaces not to be coated include:
 - 1. Anodized aluminum
 - 2. Copper / bronze / brass

1.2 Submittals

- A. Product Data: Obtain from manufacturer and submit latest technical data and installation instructions for each product specified in Part 2 - Products.
- B. Coating color samples: Submit cured samples of each type and color of coating to be incorporated into the Work. Coat 6" long x 6" wide representations of the substrates to be coated on the project.

1.3 Quality Assurance

- A. Single Source Responsibility: Provide primers and undercoat material produced by the same manufacturer as the finish coats. Use only thinners recommended by the manufacturer, and only within recommended limits.

1.4 Delivery, Storage and Handling

- A. Deliver materials to the job site in the manufacturer's original, unopened containers bearing manufacturer's name, trade name and label analysis.
- B. Store where directed in accordance with the manufacturer's instructions.

PART 2 - PRODUCTS

2.1 General

- A. Coating products by category and used in the coating systems in this Section are as follows.
 - 1. Modified Polyamidoamine Epoxy:
 - a. 135 Chembuild Epoxy (manufactured by Tnemec)
 - 2. Modified Alkyd
 - a. Ironclad Retardo Rust Inhibitive Paint (manufactured by Benjamin Moore & Co)
 - b. Alkyd Enamel Paint (manufactured by Benjamin Moore & Co)
- B. Coating colors (on a per coat basis) as indicated in this Section or, if not otherwise indicated, as selected in writing by Architect.

2.2 Steel Coatings

Coating Type 2XI: Existing Interior Steel/ Iron Elements

1. Tnemec 2 Coat System (Temperature Limit > 50° F):

Prime Coat (Red 1211 Color):	135 Chembuild Epoxy	Tnemec
Top Coat (Gray IN05 Color):	135 Chembuild Epoxy	Tnemec

OR Approved Equal

Coating Type 2NI: New Interior Steel Elements

1. Tnemec System (Temperature Limit > 40° F):

Prime Coat (Red Color):	10-99 Tnemec Primer	Tnemec
Top Coat (Gray Color):	10-99 Tnemec Primer	Tnemec

OR Approved Equal

2.3 Preparation

A. Surface Preparation:

1. Perform surface preparation and cleaning in compliance with the manufacturer's instructions for the particular substrate conditions. Where the manufacturer indicates more than one preparation standard, the better preparation (as determined by the Architect) will apply.
2. When the coating manufacturer does not specify preparation, prepare substrate in accordance with Steel Structures Painting Council (SSPC):
 - a. SSPC-SP3 "Power Tool Cleaning."

2.4 Application

- A. Coating Type: Apply coating system of Coating Type indicated on Drawings, and as described below.
- B. Comply with manufacturer's directions regarding temperature and humidity restrictions, safety precautions, applicators, spreading rate, and dry film thickness.
- C. Touch up shop applied coating after erection. Clean field welds, bolted connections and abraded areas, and apply same type coating as used in finish coat.
- D. Perform any indicated structural welding or bolting prior to field application of paints or coatings.
- E. Protect work of other trades, whether to be coated or not, against damage from coating operations. Correct damage by cleaning, repairing or replacing, or re-coating, as accepted in writing by Architect. At completion of the work of other trades, touch up and restore damaged or defaced coated surfaces.

END OF SECTION 099713

SECTION 09 22 16 – NON-STRUCTURAL METAL FRAMING

PART 4 - GENERAL

2.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

2.02 SUMMARY

- A. Section Includes:
 - 1. Non-load-bearing steel framing systems for interior gypsum board assemblies.
 - 2. Suspension systems for interior gypsum ceilings, soffits, and grid systems.
- B. Related Requirements:
 - 1. Section 054000 "Cold-Formed Metal Framing" for exterior and interior load-bearing and exterior non-load-bearing wall studs; floor joists; roof rafters and ceiling joists; and roof trusses.

2.03 ACTION SUBMITTALS

- A. Product Data: For each type of product.

PART 5 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.02 FRAMING SYSTEMS

- A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.

2. Protective Coating: **[ASTM A 653/A 653M, G40 (Z120)] [ASTM A 653/A 653M, G60 (Z180)] [Coating with equivalent corrosion resistance of ASTM A 653/A 653M, G40 (Z120)]**, hot-dip galvanized unless otherwise indicated.
- B. Studs and Runners: ASTM C 645.
1. Steel Studs and Runners:
 - a. Minimum Base-Metal Thickness: TO MATCH EXISTING
 - b. Depth: TO MATCH EXISTING See "Dimpled Steel Studs and Runners" Article in the Evaluations for information about dimpled steel studs and runners.
 2. Dimpled Steel Studs and Runners:
 - a. Minimum Base-Metal Thickness: TO MATCH EXISTING
 - b. Depth: TO MATCH EXISTING
- C. Slip-Type Head Joints: Where indicated, provide **[one of]** the following:
1. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch- (51-mm-) deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous bridging located within 12 inches (305 mm) of the top of studs to provide lateral bracing.
 2. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inch- (51-mm-) deep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.
 3. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- D. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.

2.03 SUSPENSION SYSTEMS

- A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.
- B. Hanger Attachments to Concrete:
1. Anchors: Fabricated from corrosion-resistant materials with holes or loops for attaching wire hangers and capable of sustaining, without failure, a load equal to **[5]** times that imposed by construction as determined by testing according to ASTM E 488 by an independent testing agency.
 - a. Type: **[Cast-in-place anchor, designed for attachment to concrete forms] [Postinstalled, chemical anchor] [Postinstalled, expansion anchor]**.
 2. Powder-Actuated Fasteners: Suitable for application indicated, fabricated from corrosion-resistant materials with clips or other devices for attaching hangers of type indicated, and capable of sustaining,

without failure, a load equal to [10] <Insert number> times that imposed by construction as determined by testing according to ASTM E 1190 by an independent testing agency.

- C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, TO MATCH EXISTING
- D. Flat Hangers: Steel sheet, TO MATCH EXISTING
- E. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.053 inch (1.34 mm) and minimum 1/2-inch- (13-mm-) wide flanges.
 - 1. Depth: TO MATCH EXISTING
- F. Grid Suspension System for Gypsum Board Ceilings: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.

PART 6 - EXECUTION

2.01 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

2.02 PREPARATION

- A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.
 - 1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.
- B. Coordination with Sprayed Fire-Resistive Materials:
 - 1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches (610 mm) o.c.
 - 2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load-bearing steel framing. Do not reduce thickness of fire-resistive materials below that required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage.

2.03 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754.

1. Gypsum Plaster Assemblies: Also comply with requirements in ASTM C 841 that apply to framing installation.
 2. Portland Cement Plaster Assemblies: Also comply with requirements in ASTM C 1063 that apply to framing installation.
 3. Gypsum Veneer Plaster Assemblies: Also comply with requirements in ASTM C 844 that apply to framing installation.
 4. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.
- D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

2.04 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
1. Multilayer Application: **[24 inches (610 mm)]** o.c. unless otherwise indicated.
 2. Tile Backing Panels: **[16 inches (406 mm)]** o.c. unless otherwise indicated.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.
- D. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 2. Door Openings: Screw vertical studs at jamps to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (13-mm) clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.

- a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
- 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
- 6. Curved Partitions:
 - a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
 - b. Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of no fewer than two studs at ends of arcs, place studs 6 inches (150 mm) o.c.

END OF SECTION 092216

END OF DIVISION NINE

SECTION 221426 - DRAINS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- C. The General Contract Provisions and Sections of Division 1 apply to the work of this Section.

1.2 WORK INCLUDED

- A. Provide all labor, materials, tools, and services to install drains and related components as shown on drawings and specified herein.
- B. Related Sections:
 - 1. Division 7, Section "Fluid-Applied Membrane waterproofing."

1.3 SUBMITTALS

- A. Product Data: Submit manufacturers' technical data and material safety data sheets for each type of drain, indicating drain body style, dimensions, type of outlet and pipe connection, pipe diameter, and non-standard accessories.

1.4 PROJECT CONDITIONS

- A. Field Measurements: Check actual drain openings in construction work by accurate field measurement before fabrication. Show recorded measurements on final shop drawings.
- B. The Drawings are finished to guide the Contractor and do not necessarily represent actual field conditions. The Contractor is responsible for accurate drain count and corresponding field dimensions.
- C. Protect interior spaces from leaks during testing and installation of roof / terrace drains.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Protect materials from damage before installation per instructions.
 - 1. Materials shall be packed, loaded, shipped, unloaded, stored and protected in a manner which will avoid abuse, damage, and defacement in accordance with AAMA CW-10.
 - 2. Store inside if possible in a clean, well drained area free of dust and corrosive fumes.

1.06 GUARANTEES AND WARRANTIES

- A. Manufacturer's Warranties: Submit written warranties from drain manufacturer.
- B. Installation Guarantee: Submit written warranties from drain manufacturer for the following:

Installation labor shall be guaranteed by the installer for, but not limited to, leaking around site applied sealants, poor anchorage of materials into existing conditions, and other installation applicable workmanship for period of five (5) years from the date of acceptance.

PART 2 : PRODUCTS

2.01 ACCEPTABLE DRAIN MANUFACTURERS

- A. J.R. Smith or approved equal

2.02 MATERIALS

A. Domed Drain

- 1. No. 1010 Cast Iron Body with combined flashing clamp and gravel stop with cast iron dome and metal mesh – J.R. Smith or approved equal

B. Trench Drain

- 1. #1419 Promenade Deck Drain by JR Smith or approved equal

C. Lower Plaza Drain

- 1. #1915 Plaza and Planter Drain by JR Smith or approved equal

D. Accessories

- 2. Lead Pan - Comply with ASTM B749, Sheet lead conforming to ASTM B29

PART 3: EXECUTION

3.01 Pre-Construction Testing

- A. Prior to start of construction, test drain by inserting a hose in the drain. Run test for a minimum of 15 minutes at a rate of 5 gallons per minute to determine flow capacity. If drain flow is inadequate (due to blockage or undersized plumbing line), notify Architect in writing immediately.

3.02 INSTALLATION

- A. Install drains as per manufacturer's instructions. All work shall be performed by a Plumber licensed in New York City. Set plane, level and rigid.
- B. Replacement of the drain will be required if existing drain is improperly installed, deteriorated or height needs to be adjusted. Replacement of the drains will be determined during the construction.
- C. Maintain integrity of waterproof membrane, where penetrated.
- D. Field verify type and size of pipe connections required to assure a water-tight connection at roof or terrace.
- E. Exercise caution to minimize damage to roof or terrace deck surrounding drains, and to ceiling below drains.
- F. Patch opening surrounding drain body to provide a level surface for setting new drain.

3.03 Post-Construction Testing

- A. Following completion of construction, inspect drains, and clean drain lines as required for proper flow.
- B. Test drain by inserting a hose in the drain. Run test for a minimum of 15 minutes at a rate of 5 gallons per minute to determine flow adequacy. Notify Architect in writing in advance of test.

END OF SECTION 221426

END OF DIVISION TWENTY-TWO

SECTION 329113 - SOIL AND PLANTING SOIL MIX

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes planting soils specified according to performance requirements of the mixes for planters.
- B. Related Requirements:
 - 1. Section 075600 Fluid Applied Waterproofing System

1.03 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include recommendations for application and use.
 - 2. Include test data substantiating that products comply with requirements.
 - 3. Include sieve analyses for aggregate materials.
 - 4. Submit verification that packaged materials are registered by each state in which material is sold.

1.05 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Agricultural Chemist/Soil Scientist: Experienced person or persons employed by public or private soils testing laboratory, qualified and capable of performing tests, making soil recommendations, and issuing reports as specified. The Testing Laboratory shall be as approved by the Battery Park City Parks Conservancy.
- B. References:
 - 1. Association of Official Agricultural Chemists.
 - 2. American Society for Testing and Materials (ASTM) using test criteria as specified or required by other references.
 - 3. Soil Science Society of America, Methods of Soil Analysis.
- C. Pre-Installation Conferences: Person(s) responsible for soil preparation and mixes of this Section shall attend Pre-Installation Conference(s) to coordinate with work of other sections.
- D. Inspections and Testing
 - 1. Soil, leaf mold, mulch and other material testing and soil mix testing required in this Section or additionally required by Battery Park City Parks Conservancy, shall be furnished and paid for by Contractor.
 - 2. BPCA/BPCPC reserves the right to take and analyze at any time such additional samples of materials as deemed necessary for verification of conformance to specification requirements. Contractor shall furnish samples for this purpose upon request and shall perform testing as requested.

1.06 REGULATORY REQUIREMENTS

- A. Comply with all rules, regulations, laws and ordinances of local, state and federal authorities having jurisdiction. Provide labor, materials, equipment and services necessary to produce soil as per specification. Work shall comply with such requirements without additional cost to Owner.
- B. Procure and pay for permits and licenses required for work of this section.

1.07 PROJECT/SITE CONDITIONS

- A. The Contractor shall be responsible for pedestrian and vehicular safety and control within the work site. He/she shall provide the necessary warning devices and ground personnel needed to give safety, warning and protection to persons and vehicular traffic within the area.
- B. During site preparation, soil installation and protection, the Contractor shall be responsible for all damage to existing features above and below ground (benches, utility lines, irrigation pipes, lampposts, path surfaces, existing vegetation) incurred as a result of work operations. Repairs and/or replacements shall be made to the satisfaction of the BPCA/BPCPC.
- C. Investigate the conditions of public thoroughfares and roads as to availability, clearances, loads, limits, restrictions, and other limitations affecting transportation to, ingress and egress of this work site. Conform to all government regulations in regard to the transportation of materials to, from, and at the job site, and secure in advance such permits as may be necessary.
- D. Should the Contractor, in the course of Work, find any discrepancies between Contract Drawings and physical conditions or any omissions or errors in Drawings, or in layout as furnished by the Owner, it will be Contractor's duty to inform the BPCA/BPCPC immediately in writing for clarification. Work done after such discover, unless authorized by BPCA/BPCPC, shall be done at the Contractor's risk.
- E. Environmental Requirements for Soils:
 - 1. Perform both off-site mixing and on-site soil work only during suitable weather conditions. Do not work soil when frozen, excessively wet (maximum 18% moisture) or in otherwise unsatisfactory condition.
 - 2. Soil mixes shall not be handled, hauled or placed during rain or wet weather or when near or above the point where maximum compaction will occur (as defined by BPCA/BPCPC).
- F. Environmental Requirements for Soil: Sequencing and Scheduling: Adjust, relate together and otherwise coordinate work of this Section with work or Project and all other Sections of Project Specifications.

1.08 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Packaged Materials: Deliver packaged materials to the location where soils are to be mixed, in unopened bags or containers, each clearly bearing the name, guarantee, and trademark of the producer, material composition, manufacturers' certified analysis, and the weight of the material. Retain packages for BPCA/BPCPC.
- B. Soil or amendment materials stored on site temporarily in stockpiles prior to placement shall be protected from intrusion of contaminants and erosion. All temporary storage means and methods shall be approved by BPCA/BPCPC.

- C. Store and handle packaged materials in strict compliance with manufacturer's instructions and recommendations. Protect all materials from weather, damage, injury and theft.
- D. In addition, the following provision is established: Material should not be handled or hauled, placed or compacted when it is wet as after a heavy rainfall or is frozen. Soil should be handled only when the moisture content is less than the point where maximum compaction will occur (as defined by BPCA/BPCPC).
- E. After mixing, soil materials shall be covered with a tarpaulin until time of actual use and protected from contamination or erosion.

PART 2 – PRODUCTS

2.01 SOIL MIX MATERIALS

A. General

1. All soil mix material shall fulfill the requirements for new soil mixes as specified.
2. Samples of individual components of soil mixes and also blended soil mixes shall be submitted by the Contractor for testing and analysis to the approved testing laboratory. Include verification testing of on-site sub soils. Comply with specific materials requirements specified.
 - a. No base component or soil components for soil mixes shall be used until certified test reports by an approved agricultural chemist have been received and approved by the BPCA/BPCPC.
 - b. As necessary, make any and all soil mix amendments and resubmit tests reports indicating amendments until approved.
3. The BPCA/BPCPC may request additional testing by Contractor for confirmation of mix quality and/or soil mix amendments at any time until completion.
4. Base Component Material shall be a sand that meets the requirements outlined below mixed by volume with loam material that meets the requirements outlined below. Base component materials shall not be site salvaged and must be off-site borrow material.
5. Test Base Component Materials, both individual components and mixed materials, for compliance with material specifications. These test criteria and results, when approved, shall establish the standard to which all subsequent Base Component Material tests must conform.
6. Prior to mixing Base Component Material with organic matter (leaf mold or yard waste compost), have one (1) composite sample tested from each 50 c.y. of material intended for use in soil mixes of planting work.
7. Sand for Base Component Material shall meet the following requirements:

a. Texture:

<u>Sand Fraction</u>	<u>Size (mm)</u>	<u>Sieve Size</u>	<u>% Passing</u>
Gravel	> 2.0	#10	95 – 100%
Very coarse sand	1.0 – 2.0	#18	90 – 100%
Coarse sand	0.5 – 1.0	#35	65 – 75%
Medium sand	0.25 – 0.5	#60	15 – 20%
Fine sand	0.1 – 0.25	#140	0 – 4%
Very fine sand	0.05 – 0.1	#270	0 – 2%

b. Chemical Analysis:

- 1) Soil reaction (pH) - $5.0 - 6.5 \pm 0.5$
 - 2) Soluble salt content (Conductivity) - $< 1.5 \text{ dSm}^{-1}$
 - c. Material shall have a saturated hydraulic conductivity rate of no less than 30 inches per hour, per ASTM 1815.
8. Loam for Base Component Material shall meet the following requirements:
- a. Soil Texture per ASTM D422 or ASTM F1632, as determined on material passing a 2 mm screen:

Main Fractions	Size (mm)	Percent
Sand	0.05-2.0	83 - 87
Silt	0.002-0.05	7 - 10
Clay	<0.002	4 - 8

In addition, maximum size shall be $\frac{1}{2}$ ", the total gravel ($> 2 \text{ mm}$) shall be less than 10% of the total material, and the sand passing the 2 mm screen shall have the following particle size distribution:

<u>Sand Fraction</u>	<u>Size (mm)</u>	<u>Sieve Size</u>	<u>% Passing</u>
Very coarse	1.0 - 2.0	#18	87-90
Coarse	0.5 - 1.0	#35	65-71
Medium	0.25 - 0.5	#60	34-42
Fine	0.10 - 0.25	#140	17-23
Very fine	0.05 - 0.10	#270	14-18

- b. Chemical Analysis:
 - 1) Organic matter content (%) oven dry weight of soil shall be within the range of 4 to 10%.
 - 2) Soil reaction (pH) - 6.0 ± 0.5
 - 3) Soluble salt content (Conductivity) - $< 1.5 \text{ dSm}^{-1}$
9. Before base sand-loam mix (base component) is used for mixing with organic amendments, handle and pile the mix in the following manner:
- a. Mix the base sand with base loam in a ratio of 3 parts sand to 1 part loam. Adjustments to the ratio may have to be made to meet the specifications for the base component. Homogenize to make a uniform mix, free of subsoil lenses and other irregularities.
 - b. Aerate the base component to make a friable planting medium.
 - c. Screen out all clay lumps, stones, roots, and other debris.
10. Material Requirements, Base Component Mix: The final mix of sand and loam materials shall substantially conform to the following:
- a. Soil Texture per ASTM D422 or ASTM F1632, as determined on material passing a 2 mm screen:

Main Fractions	Size (mm)	Percent
Sand	0.05-2.0	95.0

Silt	0.002-0.05	3.0
Clay	<0.002	<u>2.0</u>

In addition, maximum size shall be ½", the total gravel (> 2 mm) shall be less than 5% of the total material, and the sand passing the 2 mm screen shall have the following particle size distribution:

<u>Sand Fraction</u>	<u>Size (mm)</u>	<u>Sieve Size</u>	<u>% Passing</u>
Very coarse sand	1.00	#18	92-95
Coarse sand	0.50	#35	67-73
Medium sand	0.25	#60	20-26
Fine sand	0.10	#140	5-9
Very fine sand	0.05	#270	5

b. Chemical Analysis:

- 1) Organic matter content (%) oven dry weight of soil: 1- 4%
- 2) Soil reaction (pH): 6 - 7
- 3) Soluble salt content (Conductivity) - < 1.5 dSm⁻¹

c. Saturated hydraulic conductivity of no less than 15 inches per hour per ASTM 1815.

