

BATTERY PARK CITY AUTHORITY

REQUEST FOR PROPOSALS

FOR

Irish Hunger Memorial 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 to BPCA in connection with the Irish Hunger Memorial Leak Remediation project (the “Project”). Such services shall include a full complement of construction management services typically associated with similar types of projects performed in New York City and which are more 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: 1) to accept or reject any and all Proposals; 2) to request additional information from any or all Proposers to assist BPCA in its evaluation process; 3) to amend or withdraw this RFP prior to the announcement of the selected firm; and 4) to award the proposed services, in whole or in part, to one or more firms. In case of an amendment to the RFP, all Proposers will be provided with a copy of any such amendment(s) and will be afforded the opportunity to revise their Proposals in response to the RFP amendment.

II. DESCRIPTION OF BPCA

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

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

Since its inception, BPCA has caused the staged development of Battery Park City, in individual parcels, creating a richly diversified mixed use community providing residential and commercial space, with related amenities such as parks, open spaces, plazas, recreational areas and a mile-long 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. BPCPC carries out its mission by maintaining 36 acres of parks, playgrounds and open spaces, including the waterfront esplanade. BPCPC also develops programs and manages public events for the Battery Park City community. BPCA owns and has built out a commercial condominium unit in a residential building in Battery Park City, which serves as the BPCPC headquarters.

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

III. SERVICES REQUIRED

A. If selected, Proposer will be responsible for the services delineated in Exhibit A (the "Services Required"), 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, 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: **Friday July 24, 2015**
- Pre-proposal meeting: **Wednesday July 29, 2015 @ 3:30 am**
- Deadline to submit questions to BPCA: **Monday August 3, 2015 by 4:00 p.m. (by email only)**

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

- Deadline for BPCA's response to substantive questions: **Thursday August 6, 2015 (by email)**
- **DUE DATE FOR RESPONSES TO RFP: Thursday August 20, 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 12 months, although the actual construction duration is not expected to exceed six months. BPCA reserves the right to terminate the Contract at any time, with or without cause. BPCA reserves the right to terminate the Contract at any time, without prior notice, if the Project Manager identified in the Proposal ceases to be employed by the selected Proposer.

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); and

- 2) The Proposer must have a minimum of five years' experience providing construction management services in New York City, including projects involving the waterproofing of structures.

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 THURSDAY AUGUST 20, 2015

Proposers must submit ten (10) paper copies of their Proposals and one (1) electronic CD-Rom copy in a sealed package clearly marked "**Proposal Enclosed – Irish Hunger Memorial Leak Remediation Construction Management Services**" to the Designated Contact **by messenger, overnight courier or certified mail** to the following address:

Michael LaMancusa
Battery Park City Authority
One World Financial Center, 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 – Irish Hunger Memorial Leak Remediation Construction Management Services**," as long as the amended Proposal is submitted by the Due Date.

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

D. Mandatory Forms

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

These Mandatory Forms include the following:

1) NYS Standard Vendor Responsibility Questionnaire – **Submit with the Cost Proposal (as described below), one (1) original unbound set of a completed NYS Standard Vendor Responsibility Questionnaire with original ink signatures. Do not include the Standard Vendor Responsibility Questionnaire in the bound copies of the Cost Proposal.** The NYS Standard Vendor Responsibility Questionnaire must be notarized and signed by the individual(s) authorized to bind the firm contractually. Indicate the title or position that the signer holds within the firm.

2) State Finance Law § 139 Form 1 – **one original unbound completed SFL 139 Form 1: Professional’s Certifications Pursuant to SFL § 139-j and § 139-k with original signature.** State Finance Law § 139 Forms 1 must be signed by the individual(s) authorized to bind the firm contractually.

3) W-9 form.

4) Statement of Non-Collusion.

5) Diversity Forms.

VI. PROPOSAL FORMAT AND CONTENTS

A. Proposal Format

The Proposal must be printed on 8½” x 11” paper. Pages should be numbered. The Proposal will be evaluated on the basis of its content, not length and should be limited to no more than ten (10) pages, exclusive of the Transmittal Letter and the Appendices listed below. 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 within the firm who is authorized to bind the firm, preferably the Lead Project Manager. **Transmittal Letters 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) Firm’s discussion of its understanding of the Services Required and proposal for undertaking the Scope of Work (see Section III).

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

5) Firm’s Cost Proposal, as described below.

- 6) Firm's response to the question regarding the use of New York State businesses set forth in Section X of the RFP.

C. RFP Questions

- 1) Describe your firm's background, size, and history as it may be relevant to the Services Required, with an emphasis on leak repair and remediation. If your offices are located in more than one city, indicate which office will provide the services.
- 2) Describe the relevant special services your firm provides, particularly those that may not be offered by other firms.
- 3) Describe your experience in and methodology for managing waterproofing and leak remediation projects, providing relevant examples.
- 4) Describe your experience and expertise in the management of projects involving public spaces, public art and/or memorial structures, providing relevant examples..
- 5) 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.
- 6) How does your firm identify and manage conflicts of interest?
- 7) Has your firm or any of the firm's partners/employees been disciplined or censured by any regulatory body within the last 5 years? If so, please describe the relevant facts.
- 8) 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 construction management services? If so, please provide an explanation and the current status or disposition of the matter.
- 9) Are there any potential conflict of interest issues in representing 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 as Exhibit C.
- 11) List all the project managers, inspectors, and support staff you intend to assign to this engagement and the area(s) of specialization for each. Describe the role of each employee who will be assigned to this engagement.
- 12) Identify the Lead Project Manager who will be the primary contact in providing services to BPCA, and who will be listed as a "key person" in any contract with BPCA.
- 13) Describe your proposed team's experience with similar work for other public agencies and authorities, with a particular emphasis on New York State agencies and authorities. Include contract dates, the nature of the work performed, the contracting agency, the contract number (if known) and the agency supervisor for each.
- 14) Describe your firm's "backup plan" in the event one or more of the employees assigned to this engagement leave the firm.
- 15) 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 name of the client and each such client's in-house counsel's name, address and telephone number.
- 16) Identify any and all exceptions taken to BPCA's standard form of contract attached hereto as Exhibit D 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.
- 17) Please provide any additional information that would serve to distinguish your firm from other firms and that you believe may be relevant to this RFP and your capability to perform the services requested.

D. RFP Additional Information Request

1) Insurance:

- 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 \$10,000,000;
 - 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 at a limit of not less than \$2,000,000 per occurrence.

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 limitations/exclusions for Labor Law claims.

2) Appendices:

- a. Include professional biographies for all employees listed in your proposal.
- b. Provide a copy of each addenda submitted by BPCA with regard to this Proposal (if applicable) and a signed acknowledgment of receipt of each addenda.

3) References:

Please provide at least three client (3) 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 or other contact person.

4) Financial Statements:

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

E. Cost Proposal

Each 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 E ("Form of Cost Proposal"); and
- 2) Labor rates for each personnel category Proposer proposes to employ for the Services Required in the form attached hereto as Exhibit F ("Form of Labor Rates").

The Cost Proposal, regardless of whether it is bound, must be submitted in its own separate envelope within the sealed package containing all other Proposal documents. For the avoidance of doubt, the Cost Proposal must be submitted separately and unbound from the remainder of the Proposal documents.

VII. THE EVALUATION PROCESS

A. Objectives

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

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

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

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

B. Interviews

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

C. 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 projects and projects involving public spaces, public art and/or memorial structures: | 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% |

D. Basis for Contract Award

The Contract will be awarded to the highest 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/regs/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 that 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 for this Contract for commodities, services or technology 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

The Irish Hunger Memorial (the “Memorial”) is located at North End Avenue and Vesey Street in Battery Park City and is considered a public work of art situated on dedicated New York City parkland. The Memorial was conceived of and designed by artist Brian Tolle (the “Artist”) (with construction documents prepared by 1100 Architects) and intended to be a contemplative space devoted to raising awareness of the Great Irish Hunger and Migration of 1845 – 1852. The Memorial was dedicated in July 2002.

Since its construction, the Memorial has experienced considerable leaking on its south side, in the underground niche, and near its sound system. In addition, stains and cracks have developed over time throughout the Memorial’s structure. In 2003, a remedial project waterproofed a portion of the Memorial’s cantilevered concrete perimeter, but the leaking has persisted and has worsened over time. As such, extensive leak remediation and waterproofing of the Memorial (the “Project”) must be performed. A structural assessment performed by e2chem Consultants LLC at the request of BPCA in early 2015 confirmed the structural integrity of the Memorial. A copy of the e2chem May 14, 2015 report is attached hereto as Exhibit H.

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”), which will be retained under a separate contract with BPCA. The remediation work will be performed in accordance with drawings and specifications prepared by Cutsogeorge Tooman & Allen Architects, PC (“CTA”) and attached hereto as Exhibit G (the “Drawings and Specifications”). The selected Proposer will also be required to communicate and coordinate Project information with the Artist, who will be providing oversight services for the Project under a separate contract with BPCA.