B. Organic Matter: Organic matter for amending planting media shall be a stable, material produced from the aerobic decomposition and curing of yard wastes. The compost shall meet the following criteria

- 1) Organic matter content of no less than 40% as determined by ASTM 2974
- 2) Moisture content of 35 to 70% as determined by ASTM D2974.
- 3) Carbon to nitrogen ratio of 15:1 to 30:1
- 4) Soluble salts not exceeding 4 dSm⁻¹
- 5) Solvita Maturity Index 6 to 8
- 6) 95 – 100% passing a 3/8" screen
- 7) pH 6 to 7.5
- 8) Biological Organisms: The compost shall have the following levels of organisms (direct microscopy). Refer to Article 1.04 E.15 for testing and sampling requirements.
 - 15 to 25 or more μ g active bacteria /g dry weight (dw) compost
 - 100 μ g (fungal compost) to 300 or more μ g (bacterial compost) total bacteria /g dw compost
 - 15 to 25 μ g or more active fungi /g dw compost
 - 100 to 300 μ g total fungal biomass /g dw compost
 - 10,000 or more flagellates
 - 10,000 or more amoebae
 - 50 - 100 ciliates.
 - 20 – 30 Total nematodes (No root feeding nematodes)

C. Nutrient Analysis:

1. Ammonium (NH₄) and Nitrate (NO₃): below 100 ppm

2. Phosphorous
3. Potassium
4. Calcium (Ca), Magnesium (Mg): ratio of 7 part Ca to 1 part Mg
5. Iron (Fe) 1 to 4 ppm
6. Manganese (Mn) 3 to 20 ppm
7. Zinc (Zn) 0.1 to 70 ppm
8. Copper (Cu) 0.3 to 8 ppm

2.02 PLANTING SOIL MIXES

- A. Adequate quantities of mixed planting soil materials shall be provided to attain, after compaction and natural settlement, all design finish grades.
- B. Uniformly mix ingredients using a mechanical soil blender designed for such purpose as specified for each Mix Type (Base Component Material, compost, and other ingredients deemed to be necessary as a result of testing). Wind rowing/tilling on an approved hard surface area may also be used as an alternative. Organic matter shall be maintained moist, not wet during mixing.
 1. Mixing of Amendments: Add organic amendment in proportions as specified and as confirmed by testing. Other amendments shall not be added unless approved to extent and quantity by Battery Park City Parks Conservancy and additional tests have been conducted to verify type and quantity of amendment is acceptable.
- C. Testing of Plant Mixes:
 1. Perform initial tests to confirm compliance with base material and mix specifications. These test results, when approved, will establish the standard to which all other test results must conform.
 2. Follow-up Testing: Have one (1) composite sample delivery and upon arrival to the site from each 500 c.y. or as required by BPCA/BPCPC for use in each type plant mix to include the following:
 - a. Particle size analysis: Use sieve sizes as specified for Base Component Material.
 - b. Organic matter content as per mix specified.
 - c. Nutrient Analysis:
 - 1) Have nutrient levels (pH, Cation Exchange Capacity, ammonium nitrogen, nitrate nitrogen, nitrite nitrogen, phosphorus, potassium, magnesium, calcium, magnesium, zinc, iron, copper, and manganese) tested,. Soluble salts shall also be tested.
 - 2) Contractor shall not use amendments to correct nutrient deficiencies.
 - d. Biological Organisms: The mixes shall have the following levels of organisms (direct microscopy). Refer to Article 1.04 E.15 for testing and sampling requirements. Mix shall have microbiological populations as listed below. Acceptance or rejection of mixes based on these test values will be determined by Battery Park City Parks Conservancy.

Plant Material	Active Bacterial Biomass (ug/g)	Total Bacterial Biomass (ug/g)	Active Fungal Biomass (ug/g)	Total Fungal Biomass (ug/g)	Hyphal Diameter (ug/g)	Protozoa Numbers/g			Total Beneficial Nematode Numbers (#/g)
						Flagellates	Amoebae	Ciliates	
Plants	15-25	100-300	15-25	100-300	3.0	10,000	10,000	50-100	20-30

D. Soil Mix Types: Provide the following planting soil mix types at the locations indicated on plan. Percentages of components, unless otherwise noted, will be established upon completion of individual test results for components of the various mixes. The controlling factor will be the percent (%) organic matter as specified for each mix. Note that percent (%) by volume of components will be, in large part, determined by the compost. Specifically the bulk density of the compost will directly impact the organic matter readings that have been specified for each mix.

1. Soil A (Upper Root Zone): Organic Component shall be mixed with the Base Component (sand-loam) mix at a rate necessary to provide an organic matter content of 4-6% by weight, as determined by ASTM F1647. pH shall be 6.5 to 7.0, Cation Exchange Capacity will be 10 or above, and there will be 100 to 150 lbs available Nitrogen per acre natural nutrient cycling capacity from microbial activity.
2. Soil C (Lower Root Zone): Organic Component shall be mixed with the Base Component (sand-loam) mix at a rate necessary to provide an organic matter content of 2-4% by weight, as determined by ASTM F1647. pH shall be 6.5 to 7.0

END OF SECTION 329113

END OF DIVISION THIRTY-TWO

E	1. SEQUENCE OF CONSTRUCTION: THE SCOPE OF WORK SHOWN IN REFERENCE DRAWINGS AND RELATED CONTRACT DOCUMENTS SHALL BE EXECUTED IN ACCORDANCE TO THE FOLLOWING SEQUENCE OF CONSTRUCTION:				
	• ALL WORK RELATED TO DEMOLITION.				
	2. CONTRACTOR SHALL PROVIDE A FINAL SITE LOGISTIC PLAN WITHIN 15 DAYS OF CONTRACT AWARD. PLAN SHALL INCLUDE THE FOLLOWING:				
D	• METHOD FOR SELECTIVE DEMOLITION AND REMOVAL.				
	• ACCESS AREA AND HOISTING PLAN AND LOCATIONS.				
	• MATERIAL STORAGE PLAN.				
D	10	ENERGY ANALYSIS			
	ALT - 2	COMMERCIAL: CLIMATE ZONE 4A			
C	NYC ECC TABULAR ANALYSIS:				
	2011 NYSECC (NYSECC-2010)				
	COMMERCIAL: CLIMATE ZONE 4A ALT - 2				
B	ITEM DESCRIPTION	PROPOSED DESIGN VALUE	CODE-PRESCRIPTIVE VALUE AND CITATION	SUPPORTING DOCUMENTATION	PROGRESS INSPECTION
	TYPICAL BACKER ROD AND SEALANT INSTALLATION	SEALING ALL OPENINGS AND PENETRATIONS AS PRESCRIBED IN ECC §402.4.1 (BUILDING THERMAL ENVELOPE), ECC §402.4.2 (AIR SEALING AND INSULATION), AND ECC TABLE 402.4.2 (AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA).	ALL OPENINGS AND PENETRATIONS SHALL BE SEALED WITH CAULKING, GASKETING, WEATHERSTRIPPING OR OTHER MATERIALS IN ACCORDANCE WITH REQUIREMENTS OF ECC SECTION 402.4.1 (BUILDING THERMAL ENVELOPE).	A-500.00 DRAWING SERIES. SEALANT INSTALLATION DETAILS AND NOTES	IA6: AIR SEALING - VISUAL INSPECTION: VISUAL INSPECTION OF OPENINGS AND PENETRATIONS IN THE BUILDING ENVELOPE TO VERIFY THAT THEY ARE PROPERLY SEALED, IN ACCORDANCE WITH ECC SECTIONS 402.4.1, 402.4.2.2, AND APPROVED DRAWINGS.
	TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT, THIS APPLICATION IS IN COMPLIANCE WITH THE ECC NYC 2014.				
A	THIS APPLICATION IS AN EXCEPTION, THE SCOPE OF WORK DOES NOT AFFECT THE ENERGY USE OF THE BUILDING				
	1	2	3	4	5
	6	7	8	9	10
A	A.F.F. ABOVE FINISHED FLOOR DIM. DIMENSION MIN. MINIMUM				
	ARCH. ARCHITECTURAL DN. DOWN MISC. MISCELLANEOUS				
	@ AT DWG. DRAWING MTL. METAL				
A	B.L. BUILDING LINE EA. EACH NA. NOT APPLICABLE				
	BLDG. BUILDING EQ. EQUAL N.I.C. NOT IN CONTRACT				
	BLK. BLOCK EQUIP. EQUIPMENT N.T.S. NOT TO SCALE				
A	B.O. BOTTOM OF EXIST. EXISTING NYC. NEW YORK CITY				
	CEM. CEMENT EXP. JT. EXPANSION JOINT O.C. ON CENTER				
	C.B. CATCH BASIN FL. FLOOR REF. REFERENCE				
A	CL. CENTER LINE G.F. GROUND FLOOR REINF. REINFORCED (MENT, ING)				
	COL. COLUMN GL. GLASS REQ. REQUIRED				
	CONC. CONCRETE HORIZ. HORIZONTAL SIM. SIMILAR				
A	COND. CONDUIT HR. HOUR SPEC. SPECIFICATION				
	CONT. CONTINUOUS I.D. INSIDE DIAMETER S.S. STAINLESS STEEL				
	DTL. DETAIL JT. JOINT ST. STEEL				
A	DIA. DIAMETER LOCS. LOCATIONS TYP. TYPICAL				
	DOB. DEPARTMENT OF BUILDINGS MAX. MAXIMUM V.I.F. VERIFY IN FIELD				
	W. WITH				
A	BLOCK NO. 16 LOT NO. 7519 & 7520				
	WARRENS STREET				
	N END AVE				
A	MURRAY STREET				
	WEST STREET				
	AREA OF WORK				
A	NO. OF STORIES: 1				
	200 NORTH END AVE				
	300 NORTH END AVE				
A	Murray St				
	Warren St				
	N End Ave				
A	15				
	16				
	17				
A	18				

[illegible]

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1

FEMA FLOOD INFORMATION

NOT TO SCALE

IMAGE OF SITE FROM GIS.NYC.GOV / FEMA

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0 National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was New York State Plane FIPSZONE 3104. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov>, or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NINGS12
National Geodetic Survey
SSM/C-3 #2022
1315 East-West Highway
Silver Spring, Maryland 20910-3182
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was provided in digital format by the Department of Information Technology and Telecommunication, City of New York. This information was derived from digital orthophotos produced at a scale of 1:1,200 with 2-foot pixel resolution from photography dated 2004.

Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations** and **floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. Also, the road to floodplain relationships for unreviewed streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

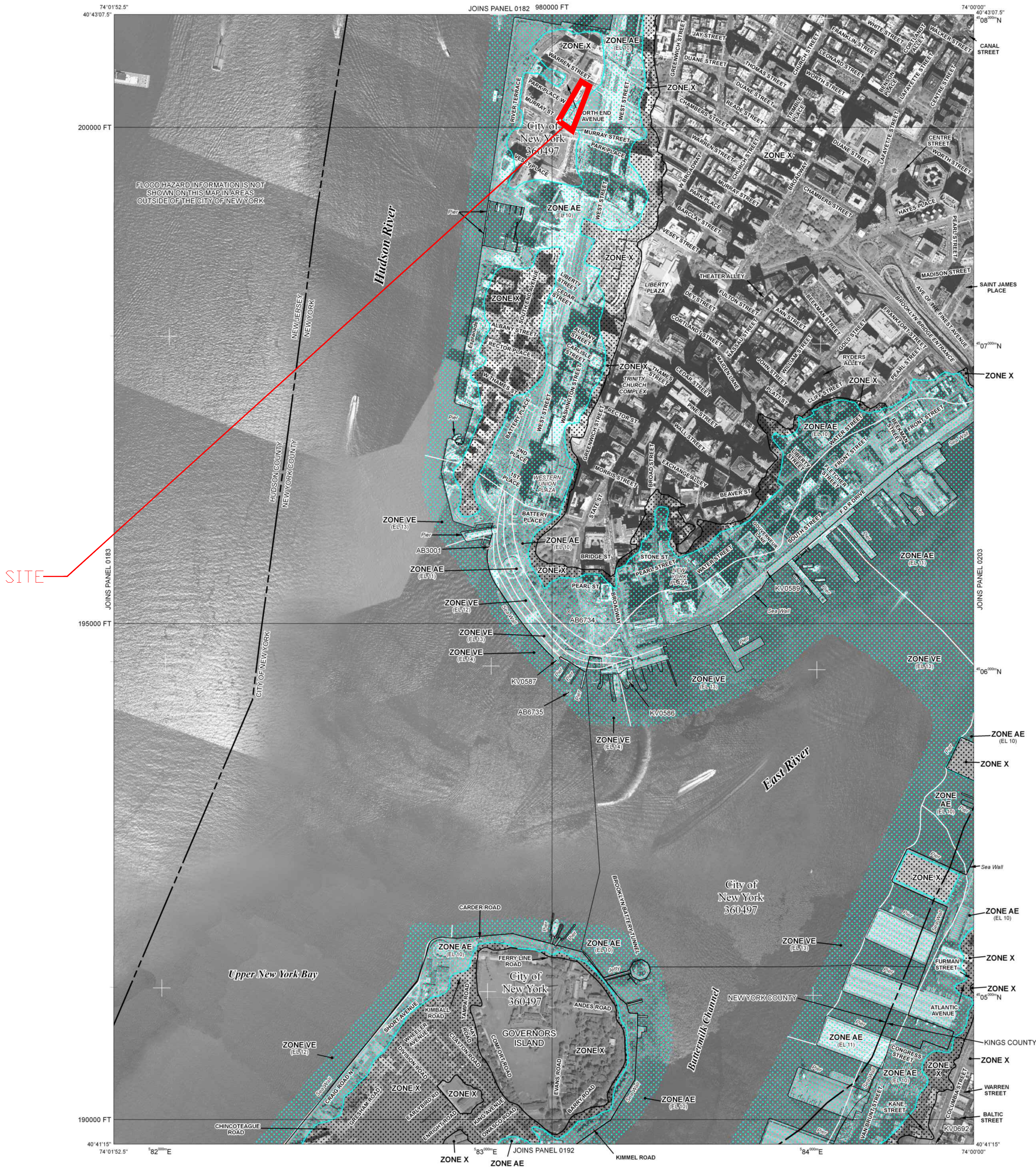
Please refer to the separately printed **Map Index** for an overview map showing the layout of map panels for this jurisdiction.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://msc.fema.gov>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.

NOTE: THIS SITE IS
WITHIN A "SPECIAL FLOOD
HAZARD AREA"

ZONE: AE
ZONE: X



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

Areas determined to be outside the 0.2% annual chance floodplain. Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the National Geodetic Vertical Datum of 1929

- Cross section line**
Traverse line
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 1000-meter Universal Transverse Mercator grid values, zone 18
- 5000-foot grid ticks: New York State Plane coordinate system, Long Island zone (FIPSZONE 3104), Lambert Conformal Conic projection
- Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index.

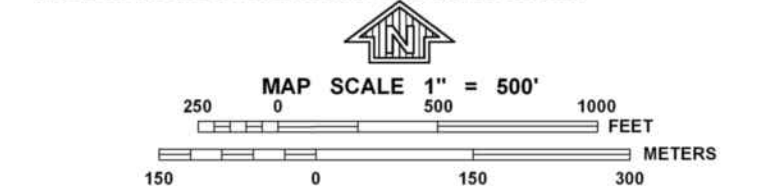
INITIAL NFIP MAP DATE
June 28, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS
June 11, 1976

FLOOD INSURANCE RATE MAP EFFECTIVE
November 15, 1983

FLOOD INSURANCE RATE MAP REVISIONS
September 5, 2007: To change Special Flood Hazard Areas, to reflect updated topographic information, and to update map format.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-438-6223.