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 CTA 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. Collect and review all information pertaining to the Memorial and its immediate surroundings (the “Work Area”) to become familiar with any factors that could interfere with or affect the construction progress. This is an art application, and special care needs to be taken.
5. 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.
6. 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.

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 Drawings and Specifications, 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.
2. 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.
3. The selected Proposer is responsible for monitoring on-site work related to the Project during the pre-construction phase and for coordination of site access in accordance with BPCA’s directives.
4. For the duration of the Project while public access to the Memorial is closed, the selected Proposer will ensure that the General Contractor maintains adequate fencing, barricades, signage and safety precautions for the protection of the general public.
5. The selected Proposer shall be responsible for working with CTA 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.
6. The selected Proposer shall provide cost estimating services to BPCA to verify the construction budget and evaluate contractors’ prices, unit costs and change orders.
7. The selected Proposer shall 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.
8. 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.

9. 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.
10. 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.
11. 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.



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.

Battery Park City Authority Request For Proposals

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

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
John Tam
Alexis Torres
Sharon Wade
Angela Whitehead
Kenneth Windman
Bingxin Zheng

Battery Park City Parks Conservancy Staff

Dana Anders
Anthony Andriano
Stephen Arciold
Scott Birdseye
Nancy Buivid
Monica Centeno
Betty Chin
Adam Choper
Carlton Chotalal
Kevin Colon
Marie Corneille-Baptiste
Gilbert DePadua
Paul Diaz-Larui
Abigail Ehrlich
Evelyn Evans
Richard L. Faraino
Eric Fleisher
Patrick Greene
Evelyn Gregg
Robert Hansen
Nicole Heater
Sankar Heerah
Craig Hudon
Tessa Huxley
Amy Jogie
Roland Kemp
Kurtis King
Betzayda Laboy
Tony Lee
Marianna Lerner
Luis Lopez

Robert Maggi
Evonne Marche
Phillip Mason
Ellen McCarthy
Princess McNeill
Vanessa Mesine
Yoshihiro Nishida
Hector Oyola
Willem Paillant
Gladys Pearlman
Churman Persaud
Bruno Pomponio
Sandra Power
Madelin Ramirez
Lenore Reuter
Manuel Rivera
Nelson Rogers
Jose Rosado
Holly Ross
Sebastian Rozalski
Carlos Santiago
Jean Schwartz
Lindsey Senn
Sean Simon
Kemnarine Singh
Timothy Skipper
Kareem Starks
Jerome Sturiano
Ryan Torres
Douglas Van Horn
Noe Velasquez
Antonio Velez
Evangelio Villalobos
Peter Wheelwright
Eric White
Al Wright
Jouli B. Yohannes

EXHIBIT D

BPCA Standard Form of Contract

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 E

Form of Cost Proposal

COST PROPOSAL

(Proposer to submit executed Cost Proposal on its letterhead)

Date:

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

Attention: Michael LaMancusa
Contract Administrator

Dear Mr. LaMancusa:

The undersigned (the "Proposer") hereby proposes to provide all the work specified in Exhibit A (Scope of Work) attached to the Request for Proposal for **Irish Hunger Memorial Leak Remediation Construction Management Services** (the "RFP"). The Proposer agrees to commence the work upon execution of a contract, for the sum written below.

A. Base Proposal

A total Not to Exceed amount of \$_____ (_____ Dollars and _____ Cents) to perform all associated work as described in the Exhibit A to the RFP.

B. Reimbursable Expenses

A not-to-exceed amount for reimbursables of \$_____ (_____ Dollars and _____ Cents).

The Proposer has submitted with its proposal, labor rates for all trades, including all costs except overhead and profit, in the form attached to the RFP as Exhibit F.

Name of Proposer:

By: _____

Title: _____

EXHIBIT F

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

(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 = \$ _____

Proposer: _____ <Name of Company>

By: _____ <Printed Name of Executing Officer>

Title: _____

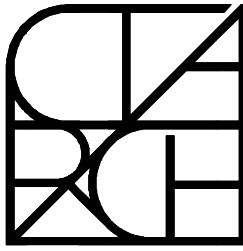
Signature: _____ Date _____

EXHIBIT G

Drawings and Specifications

IRISH HUNGER MEMORIAL RESTORATION

VESEY GREEN NEW YORK, NY 10004



CTA ARCHITECTS P.C.