NFIP

PANEL 0184F

FIRM

FLOOD INSURANCE RATE MAP

CITY OF
NEW YORK,
NEW YORK
BRONX, RICHMOND, NEW YORK,
QUEENS, AND KINGS COUNTIES

PANEL 184 OF 457

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY NUMBER PANEL SUFFIX

NEW YORK, CITY OF 360497 0184 F

Notice to User: The **Map Number** shown below should be used when placing map orders. The **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER
3604970184F

MAP REVISED
SEPTEMBER 5, 2007

Federal Emergency Management Agency

ARCHITECT



ARCHITECTURE / ENGINEERING / INTERIORS / PRESERVATION

740 BROADWAY, NEW YORK, NY 10003

TEL: 212.420.1160 FAX: 212.420.1163

OWNER

BATTERY PARK CITY AUTHORITY

200 LIBERTY STREET

NEW YORK, NY 10281

ENVIRONMENTAL SUB-CONSULTANTS

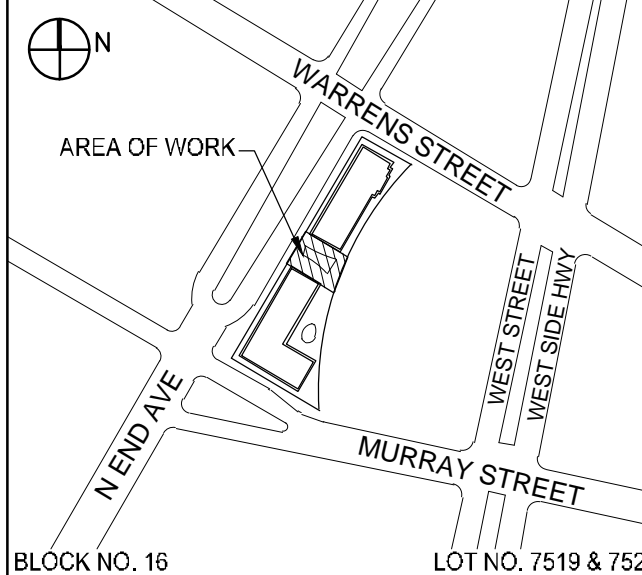
JLC ENVIRONMENTAL
CONSULTANTS

243 WEST 30TH STREET, 7TH FL

NEW YORK, NY 10001

TEL: (212) 420-8119

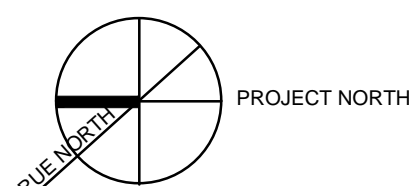
LOCATION PLAN



NO.	SUBMISSIONS/ REVISIONS	DATE
3	BID DOCUMENTS	7.15.2015
2	OWNER'S REVIEW	6.18.2015
1	OWNER'S REVIEW	5.22.2015

DOB STAMP & SIGN

BIS JOB NUMBER LABEL



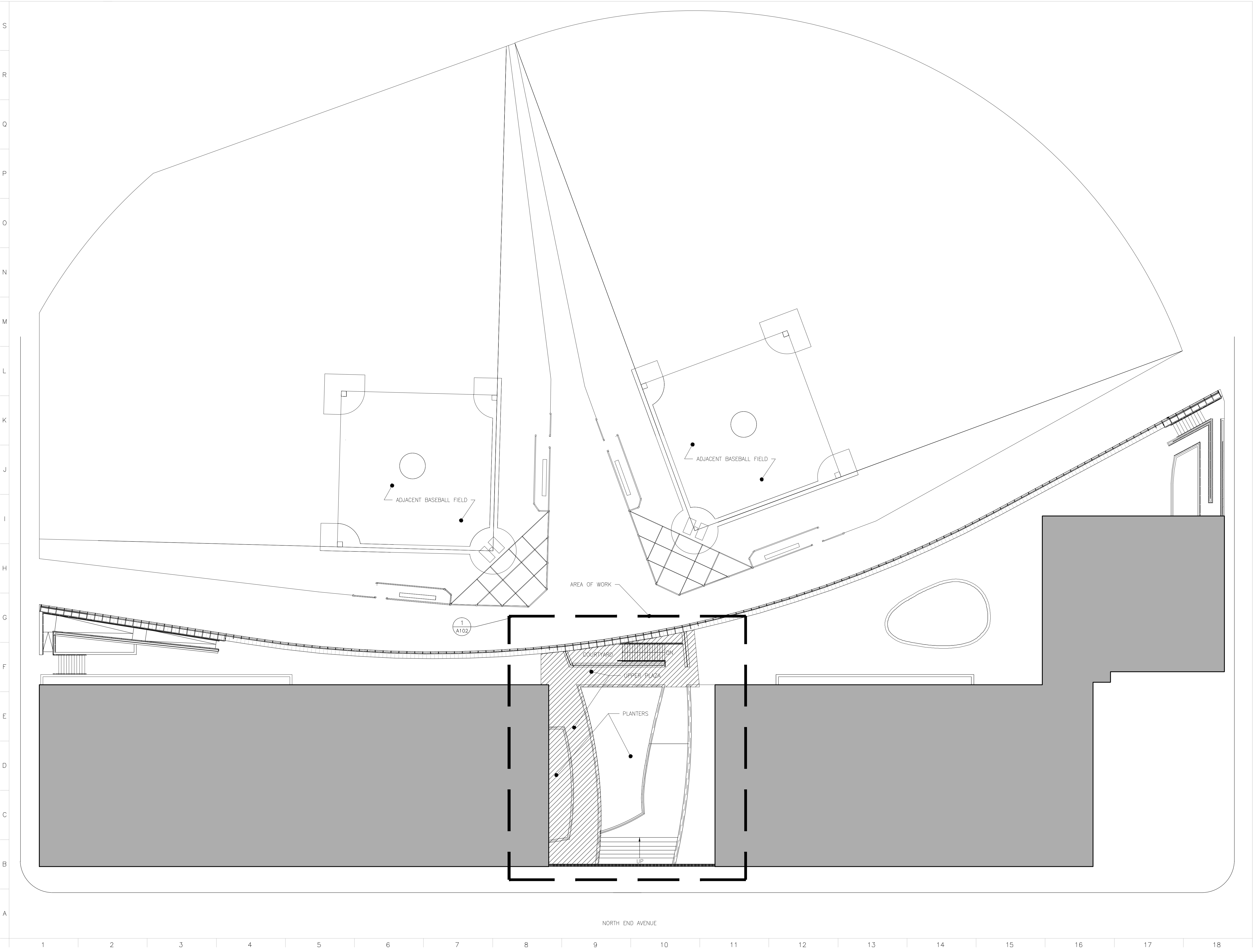
PROJECT
200-300 NORTH END AVE
LEAK REMEDIATION
DESIGN
200-300 NORTH END AVE
NEW YORK, NY 10282

DRAWING NAME


FEMA NOTES & 2013
FEMA FLOOD MAP
ZONES

SEAL & SIGNATURE	DATE: 07.15.2015
	WASA PROJECT NO: 65016
	SCALE: AS NOTED
	DRAWING BY: BM/BB/YO
	CHECKED BY: SS
DWG NO:	T-003
DWG COUNT:	3 OF 21

I:\01_Projects\WASA\MSD16 - 200-300 North End Avenue\Drawings\1-Current\MSD16-A101-103.dwg, 7/22/2015 9:59:57 AM, DWG To PDF.p3



ARCHITECT



ARCHITECTURE / ENGINEERING / INTERIORS / PRESERVATION
740 BROADWAY, NEW YORK, NY 10003
TEL: 212.420.1160 FAX: 212.420.1163

OWNER

BATTERY PARK CITY AUTHORITY

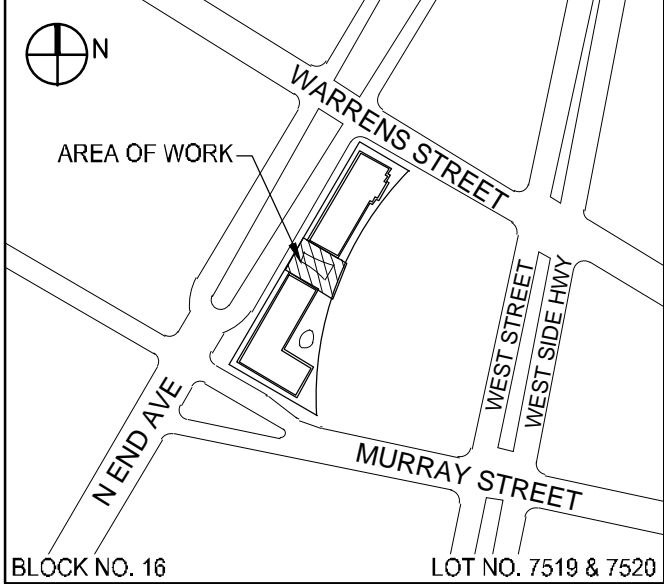
200 LIBERTY STREET
NEW YORK, NY 10281

ENVIRONMENTAL SUB-CONSULTANTS

JLC ENVIRONMENTAL CONSULTANTS

243 WEST 30TH STREET, 7TH FL
NEW YORK, NY 10001
TEL: (212) 420-8119

LOCATION PLAN

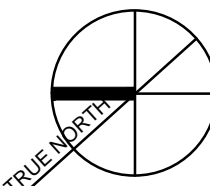


N
AREA OF WORK
WARRENS STREET
WEST STREET
WEST SIDE HWY
MURRAY STREET
N END AVE
BLOCK NO. 16
LOT NO. 7519 & 7520

3	BID DOCUMENTS	7.15.2015
2	OWNER'S REVIEW	6.18.2015
1	OWNER'S REVIEW 80%	5.22.2015
NO.	SUBMISSIONS/ REVISIONS	DATE

DOB STAMP & SIGN

BIS JOB NUMBER LABEL



PROJECT NORTH
TRUE NORTH

PROJECT

**200-300 NORTH END AVE
LEAK REMEDIATION
DESIGN**
200-300 NORTH END AVE
NEW YORK, NY 10282

DRAWING NAME

SITE PLAN

SEAL & SIGNATURE

DATE: 07.15.2015

WASA PROJECT NO: 65016

SCALE: AS NOTED

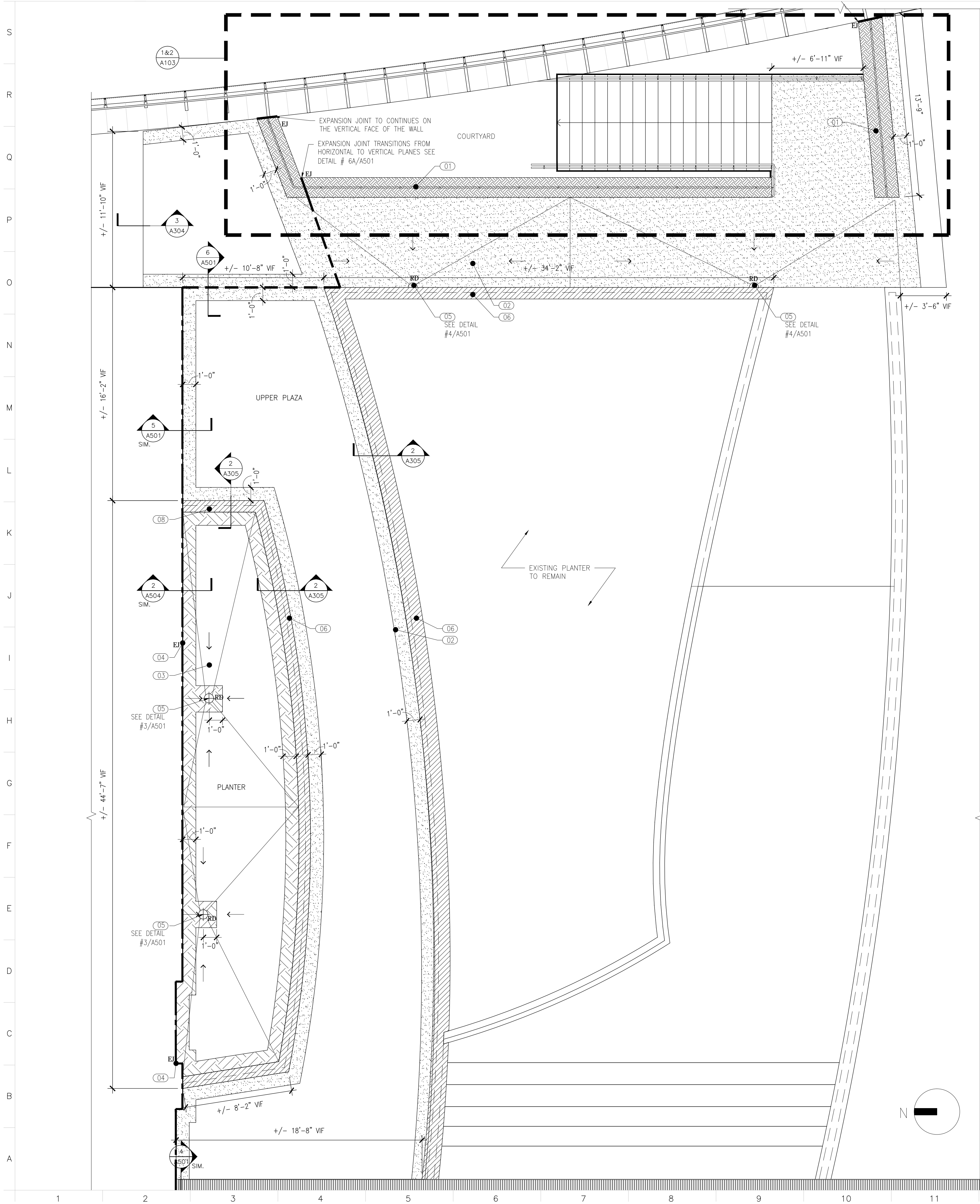
DRAWING BY: BM/ BB/YO

CHECKED BY: SS

DWG NO: **A-101.00**

DWG COUNT: 05 OF 21

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1 PART PLAN @ PLAZA LEVEL
SCALE: 1/4" = 1'-0"

- NOTES:**
1. THE CONTRACTOR SHALL PROTECT THE PROPERTY AT ALL TIMES OF CONTRACT. PROTECT ALL EXISTING PLAZA-MOUNTED RAILINGS AND PLAZA ROOF PENETRATIONS TO REMAIN. SUPPORT AND PROTECT DURING CONSTRUCTION WORK AS NEEDED. ALL EXISTING PIPING, AND RELATED ITEMS TO REMAIN UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING AND MAINTAINING ALL EXISTING AND NEW WORK, FACILITIES, AND IMPROVEMENTS WITHIN THE AREA OF THE WORK. ALL EXISTING AREAS TO REMAIN AFFECTED BY DEMOLITION OR NEW CONSTRUCTION WORK THAT ARE DAMAGED SHALL BE PATCHED AS REQUIRED TO MATCH IMMEDIATE EXISTING ADJACENT AREAS IN MATERIALS, FIRE RATING, FINISH AND COLOR, UNLESS OTHERWISE NOTED.
 2. THE CONTRACTOR SHALL PROVIDE DECK REPAIR PER DETAILS.
 3. THE CONTRACTOR IS TO SUBMIT PAVING LAYOUT SHOP DRAWINGS, INCLUDING EXISTING SLAB ELEVATIONS, SLOPE AND LOCATION OF DRAINS. PROVIDE SURVEY OF EXISTING CONDITIONS AND ELEVATIONS OF EXISTING DECK. CONTRACTOR TO VERIFY AND SURVEY EXISTING DECK AND SLOPES FOR SURVEY SHOP DRAWINGS. PROVIDE SURVEY TO ARCHITECT FOR REVIEW PRIOR TO THE PREPARATION OF DRAWINGS. SUBMIT TAPERED CONCRETE TOPPING SLAB LAYOUT DRAWINGS SHOWING EXISTING AND PROPOSED PITCH & SLOPE.
 4. TEST AND CLEAN PLAZA AND COURTYARD DRAINS AND PIPES, BEFORE AND AFTER INSTALLATION OF THE DRAIN.
 5. FLOOD-TEST PLAZA AND COURTYARD DRAINS BEFORE & AFTER INSTALLATION.
 6. THE CONTRACTOR SHALL PERFORM ALL REMOVAL AND RELATED WORK SHOWN ON THE DRAWINGS, DESCRIBED IN THESE NOTES, AND REASONABLY INFERRED AS NECESSARY TO COMPLETE SCOPE OF WORK.
 7. THE CONTRACTOR SHALL DISPOSE OF REMOVED MATERIAL AND DEBRIS DAILY.
 8. PROVIDE TEMPORARY COVERS FOR PROTECTION AS NEEDED. PROTECT ALL THE EQUIPMENT AND COORDINATE WITH BUILDING MANAGEMENT.
 9. TEMPORARILY REMOVE ELECTRICAL CONDUIT AND LIGHT FIXTURES AFFECTED DUE TO PLAZA REPAIR. REINSTALL THE CONDUIT AND FIXTURES AFTER REPAIRS. THE CONTRACTOR IS TO REPLACE INTERIOR PLASTER, PAINT, AND ANY OTHER FINISHES DAMAGED DURING WORK.
 10. THE CONTRACTOR IS TO VERIFY IN FIELD THE HEIGHT OF ALL THE EXISTING PARAPETS TO BE REPAIRED AND MAINTAIN 42-INCH HEIGHT FOR NEW YORK CITY BUILDING CODE.
 11. THE CONTRACTOR IS TO PERFORM MISCELLANEOUS ELECTRICAL WORK ASSOCIATED WITH THE SCOPE OF WORK INCLUDING BUT NOT LIMITED TO DISCONNECT/ RECONNECTION OF EXISTING CONDUIT AND FIXTURES AND PROVISION OF TEMPORARY POWER TO FIXTURES INCLUDING SECURITY AND PARAPET RAILING LIGHTING DURING CONSTRUCTION.
 12. CONTRACTOR TO SURVEY THE AREA OF WORK AFTER REMOVAL OF PARGE COAT AND PROVIDE SHOP DRAWINGS INDICATING THE EXACT LOCATION OF THE INJECTION PORTS AS PER THE FIELD CONDITIONS.

LEGEND		
01		COPING RESETTNG: TEMPORARY REMOVE AND STORE EXISTING COPING STONES AND / OR ASSOCIATE RAILING (MOUNTED ON TOP). INSTALL NEW THREE WAY INTERLOCKING 26 GA STAINLESS STEEL THRU-WALL FLASHING. REINSTALL COPINGS AND RAILINGS WITH NEW ANCHORS AND SEAL ALL PENETRATIONS. SEE DETAIL 3/A303.
02		PLAZA ASSEMBLY PARTIAL REPLACEMENT: REMOVE EXISTING PAVERS, SETTING MORTAR, TOPPING SLAB CONCRETE, INSULATION, DRAINAGE MATT, FILTER FABRIC AND LIQUID APPLIED MEMBRANE TO THE DECK REPAIR DECK (ASSUME 15% OF THE AREA IN SCOPE) WITH MODIFIED REPAIR CONCRETE. PREPARE AND PRIME DECK TO RECEIVE NEW WATERPROOFING MEMBRANE, DRAINAGE MATT AND FILTER FABRIC FOLLOWED BY FILL. INSULATION, TOPPING SLAB, SETTING BED. RESET THE EXISTING PAVERS. SEE DETAIL 2/A501.
03		PLANTER FILL REPLACEMENT: REMOVE SOIL, FILTER FABRIC, DRAINAGE MATT, INSULATION, TOPPING SLAB AND WATER PROOFING MEMBRANE DOWN TO THE DECK AT THE PLANTERS. PREPARE DECK TO RECEIVE NEW WATERPROOFING MEMBRANE, INSULATION, TOPPING SLAB, DRAINAGE MATT AND FILTER FABRIC FOLLOWED BY THE SOIL FILL. SEE DETAILS 2/A305
04		EXPANSION JOINT : REMOVE EXISTING EXPANSION JOINT AND INSTALL NEW SEAL WITH NEW E MSEAL (UNIFIED BINARY PRE-COMPRESSED SEALANT SYSTEM WITH FACTORY APPLIED LOW-MODULUS SILICONE). SEE DETAILS 5/A501, 6/A501, 6A/A501
05		REMOVE AND DISPOSE EXISTING DRAIN BODY. REPLACE WITH NEW DRAIN BODY AND ASSOCIATED FLASHING PER DETAIL 3/A501, 4/A501.
06		REMOVE AND REINSTALL PLANTER'S COPINGS WITH NEW ANCHORAGE AFTER INSTALLATION OF LIQUID APPLIED MEMBRANE FLASHING OVER THE CURB. SEAL ALL TRANSVERSE JOINTS. SEE DETAIL 2/A305.
07		REMOVE AT LEAST 3'-0" STRIP OF EXISTING PAVERS, SETTING BED, CONCRETE TOPPING SLAB, SOIL, DRAINAGE MAT AND FILTER FABRIC DOWN TO THE STRUCTURAL DECK ALONG THE BUILDING LINE AT COURTYARD. PROVIDE AND INSTALL NEW FLUID APPLIED MEMBRANE FLASHING ON THE VERTICAL FACE OF THE FOUNDATION WALL AND TERMINATE AT THE STORE FRONT WINDOW SILLS. TEMPORARY REMOVE STAINLESS STEEL CLADDING AND STEEL ANGLE AND REINSTALL AFTER WATERPROOFING TO MATCH EXISTING.
08		REMOVE EXISTING PAVERS, CONCRETE TOPPING SLAB, SOIL AND AGGREGATE DOWN TO THE DECK AROUND THE TWO DRAINS AT THE LOWER PLAZA. REMOVE AND REPLACE DRAINS, ASSOCIATED CLOGGED PLUMBING IN KIND. FLASH AROUND THE DRAINS AND PLUMBING PENETRATIONS. RESET SOIL AND AGGREGATES. PROVIDE AND INSTALL NEW CONCRETE TOPPING SLAB, SETTING BED AND PAVERS. SEE DETAIL 3/A504
09		INJECTION GROUTING: AT SILL, LANDING AND WALL FACE. AREA TO BE TREATED WITH SLURRY OF CRYSTALLINE WATERPROOFING STRUCTURAL CRACK TYP. TO BE GROUTED WITH EPOXY RESIN PER DETAIL 3/A306, 2/A306

SCOPE OF WORK:

ARCHITECT

WASA
STUDIO

ARCHITECTURE / ENGINEERING / INTERIORS / PRESERVATION
740 BROADWAY, NEW YORK, NY 10003
TEL: 212.420.1160 FAX: 212.420.1163

OWNER

BATTERY PARK CITY AUTHORITY

200 LIBERTY STREET
NEW YORK, NY 10281

ENVIRONMENTAL SUB-CONSULTANTS

JLC ENVIRONMENTAL CONSULTANTS

243 WEST 30TH STREET, 7TH FL
NEW YORK, NY 10001
TEL: (212) 420-8119

LOCATION PLAN

BLOCK NO. 16LOT NO. 7519 & 7520

3	BID DOCUMENTS	7.15.2015
2	OWNER'S REVIEW	6.18.2015
1	OWNER'S REVIEW 80%	5.22.2015
NO.	SUBMISSIONS/ REVISIONS	DATE

DOB STAMP & SIGN

BIS JOB NUMBER LABEL

PROJECT
**200-300 NORTH END AVE
LEAK REMEDIATION
DESIGN**
200-300 NORTH END AVE
NEW YORK, NY 10282

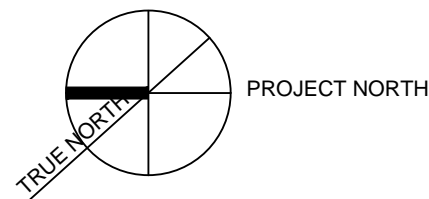
DRAWING NAME

PARTIAL PLAZA PLAN

SEAL & SIGNATURE

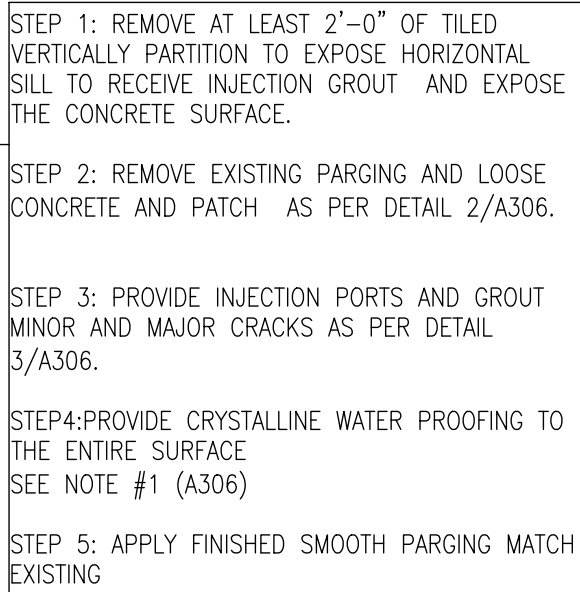
DATE: 07.15.2015
WASA PROJECT No: 65016
SCALE: AS NOTED
DRAWING BY: BM/BB/VO
CHECKED BY: SS
DWG No: **A-102.00**
DWG COUNT: 06 OF 21

3	BID DOCUMENTS	7.15.2015
2	OWNER'S REVIEW	6.18.2015
1	OWNER'S REVIEW 80%	5.22.2015
NO.	SUBMISSIONS/ REVISIONS	DATE








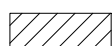


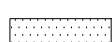
DRAWING NAME

SEAL & SIGNATURE	DATE:	07.15.2015
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	SCALE:	AS NOTED
	DRAWING BY:	BM/BB/YO
	CHECKED BY:	SS
	DWG No:	A-103.00
	DWG COUNT:	07 OF 21



1 PART PLAN @ CELLAR LEVEL
SCALE: 1/4" = 1'-0"

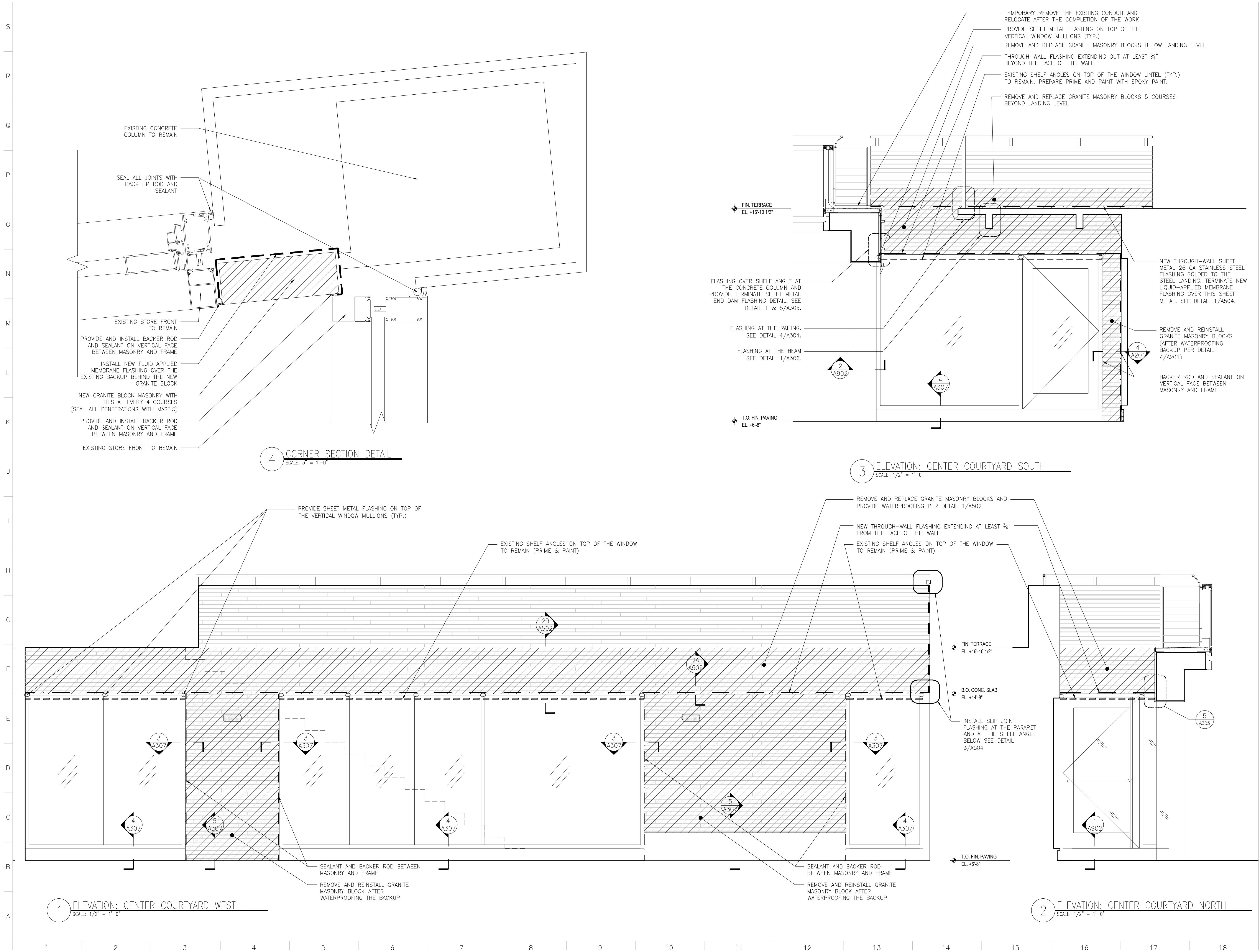
2 PART PLAN @ PLAZA LEVEL
SCALE: 1/4" = 1'-0"

LEGEND		
01		COPING RESETTING: TEMPORARY REMOVE AND STORE EXISTING COPING STONES AND / OR ASSOCIATE RAILING (MOUNTED ON TOP), INSTALL NEW THREE WAY INTERLOCKING 28 GA STAINLESS STEEL THRU-WALL FLASHING, REINSTATE COPINGS AND RAILINGS WITH NEW ANCHORS AND SEAL ALL PENETRATIONS. SEE DETAIL 3/A303.
02		PLAZA ASSEMBLY PARTIAL REPLACEMENT: REMOVE EXISTING PAVERS, SETTING MORTAR, TOPPING SLAB CONCRETE, INSULATION, DRAINAGE MATT, FILTER FABRIC AND LIQUID APPLIED MEMBRANE TO THE DECK. REPAIR DECK (ASSUME 15% OF THE AREA IN SCOPE) WITH MODIFIED REPAIR CONCRETE. PREPARE AND PRIME DECK TO RECEIVE NEW WATERPROOFING MEMBRANE. DRAINAGE MATT AND FILTER FABRIC FOLLOWED BY FILL, INSULATION, TOPPING SLAB, SETTING BED. RESET THE EXISTING PAVERS. SEE DETAIL 2/A501.
03		PLANTER FILL REPLACEMENT: REMOVE SOIL, FILTER FABRIC, DRAINAGE MATT, INSULATION, TOPPING SLAB AND WATER PROOFING MEMBRANE DOWN TO THE DECK AT THE PLANTERS. PREPARE DECK TO RECEIVE NEW WATERPROOFING MEMBRANE. INSULATION, TOPPING SLAB, DRAINAGE MATT AND FILTER FABRIC FOLLOWED BY THE SOIL FILL. SEE DETAILS 2/A305
04		EXPANSION JOINT : REMOVE EXISTING EXPANSION JOINT AND INSTALL NEW SEAL WITH NEW E MSEAL (UNIFIED BINARY PRE-COMPRESSED SEALANT SYSTEM WITH FACTORY APPLIED LOW-MODULUS SILICONE). SEE DETAILS 5/A501, 6/A501, 6A/A501
05		REMOVE AND DISPOSE EXISTING DRAIN BODY. REPLACE WITH NEW DRAIN BODY AND ASSOCIATED FLASHING PER DETAIL 3/A501, 4/A501.
06		REMOVE AND REINSTATE PLANTER'S COPINGS WITH NEW ANCHORAGE AFTER INSTALLATION OF LIQUID APPLIED MEMBRANE FLASHING OVER THE CURB. SEAL ALL TRANSVERSE JOINTS. SEE DETAIL 2/A305.
07		REMOVE AT LEAST 3'-0" STRIP OF EXISTING PAVERS, SETTING BED, CONCRETE TOPPING SLAB, SOIL, DRAINAGE MAT AND FILTER FABRIC DOWN TO THE STRUCTURAL DECK ABOVE THE BUILDING LINE AT COURTYARD. PROVIDE AND INSTALL NEW FLUID APPLIED MEMBRANE FLASHING ON THE VERTICAL FACE OF THE FOUNDATION WALL AND TERMINATE AT THE STORE FRONT WINDOW SILLS. TEMPORARY REMOVE STAINLESS STEEL CLADDING AND STEEL ANGLE AND REINSTALL AFTER WATERPROOFING TO MATCH EXISTING.
08		REMOVE EXISTING PAVERS, CONCRETE TOPPING SLAB, SOIL AND AGGREGATE DOWN TO THE DECK ABOVE THE TWO DRAINS AT THE LOWER PLAZA. REMOVE AND REPLACE DRAINS, ASSOCIATED CLOGGED PLUMBING IN KIND. FLASH AROUND THE DRAINS AND PLUMBING PENETRATIONS. RESET SOIL AND AGGREGATES. PROVIDE AND INSTALL NEW CONCRETE TOPPING SLAB, SETTING BED AND PAVERS. SEE DETAIL 3/A504
09		INJECTION GROUTING AT SILL, LANDING AND WALL FACE. AREA TO BE TREATED WITH SLURRY OF CRYSTALLINE WATERPROOFING STRUCTURAL CRACK TYP. TO BE GROUTED WITH EPOXY RESIN PER DETAIL 3/A306, 2/A306

SCOPE OF WORK:

1. REMOVE & RESET PAVERS AT UPPER PLAZA. INSTALL SAND SETTING BED WITH POLYMERIC LIQUID STABILIZER AT JOINTS OF PAVERS.
2. REMOVE AND REPLACE IRRIGATION SYSTEM AND RECONNECT TO MAIN SUPPLY IN KIND AFTER COMPLETION OF WATERPROOFING OF THE PLANTER.

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TEL: 212.420.1160 FAX: 212.420.1163

OWNER

BATTERY PARK CITY AUTHORITY

200 LIBERTY STREET
NEW YORK, NY 10281

ENVIRONMENTAL SUB-CONSULTANTS

JLC ENVIRONMENTAL CONSULTANTS

243 WEST 30TH STREET, 7TH FL.
NEW YORK, NY 10001
TEL: (212) 420-8119

LOCATION PLAN

AREA OF WORK

WARREN STREET
WEST SIDE HWY
MURRAY STREET
N END AVE

BLOCK NO. 16 LOT NO. 7519 & 7520

NO.	SUBMISSIONS/ REVISIONS	DATE
3	BID DOCUMENTS	7.15.2015
2	OWNER'S REVIEW	6.18.2015
1	OWNER'S REVIEW 80%	5.22.2015

DOB STAMP & SIGN

BIS JOB NUMBER LABEL

PROJECT NORTH

TRUE NORTH

PROJECT

**200-300 NORTH END AVE
LEAK REMEDIATION
DESIGN**

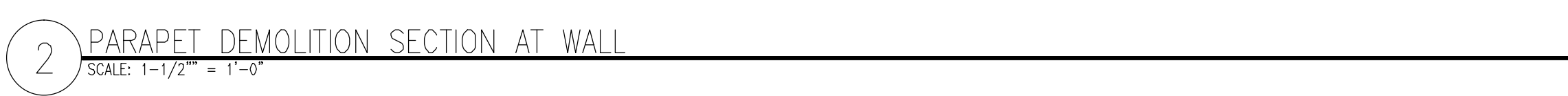
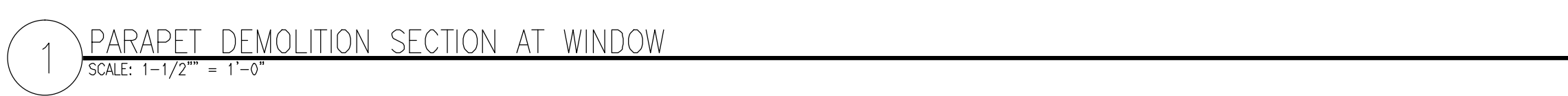
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NEW YORK, NY 10282

DRAWING NAME

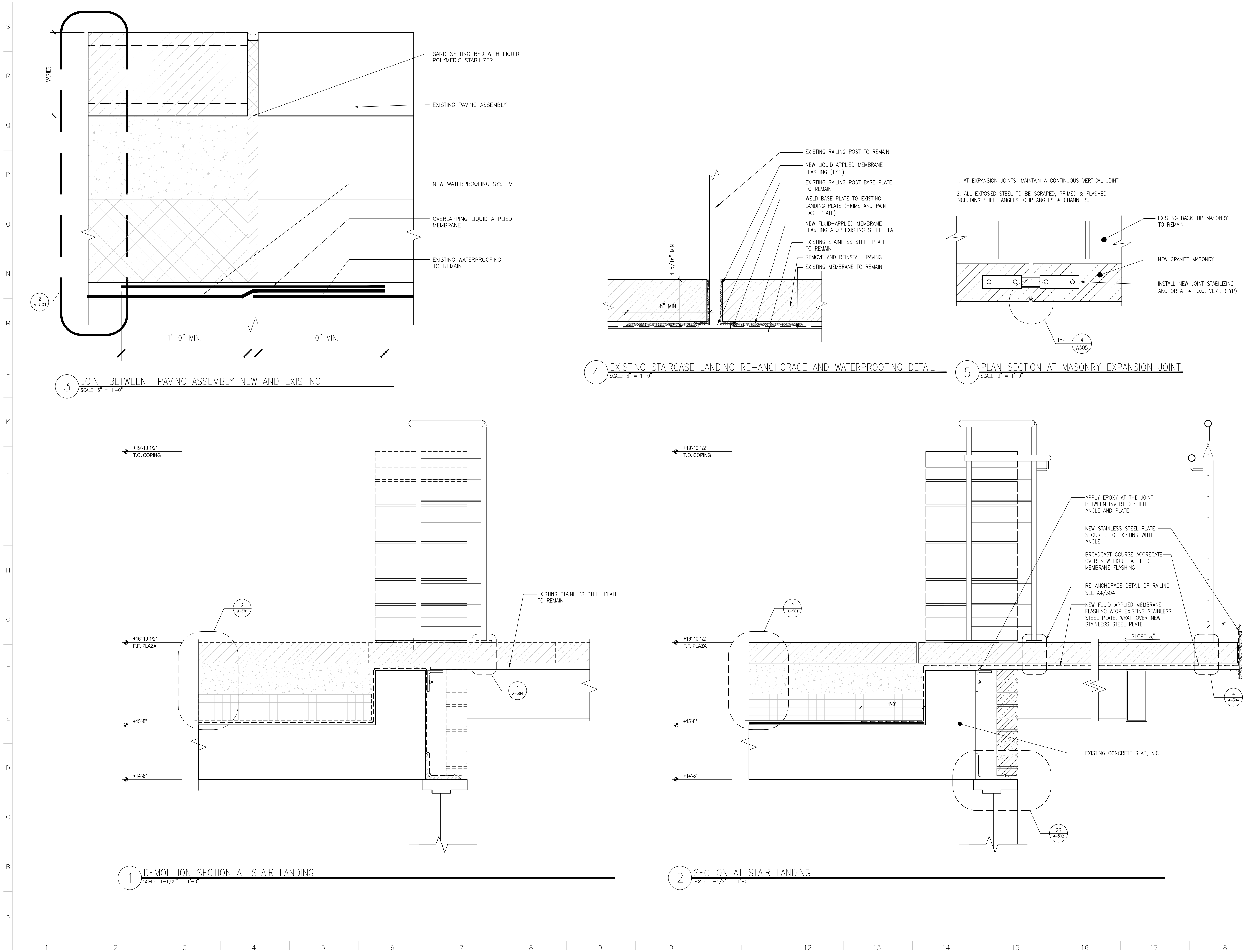
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ELEVATIONS**

SEAL & SIGNATURE

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DRAWING BY: BM/ BB/YO
CHECKED BY: SS
DWG No: **A-201**
DWG COUNT: 8 OF 21



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ARCHITECTURE / ENGINEERING / INTERIORS / PRESERVATION
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TEL: 212.420.1160 FAX: 212.420.1163

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200 LIBERTY STREET
NEW YORK, NY 10281

ENVIRONMENTAL SUB-CONSULTANTS

JLC ENVIRONMENTAL CONSULTANTS

243 WEST 30TH STREET, 7TH FL
NEW YORK, NY 10001
TEL: (212) 420-8119

LOCATION PLAN

AREA OF WORK

WARRENS STREET

WEST SIDE HWY

MURRAY STREET

BLOCK NO. 16

LOT NO. 7519 & 7520

NO.	BID DOCUMENTS	DATE
3	BID DOCUMENTS	7.15.2015
2	OWNER'S REVIEW	6.18.2015
1	OWNER'S REVIEW 80%	5.22.2015
NO.	SUBMISSIONS/ REVISIONS	DATE

DOB STAMP & SIGN

BIS JOB NUMBER LABEL

PROJECT NORTH

PROJECT

**200-300 NORTH END AVE
LEAK REMEDIATION
DESIGN**

200-300 NORTH END AVE
NEW YORK, NY 10282

DRAWING NAME

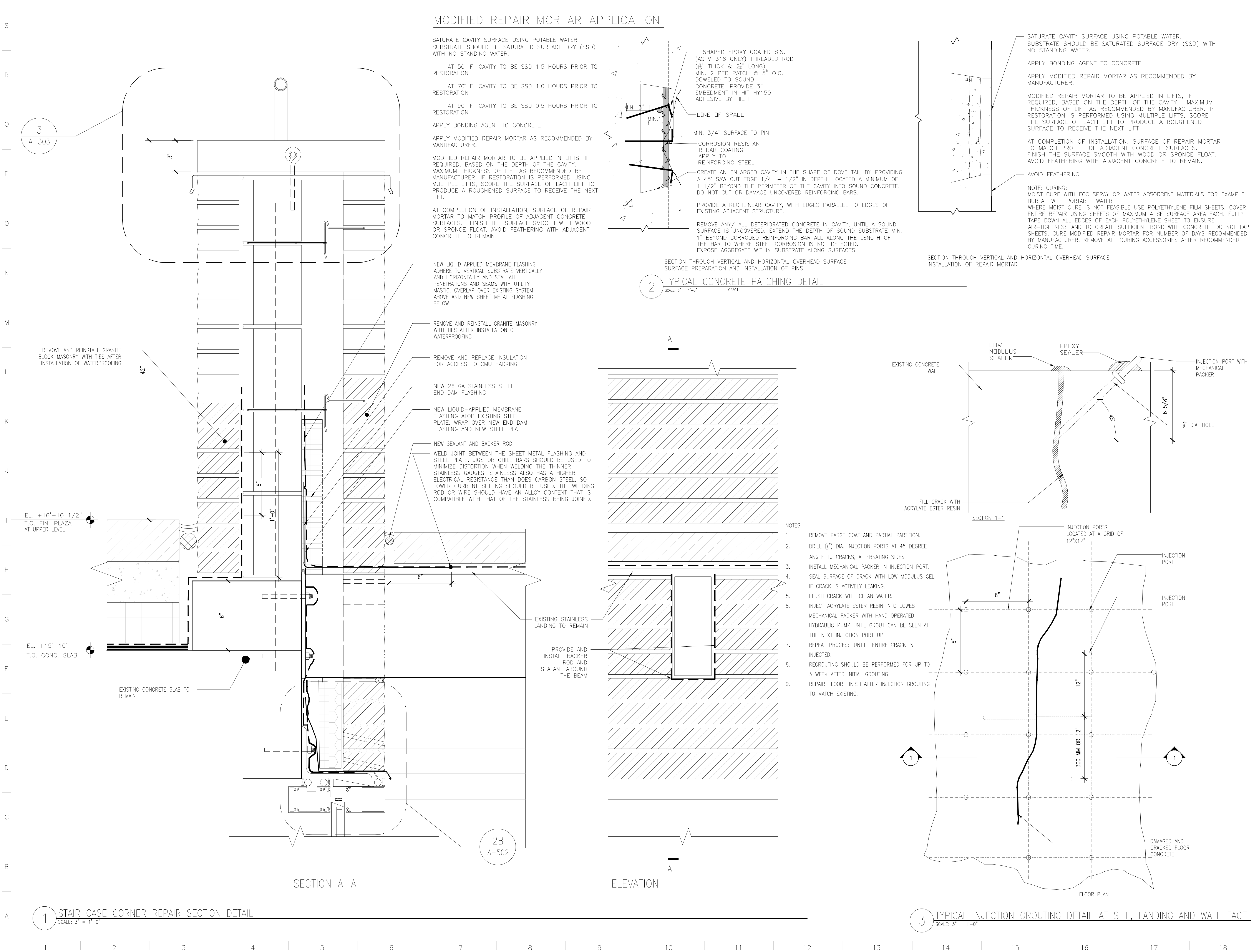
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SEAL & SIGNATURE

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WASA PROJECT NO: 65016
SCALE: AS NOTED
DRAWING BY: BM/BB/YO
CHECKED BY: SS
DWG NO: **A-304**
DWG COUNT: 12 OF 21



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200 LIBERTY STREET
NEW YORK, NY 10281

ENVIRONMENTAL SUB-CONSULTANTS

JLC ENVIRONMENTAL CONSULTANTS

243 WEST 30TH STREET, 7TH FL
NEW YORK, NY 10001
TEL: (212) 420-8119

LOCATION PLAN

AREA OF WORK

WARREN STREET

WEST SIDE HWY

MURRAY STREET

N END AVE

BLOCK NO. 16

LOT NO. 7519 & 7520

NO.	SUBMISSIONS/ REVISIONS	DATE
3	BID DOCUMENTS	7.15.2015
2	OWNER'S REVIEW	6.18.2015
1	OWNER'S REVIEW 80%	5.22.2015

DOB STAMP & SIGN

BIS JOB NUMBER LABEL

PROJECT NORTH

PROJECT

**200-300 NORTH END AVE
LEAK REMEDIATION
DESIGN**

200-300 NORTH END AVE
NEW YORK, NY 10282

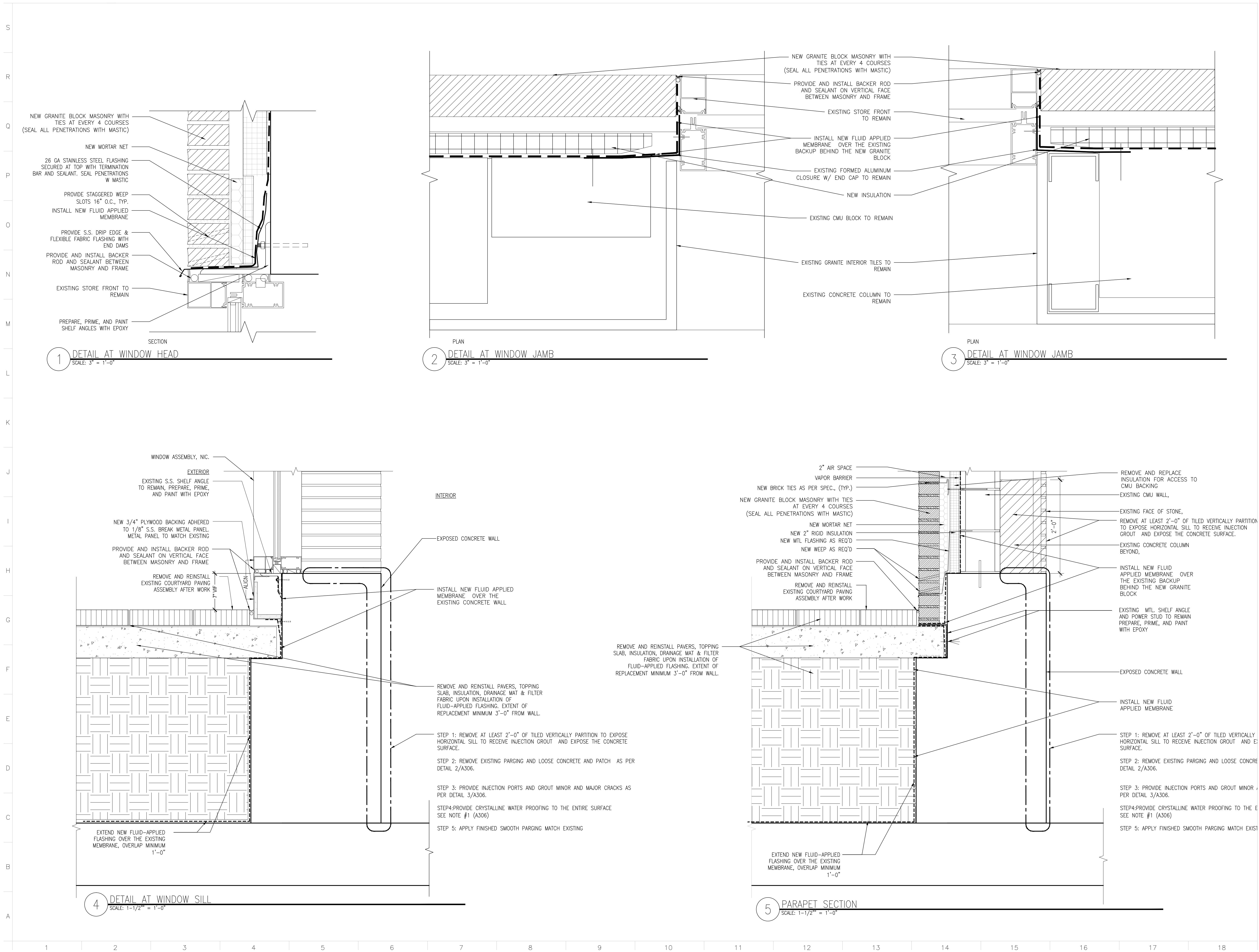
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PARAPET SECTIONS


SEAL & SIGNATURE

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DWG COUNT: 14 OF 21

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OWNER

BATTERY PARK CITY AUTHORITY

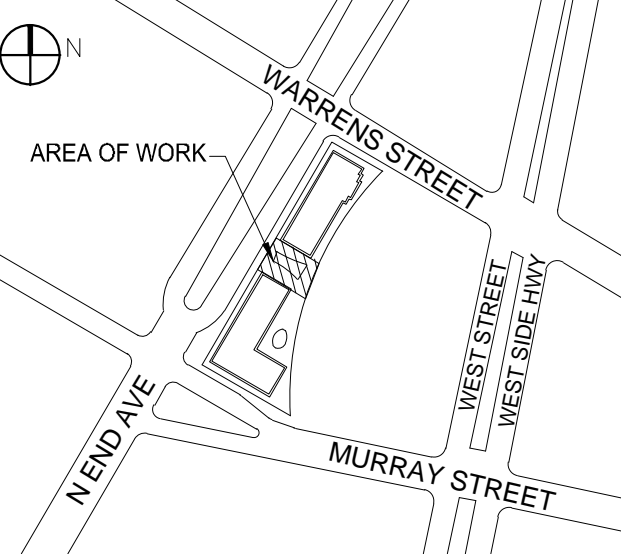
200 LIBERTY STREET
NEW YORK, NY 10281

ENVIRONMENTAL SUB-CONSULTANTS

JLC ENVIRONMENTAL CONSULTANTS

243 WEST 30TH STREET, 7TH FL
NEW YORK, NY 10001
TEL: (212) 420-8119

LOCATION PLAN



AREA OF WORK

WARRENS STREET
WEST SIDE HWY
MURRAY STREET
WEST SIDE HWY
WEST SIDE HWY
WEST SIDE HWY

BLOCK NO. 16
LOT NO. 7519 & 7520

NO.	SUBMISSIONS/	REVISIONS	DATE
3	BID DOCUMENTS		7.15.2015
2	OWNER'S REVIEW		6.18.2015
1	OWNER'S REVIEW	80%	5.22.2015

DOB STAMP & SIGN

BIS JOB NUMBER LABEL

PROJECT

**200-300 NORTH END AVE
LEAK REMEDIATION
DESIGN**

200-300 NORTH END AVE
NEW YORK, NY 10282

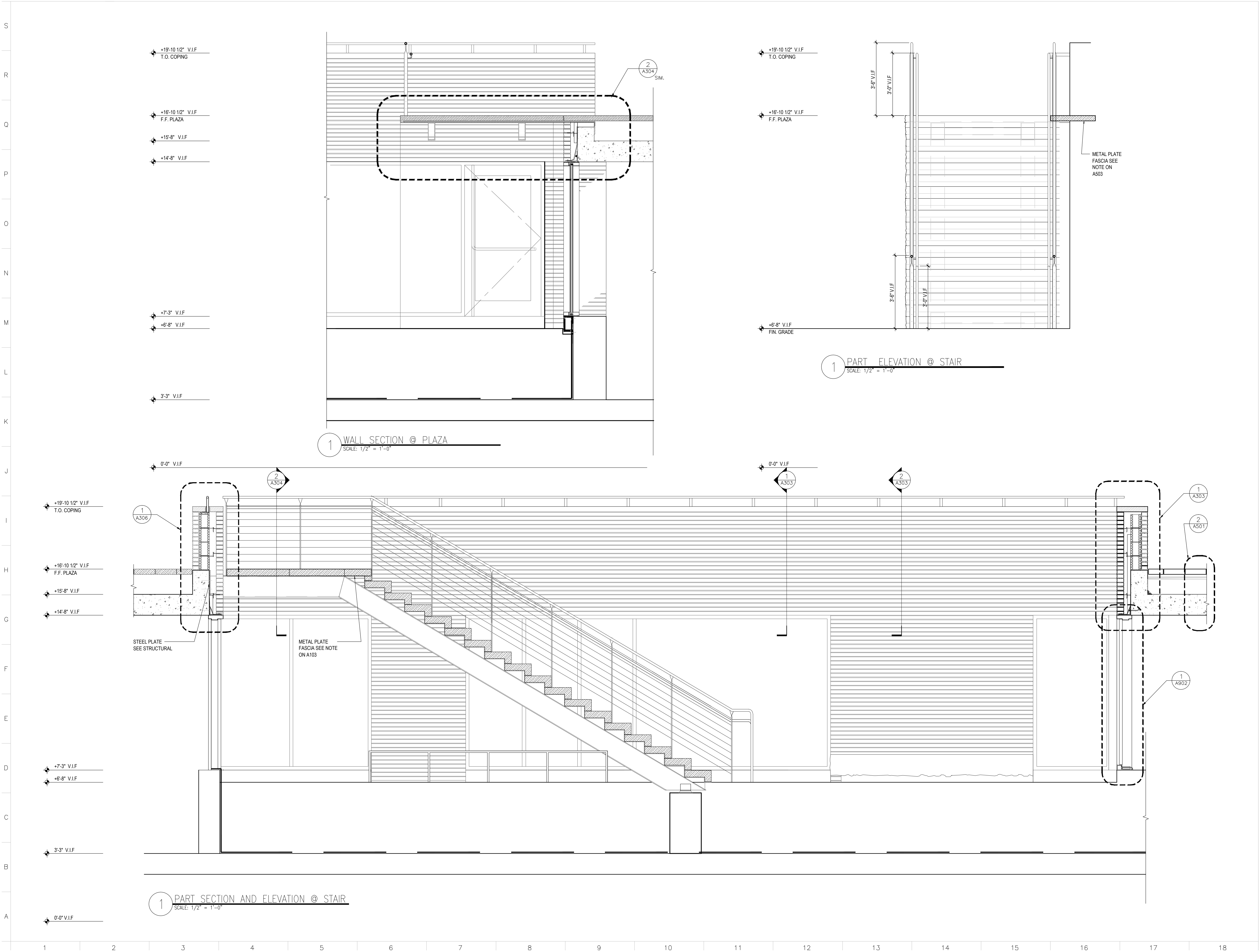
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SEAL & SIGNATURE

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DRAWING BY: BM/BB/YO
CHECKED BY: SS
DWG NO: **A-307**
DWG COUNT: 15 OF 21

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STUDIO

ARCHITECTURE / ENGINEERING / INTERIORS / PRESERVATION
740 BROADWAY, NEW YORK, NY 10003
TEL: 212.420.1160 FAX: 212.420.1163

OWNER

BATTERY PARK CITY AUTHORITY

200 LIBERTY STREET
NEW YORK, NY 10281

ENVIRONMENTAL SUB-CONSULTANTS

JLC ENVIRONMENTAL CONSULTANTS

243 WEST 30TH STREET, 7TH FL
NEW YORK, NY 10001
TEL: (212) 420-8119

LOCATION PLAN

WARRENS STREET
WEST STREET
MURRAY STREET
N END AVE
WEST SIDE HWY
BLOCK NO. 16
LOT NO. 7519 & 7520

NO.	SUBMISSIONS/ REVISIONS	DATE
3	BID DOCUMENTS	7.15.2015
2	OWNER'S REVIEW	6.18.2015
1	OWNER'S REVIEW 80%	5.22.2015

DOB STAMP & SIGN

BIS JOB NUMBER LABEL

PROJECT

**200-300 NORTH END AVE
LEAK REMEDIATION
DESIGN**

200-300 NORTH END AVE
NEW YORK, NY 10282

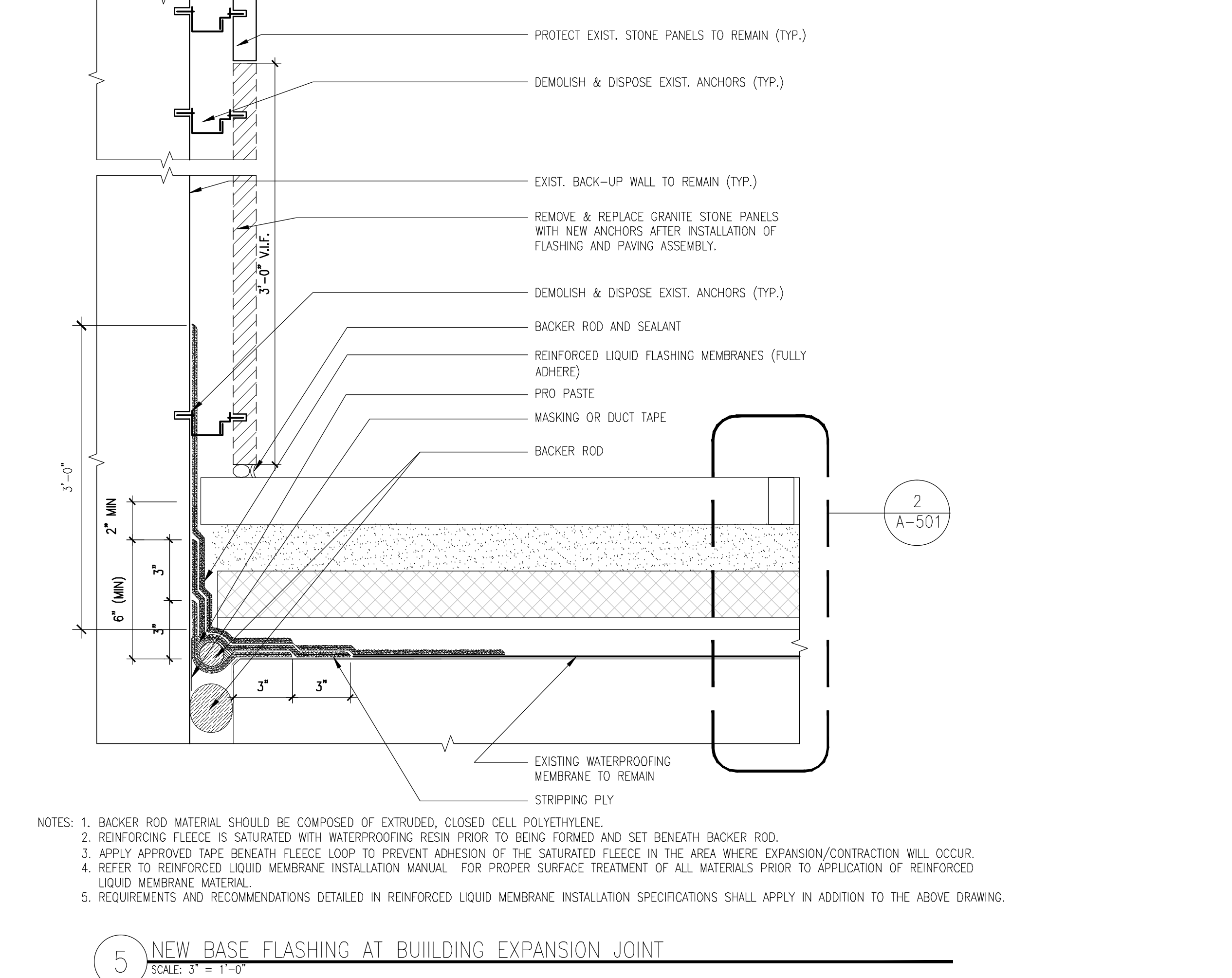
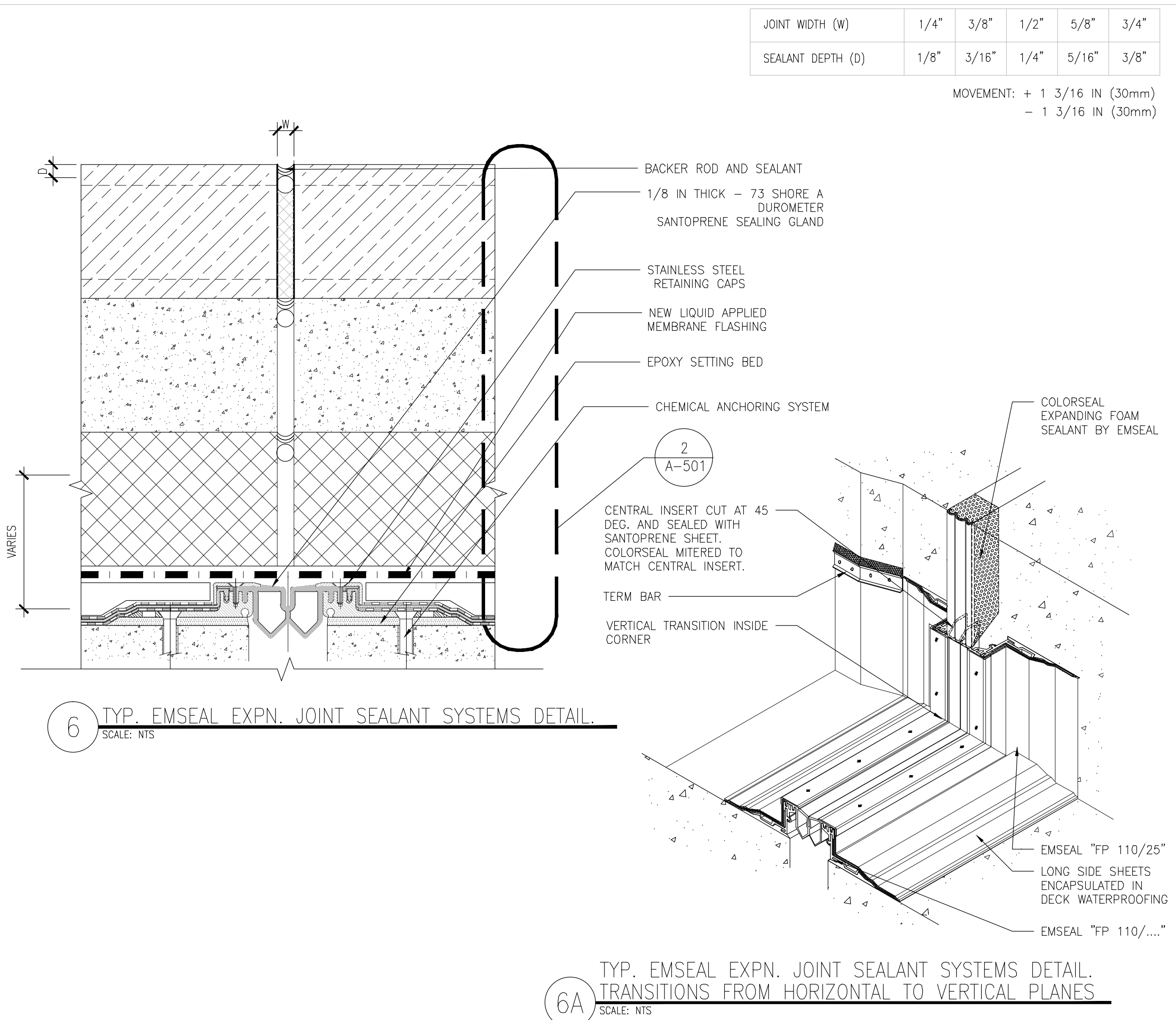
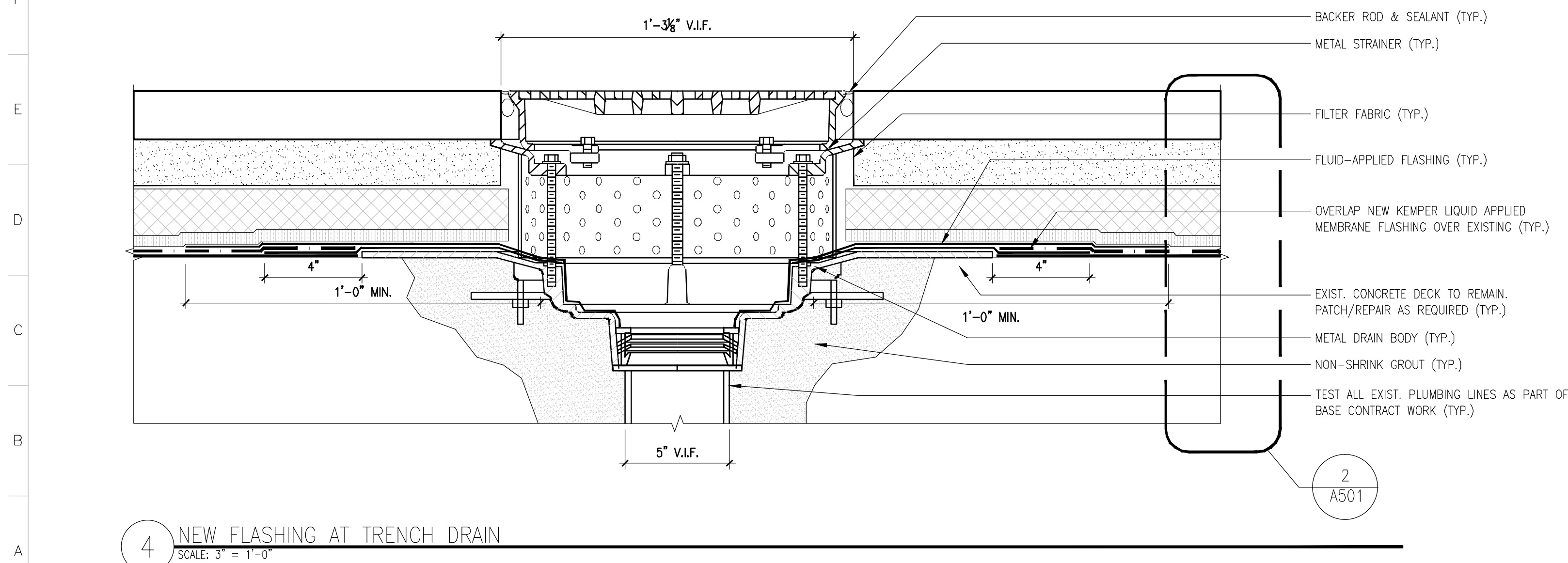
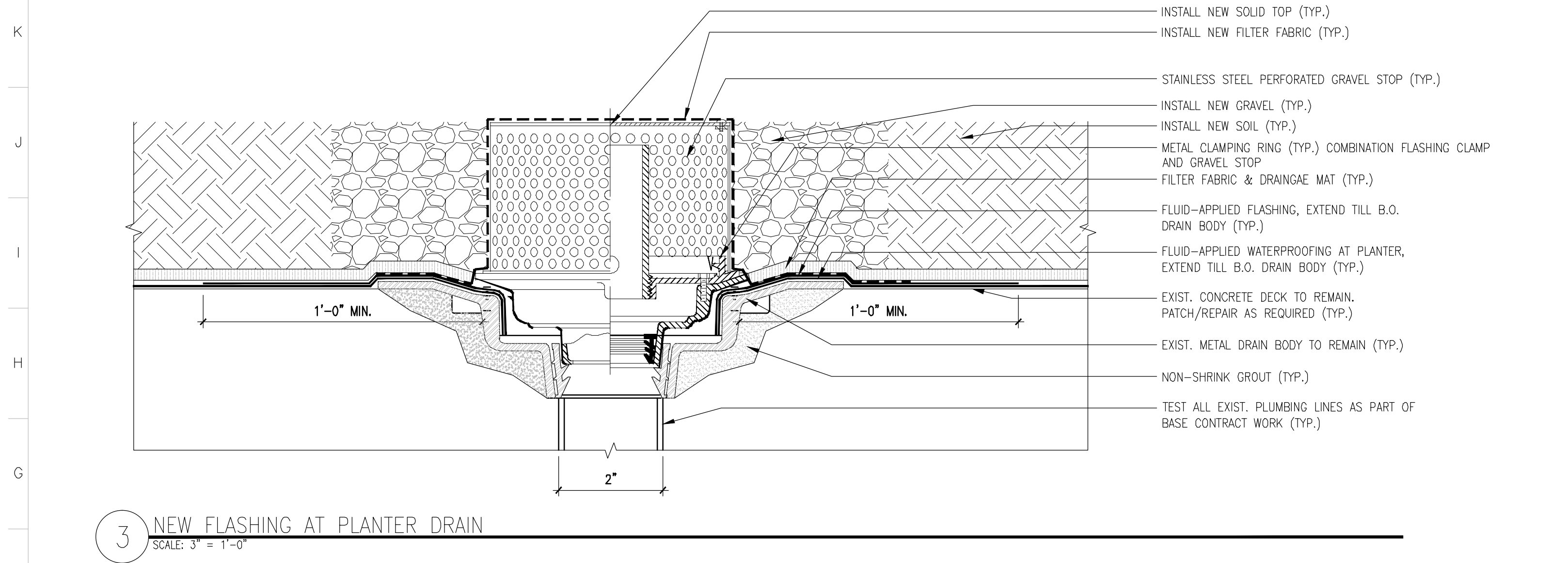
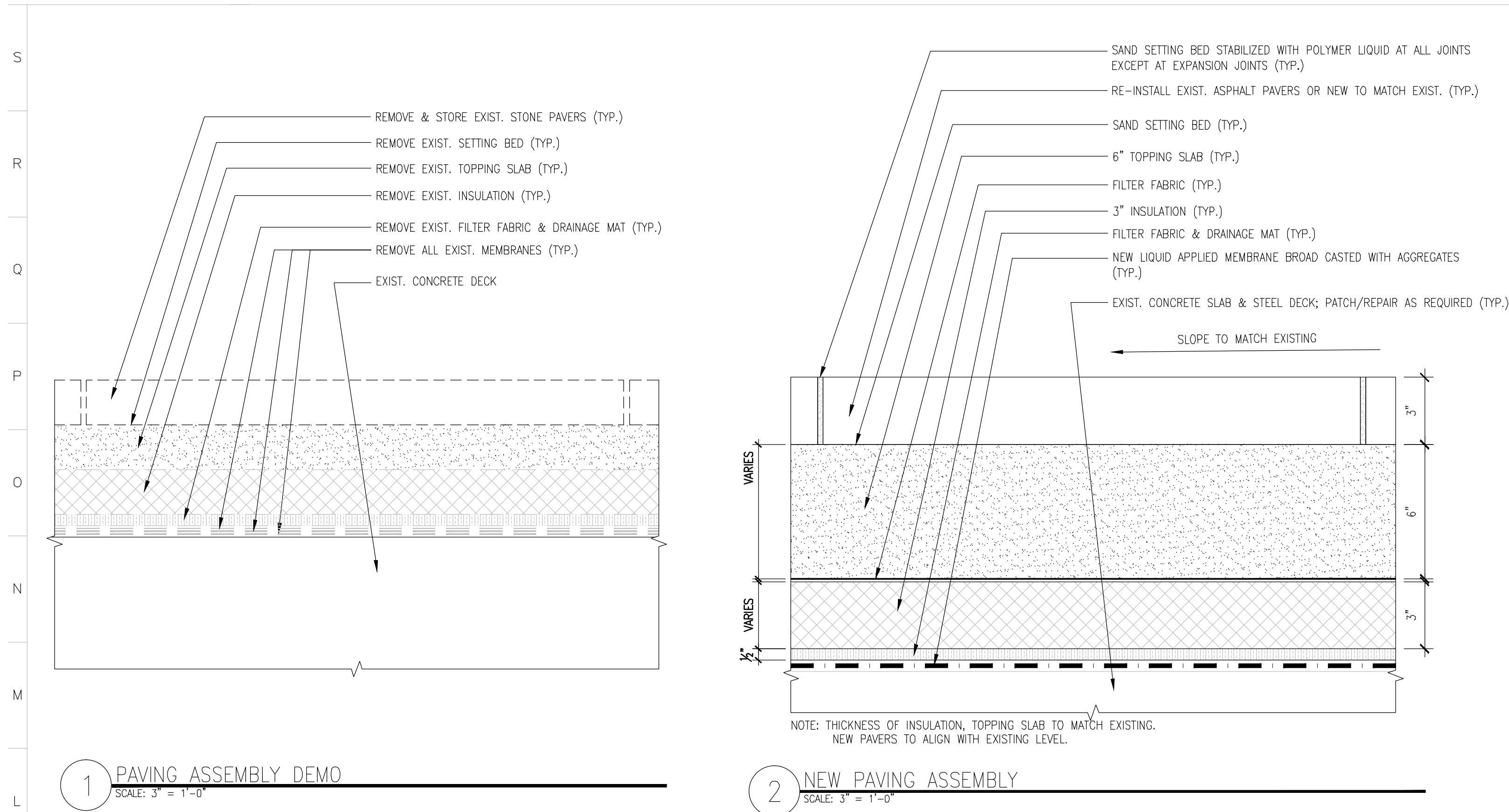
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STAIRCASE SECTION

SEAL & SIGNATURE

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DRAWING BY: BM/ BB/YO
CHECKED BY: SS
DWG No: **A-301.00**
DWG COUNT: 09 OF 21

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JOINT WIDTH (W)	1/4"	3/8"	1/2"	5/8"	3/4"
SEALANT DEPTH (D)	1/8"	3/16"	1/4"	5/16"	3/8"

MOVEMENT: + 1 3/16 IN (30mm)
- 1 3/16 IN (30mm)

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740 BROADWAY, NEW YORK, NY 10003
TEL: 212.420.1160 FAX: 212.420.1163

OWNER
BATTERY PARK CITY AUTHORITY

200 LIBERTY STREET
NEW YORK, NY 10281

ENVIRONMENTAL SUB-CONSULTANTS
JLC ENVIRONMENTAL CONSULTANTS

243 WEST 30TH STREET, 7TH FL
NEW YORK, NY 10001
TEL: (212) 420-8119

LOCATION PLAN

BLOCK NO. 16 LOT NO. 7519 & 7520

NO.	SUBMISSIONS/ REVISIONS	DATE
3	BID DOCUMENTS	7.15.2015
2	OWNER'S REVIEW	6.18.2015
1	OWNER'S REVIEW 80%	5.22.2015

DOB STAMP & SIGN

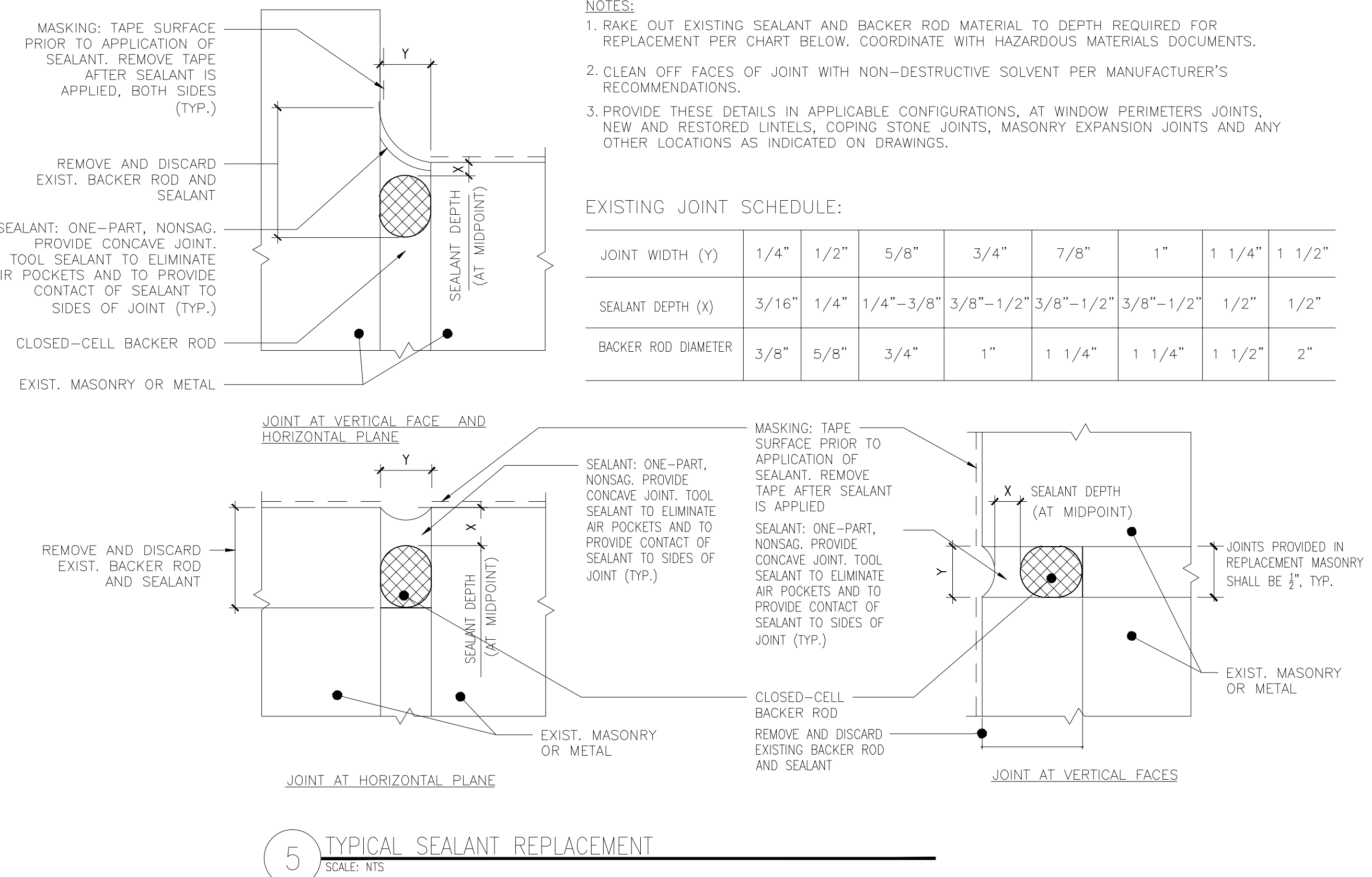
BIS JOB NUMBER LABEL

PROJECT NORTH

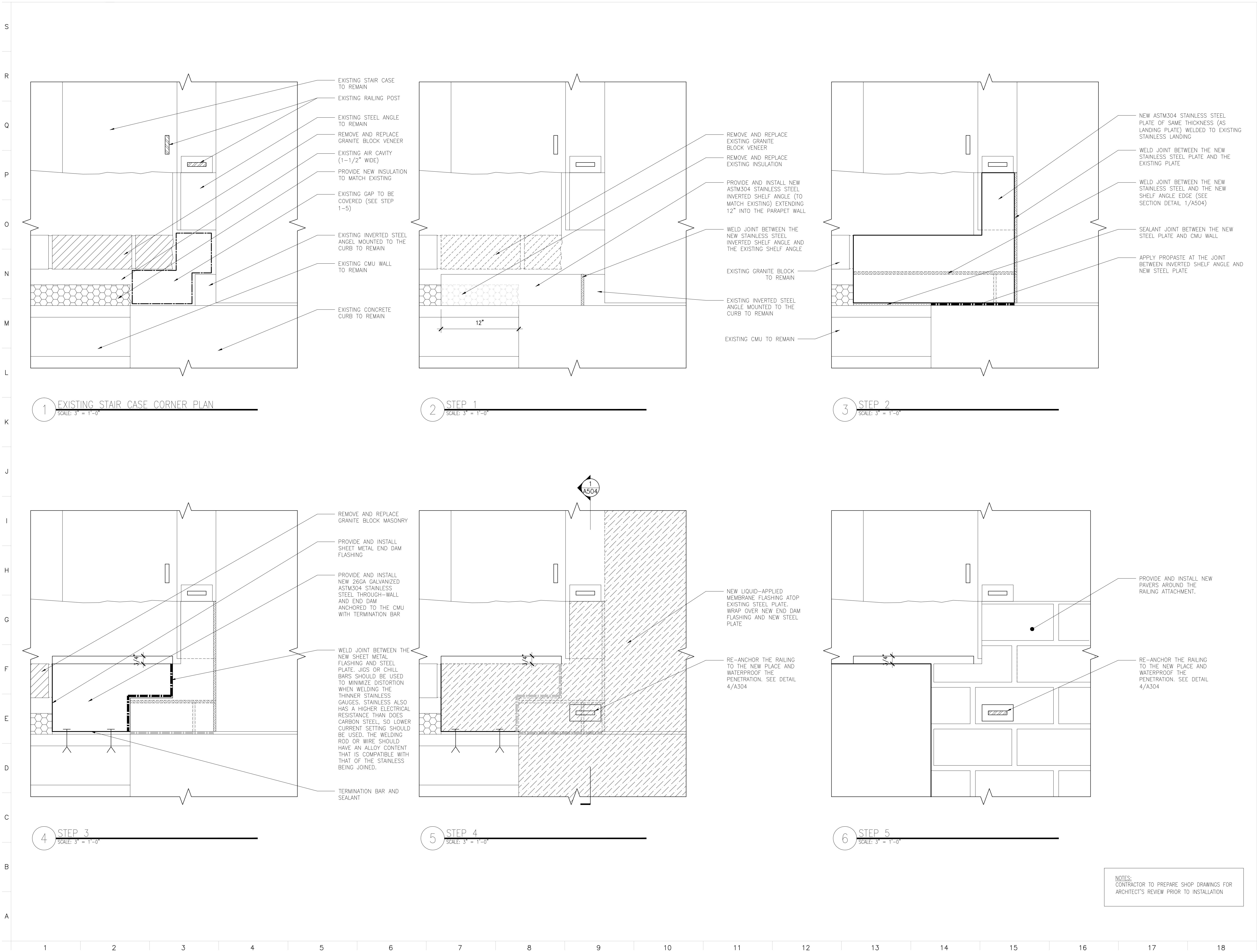
PROJECT
200-300 NORTH END AVE LEAK REMEDIATION DESIGN
200-300 NORTH END AVE
NEW YORK, NY 10282

DRAWING NAME
DETAILS

SEAL & SIGNATURE	DATE: 07.15.2015
	WASA PROJECT No: 65016
	SCALE: AS NOTED
	DRAWING BY: BM/BB/YO
	CHECKED BY: SS
DWG No:	A-501
DWG COUNT:	16 OF 21



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ARCHITECTURE / ENGINEERING / INTERIORS / PRESERVATION
740 BROADWAY, NEW YORK, NY 10003
TEL: 212.420.1160 FAX: 212.420.1163

OWNER

BATTERY PARK CITY AUTHORITY

200 LIBERTY STREET
NEW YORK, NY 10281

ENVIRONMENTAL SUB-CONSULTANTS

JLC ENVIRONMENTAL CONSULTANTS

243 WEST 30TH STREET, 7TH FL
NEW YORK, NY 10001
TEL: (212) 420-8119

LOCATION PLAN

3	BID DOCUMENTS	7.15.2015
2	OWNER'S REVIEW	6.18.2015
1	OWNER'S REVIEW 80%	5.22.2015
NO.	SUBMISSIONS/ REVISIONS	DATE

DOB STAMP & SIGN

BIS JOB NUMBER LABEL

PROJECT

**200-300 NORTH END AVE
LEAK REMEDIATION
DESIGN**

200-300 NORTH END AVE
NEW YORK, NY 10282

DRAWING NAME

DETAILS

SEAL & SIGNATURE

DATE: 07.15.2015
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SCALE: AS NOTED
DRAWING BY: BM/BB/YO
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DWG COUNT: 18 OF 21



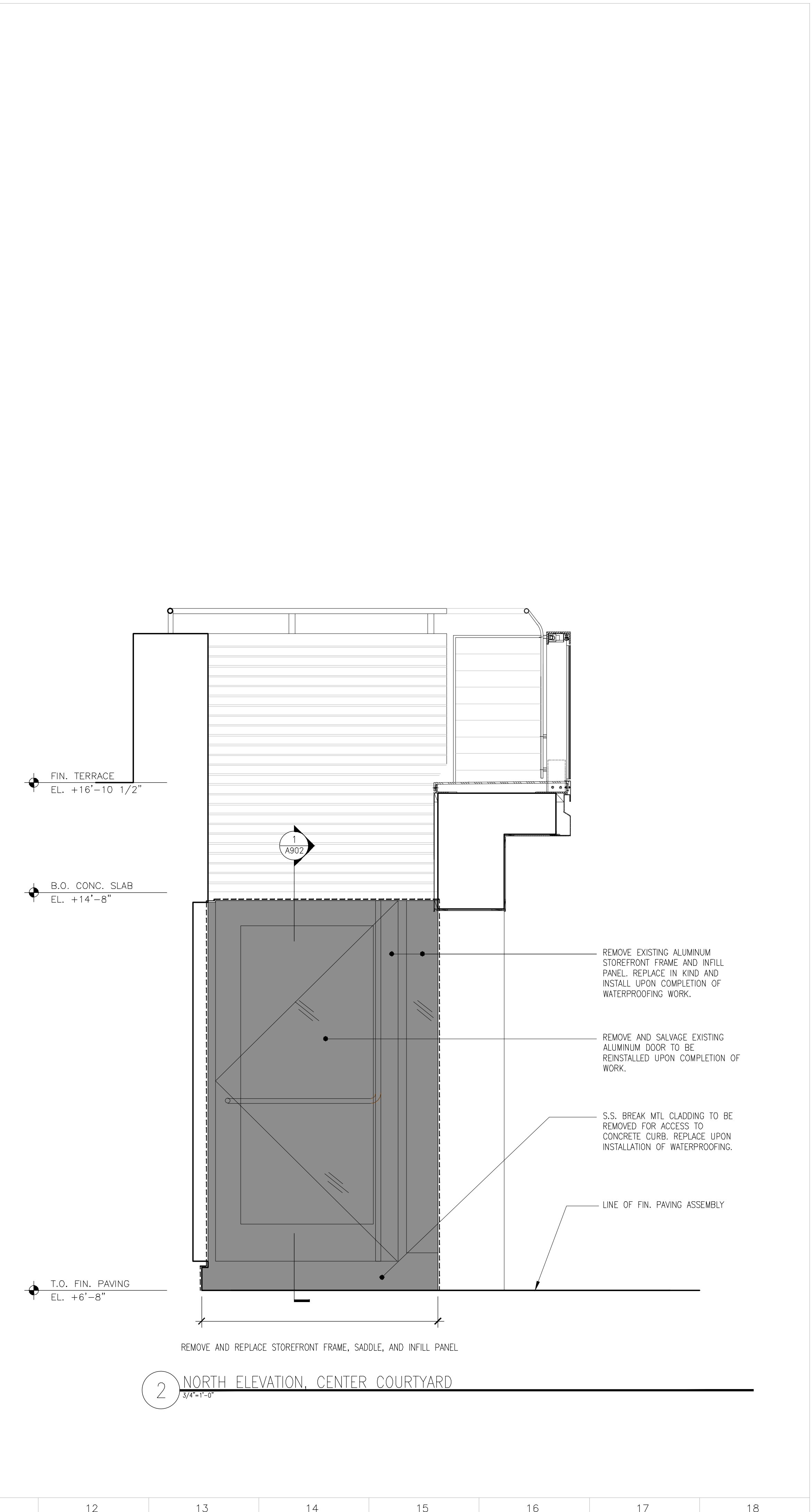
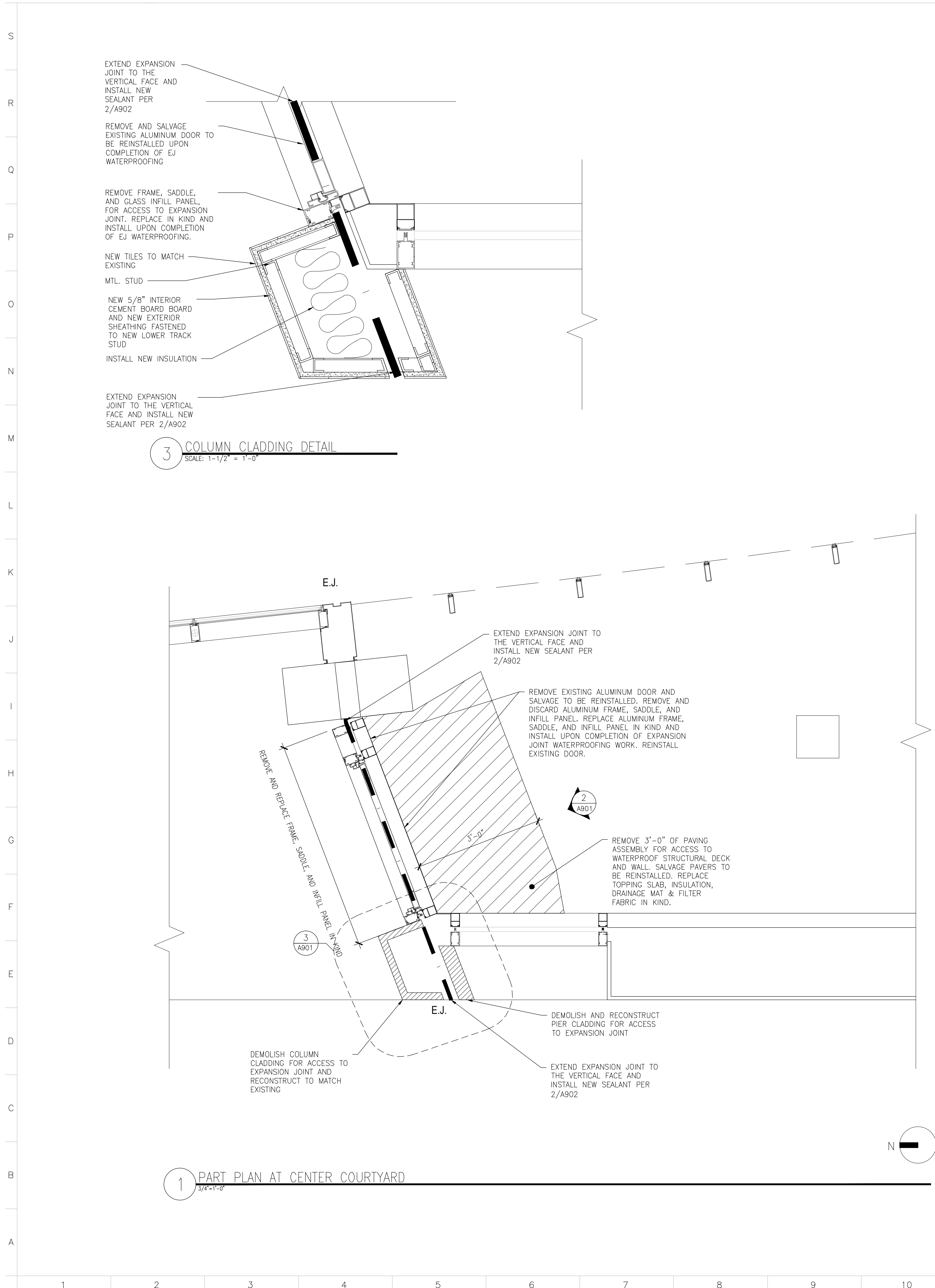
NOTES: 1. BACKER ROD MATERIAL SHOULD BE COMPOSED OF EXTRUDED, CLOSED CELL POLYETHYLENE.

2. WATERPROOFING RESIN IS SATURATED WITH REINFORCING FLEECE prior TO BEING FORMED AND SET BENEATH BACKER ROD.

3. APPLY APPROVED TAPE BENEATH FLEECE LOOP TO PREVENT ADHESION OF THE SATURATED FLEECE IN THE AREA WHERE EXPANSION/CONTRACTION WILL OCCUR.

4. REFER TO REINFORCED LIQUID MEMBRANE INSTALLATION MANUAL FOR PROPER SURFACE TREATMENT OF ALL MATERIALS PRIOR TO APPLICATION OF REINFORCED LIQUID MEMBRANE MATERIAL.

5. REQUIREMENTS AND RECOMMENDATIONS DETAILED IN REINFORCED LIQUID MEMBRANE INSTALLATION SPECIFICATIONS SHALL APPLY IN ADDITION TO THE ABOVE DRAWING.

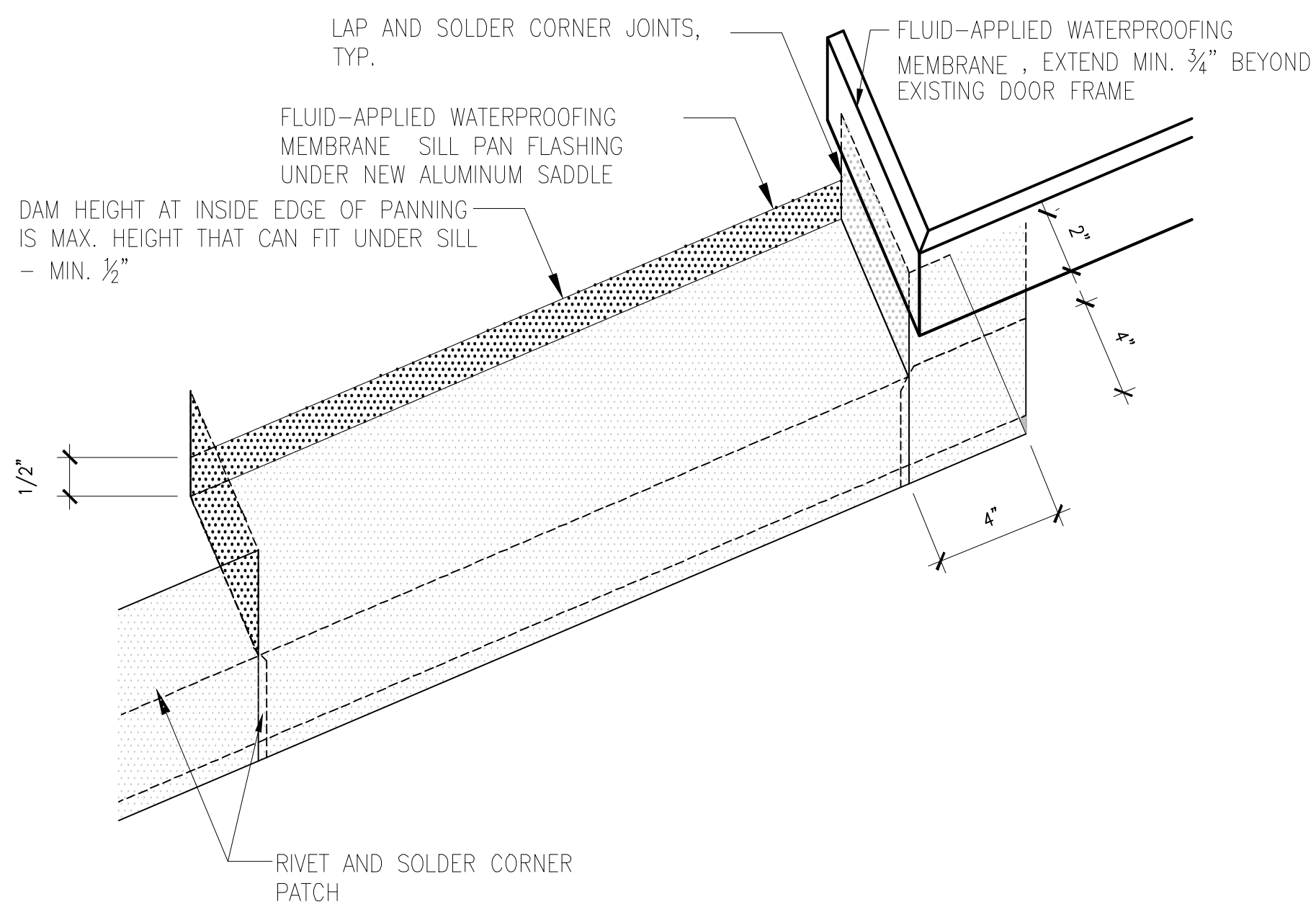
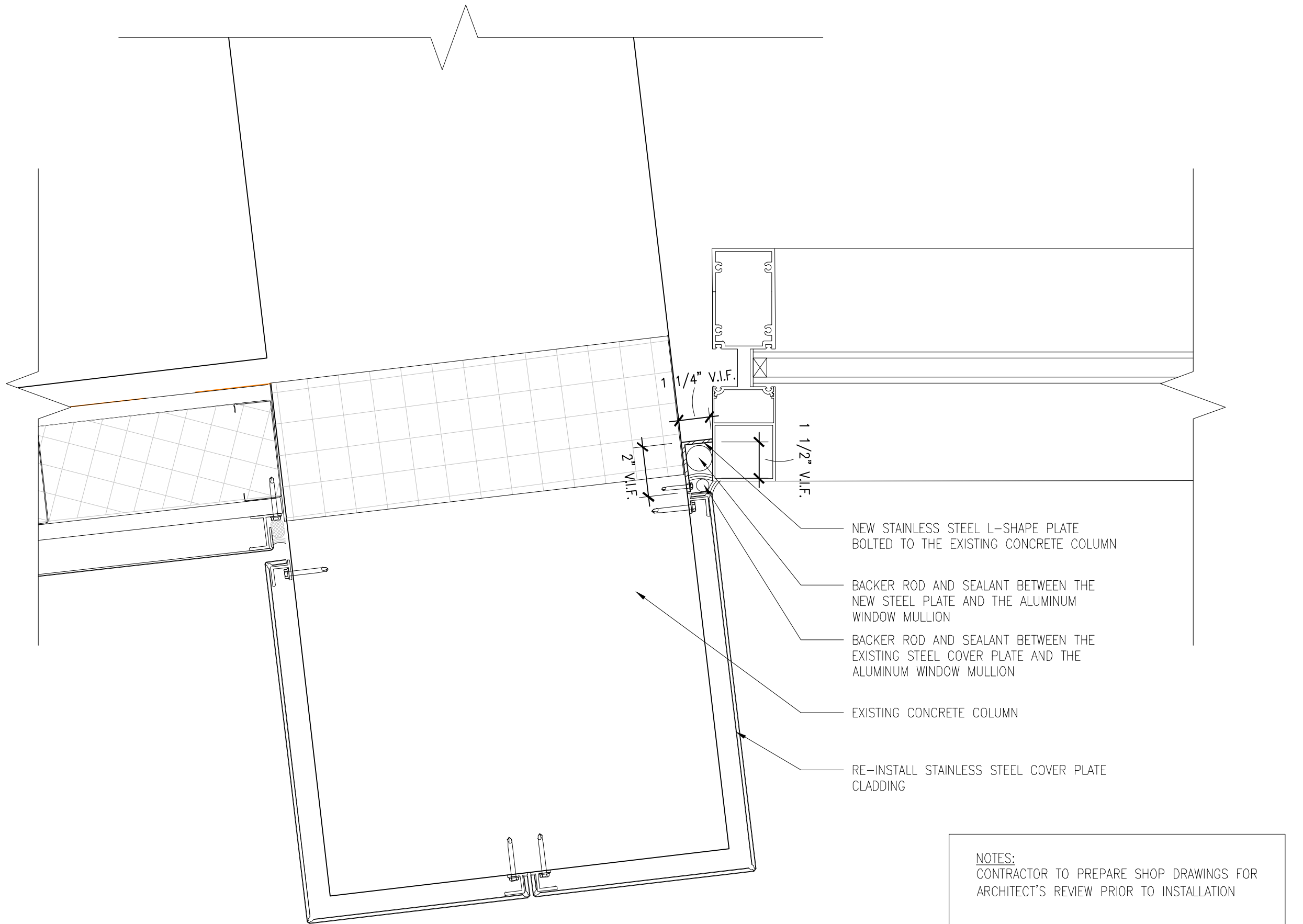
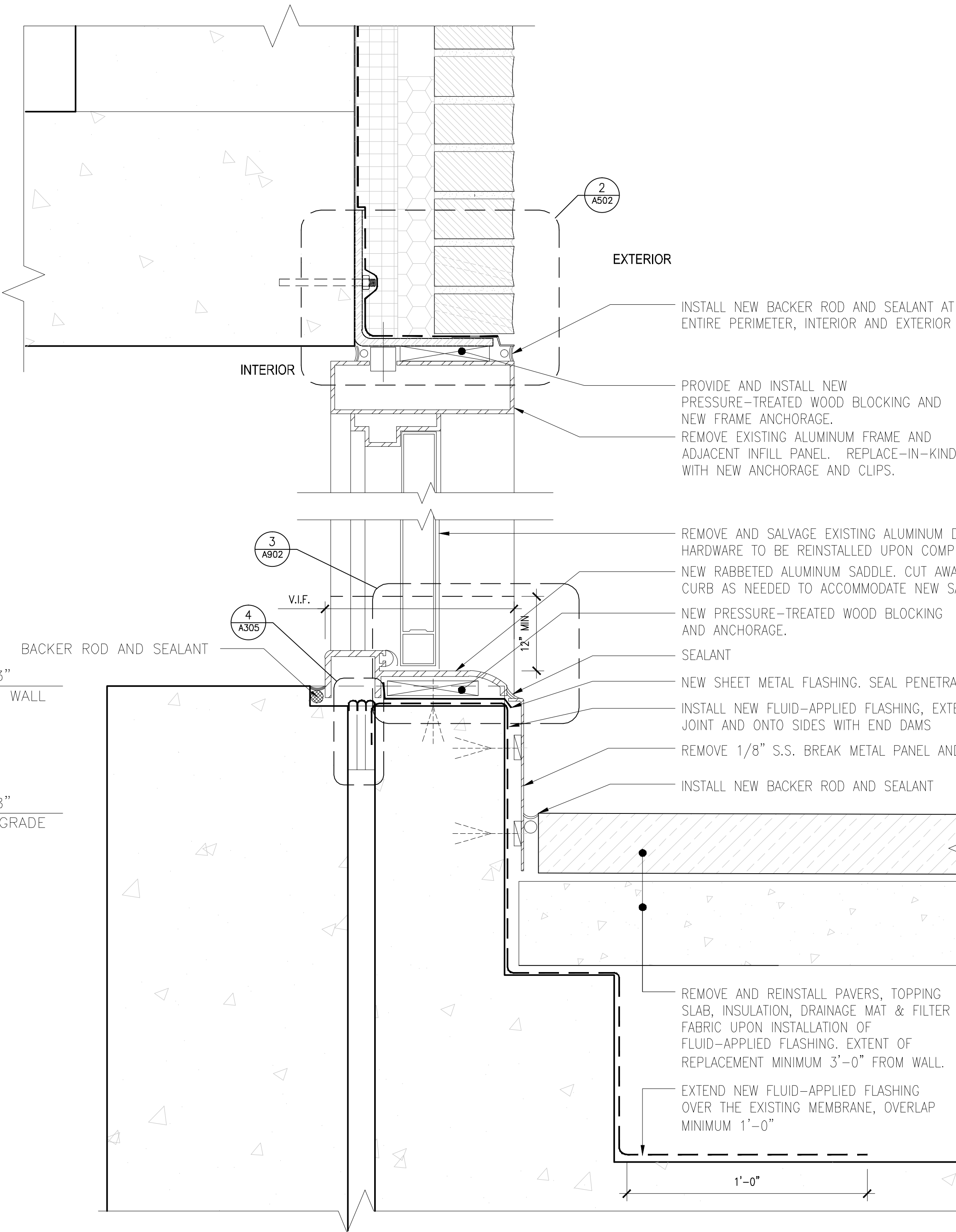


<p>ARCHITECT</p> <p>ARCHITECTURE / ENGINEERING / INTERIORS / PRESERVATION</p> <p>740 BROADWAY, NEW YORK, NY 10003 TEL: 212.420.1160 FAX: 212.420.1163</p>																
<p>OWNER</p> <p>BATTERY PARK CITY AUTHORITY</p>																
<p>200 LIBERTY STREET NEW YORK, NY 10281</p>																
<p>ENVIRONMENTAL SUB-CONSULTANTS</p> <p>JLC ENVIRONMENTAL CONSULTANTS</p> <p>243 WEST 30TH STREET, 7TH FL NEW YORK, NY 10001 TEL: (212) 420-8119</p>																
<p style="text-align: center;">LOCATION PLAN</p>																
3	BID DOCUMENTS	7.15.2015														
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1	OWNER'S REVIEW 80%	5.22.2015														
NO.	SUBMISSIONS/ REVISIONS	DATE														
<p>DOB STAMP & SIGN</p>																
<p>BIS JOB NUMBER LABEL</p>																
<p>PROJECT</p> <p>200-300 NORTH END AVE LEAK REMEDIATION DESIGN</p> <p>200-300 NORTH END AVE NEW YORK, NY 10282</p>																
<p>DRAWING NAME</p> <p>DOOR PLAN AND ELEVATION</p>																
<p>SEAL & SIGNATURE</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">DATE:</td> <td style="width: 50%; text-align: right;">07.15.2015</td> </tr> <tr> <td>WASA PROJECT No:</td> <td style="text-align: right;">65016</td> </tr> <tr> <td>SCALE:</td> <td style="text-align: right;">AS NOTED</td> </tr> <tr> <td>DRAWING BY:</td> <td style="text-align: right;">BM/ BB/YO</td> </tr> <tr> <td>CHECKED BY:</td> <td style="text-align: right;">SS</td> </tr> <tr> <td>DWG No:</td> <td style="text-align: right;">A-901</td> </tr> <tr> <td>DWG COUNT:</td> <td style="text-align: right;">20 OF 21</td> </tr> </table>		DATE:	07.15.2015	WASA PROJECT No:	65016	SCALE:	AS NOTED	DRAWING BY:	BM/ BB/YO	CHECKED BY:	SS	DWG No:	A-901	DWG COUNT:	20 OF 21
DATE:	07.15.2015															
WASA PROJECT No:	65016															
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DRAWING BY:	BM/ BB/YO															
CHECKED BY:	SS															
DWG No:	A-901															
DWG COUNT:	20 OF 21															

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NOTES:

- EXISTING ALUMINUM DOOR AND HARDWARE TO BE REMOVED AND SALVAGED, TO BE REINSTALLED UPON COMPLETION OF WORK.
- EXISTING STOREFRONT FRAME, SADDLE AND INFILL PANEL TO BE REMOVED AND REPLACED IN KIND (WITH NEW ANCHORAGE AND CLIPS). CONTRACTOR IS TO ENSURE THAT NEW FRAME AND PANEL ARE SIZED TO ACCOMMODATE AND ADEQUATELY FIT EXISTING DOOR.
- CONTRACTOR IS TO VERIFY EXISTING DOOR OPENING IN FIELD.
- PROVIDE INSTALLATION BY QUALIFIED INSTALLERS.
- CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AND SAMPLES OF ALL PARTS OF ASSEMBLY AND ANCHORAGE FOR DOORS FOR APPROVAL PRIOR TO FABRICATION. SHOP DRAWINGS ARE TO INCLUDE EXISTING DOOR AND NEW FRAME SIZED TO ACCOMMODATE DOOR.
- FINISH COAT COLOR TO MATCH ORIGINAL COLOR.
- VERIFY ANCHORAGE SIZING CONDITIONS IN FIELD.
- PROVIDE CONTINUOUS WEATHERSTRIPPING AT PERIMETER OF DOOR.
- TOP OF DOORS SHALL BE WATERTIGHT.
- UNIVERSAL DOORS ARE NOT ACCEPTABLE.
- EXTERIOR FINISH OF DOOR ASSEMBLY TO BE FREE OF DIMPLES.



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BATTERY PARK CITY AUTHORITY														
200 LIBERTY STREET NEW YORK, NY 10281														
ENVIRONMENTAL SUB-CONSULTANTS														
JLC ENVIRONMENTAL CONSULTANTS														
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LOCATION PLAN														
BLOCK NO. 16 LOT NO. 7519 & 7520														
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NO.	SUBMISSIONS/ REVISIONS	DATE												
DOB STAMP & SIGN														
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200-300 NORTH END AVE LEAK REMEDIATION DESIGN														
200-300 NORTH END AVE NEW YORK, NY 10282														
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DOOR DETAILS														
SEAL & SIGNATURE	DATE: 07.15.2015													
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	CHECKED BY: SS													
	DWG NO: A-902													
	DWG COUNT: 21 OF 21													

EXHIBIT H

List of BPCA Board Members and Employees

LIST OF BOARD MEMBERS

Dennis Mehiel
Donald Cappocia
Frank Branchini
Martha Gallo
Lester Petracca

LIST OF BPCA & BPCPC EMPLOYEES

Battery Park City Authority Staff

Elsa Alvarez
Kathleen Bailey
Nidia Blake Reeder
Freddy Belliard
Nidia Blake Reeder
Marc Brotman
Lauren Brugess
Anthony Buquicchio
Deshay Crabb
Gwendolyn Dawson
Maria Ellison
Robin Forst
Joseph Ganci
Julissa Garcia
Luis Garcia
Neresa Gordon
Sonia Henry
Shari C. Hyman
Benjamin Jones
Susie Kim
Karl Koenig
Michael Lamancusa
Della Lee
Leandro Lafuente
Evelin Maisonet
Kevin McCabe
Brenda McIntyre
Shinay McNeill
Bertha Narcisse
Robert Nesmith
Siu May Ng.
Dahlia B. Pena
Anthony Peterson

Alix Pustilnik
Robert Quon
Anthony Robinson
Andrea Rodriguez
Decorey Rowe
Robert Serpico
Rekha Sewraj
Seema Singh
Linda Soriero
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Alexis Torres
Sharon Wade
Angela Whitehead
Kenneth Windman
Bingxin Zheng

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Anthony Andriano
Stephen Arciold
Scott Birdseye
Nancy Buivid
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Betty Chin
Adam Choper
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Kevin Colon
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Craig Hudon
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