151 West 26th Street - 8th Floor
New York, New York 10001-6810
Tel: 212.243.7404 info@ctaarchitects.com

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Battery Park City Authority
200 Liberty Street, 24th Floor
New York, New York 10282

ARTIST
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New York, New York 10003

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New York, New York 10001

STRUCTURAL
GACE Consulting Engineers PC
31 West 27th Street
New York, New York 10001

MEP
Collado Engineering
116 South Broadway
Tarrytown, New York 10591

DATE	REVISION	NO.
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GENERAL NOTES

- SCOPE OF WORK: *MASONRY RESTORATION , WATERPROOFING INSTALLATION.*
- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NEW YORK CITY BUILDING CODE, FIRE DEPARTMENT REGULATIONS, UTILITY COMPANY REQUIREMENTS, AND THE BEST TRADE PRACTICES.
- BEFORE COMMENCING WORK, THE CONTRACTOR SHALL FILE ALL REQUIRED CERTIFICATES OF INSURANCE WITH THE DEPARTMENT OF BUILDINGS, OBTAIN ALL REQUIRED PERMITS, AND PAY ALL FEES REQUIRED BY GOVERNING NEW YORK CITY AGENCIES.
- THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD PRIOR TO COMMENCING WORK, AND SHALL REPORT ANY DISCREPANCIES BETWEEN DRAWINGS AND FIELD CONDITIONS TO THE ARCHITECT.
- MINOR DETAILS NOT USUALLY SHOWN OR SPECIFIED, BUT NECESSARY FOR PROPER CONSTRUCTION OF ANY PART OF THE WORK SHALL BE INCLUDED AS IF THEY WERE INDICATED IN THE DRAWINGS.
- THE CONTRACTOR SHALL COORDINATE ALL WORK PROCEDURES WITH REQUIREMENTS OF LOCAL AUTHORITIES AND BATTERY PARK CITY AUTHORITY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL CONDITIONS AND MATERIALS WITHIN THE PROPOSED CONSTRUCTION AREA. THE CONTRACTOR SHALL DESIGN AND INSTALL ADEQUATE SHORING AND BRACING FOR ALL STRUCTURAL OR REMOVAL TASKS. THE CONTRACTOR SHALL HAVE SOLE RESPONSIBILITY FOR ANY DAMAGE OR INJURIES CAUSED BY OR DURING THE EXECUTION OF THE WORK.
- THE CONTRACTOR SHALL LAY OUT HIS OWN WORK, AND SHALL PROVIDE ALL DIMENSIONS REQUIRED FOR OTHER TRADES: PLUMBING, ELECTRICAL, ETC.
- PLUMBING AND ELECTRICAL WORK SHALL BE PERFORMED BY PERSONS LICENSED IN THEIR TRADES, WHO SHALL ARRANGE FOR AND OBTAIN INSPECTIONS AND REQUIRED SIGN-OFFS.
- THE CONTRACTOR SHALL DO ALL CUTTING, PATCHING, REPAIRING AS REQUIRED TO PERFORM ALL OF THE WORK INDICATED ON THE DRAWINGS, AND ALL OTHER WORK THAT MAY BE REQUIRED TO COMPLETE THE JOB.
- ALL PIPING AND WIRING SHALL BE REMOVED TO A POINT OF CONCEALMENT AND SHALL BE PROPERLY CAPPED OR PLUGGED.
- THE ARCHITECT HAS NOT BEEN RETAINED TO PROVIDE SUPERVISION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SIDEWALK SHED AND SCAFFOLDING AS REQUIRED FOR PROTECTION OF THE PUBLIC.

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SAFETY PLAN

- GENERAL: ALL WORK TO BE DONE IN ACCORDANCE WITH THE NEW YORK CITY BUILDING CODE, CHAPTER 33, NYC FIRE CODE, AND REGULATIONS OF ALL OTHER AGENCIES HAVING JURISDICTION.
- FIRE SAFETY:
 - ALL BUILDING MATERIALS STORED AT CONSTRUCTION AREA, AND/OR IN ANY AREA OF THE BUILDING ARE TO BE SECURED IN A LOCKED AREA. ACCESS TO SUCH AREAS TO BE CONTROLLED BY OWNER AND/OR GENERAL CONTRACTOR.
 - ALL MATERIALS TO BE STORED IN AN ORDERLY FASHION.
 - ALL FLAMMABLE MATERIALS TO BE KEPT TIGHTLY SEALED IN THEIR RESPECTIVE MANUFACTURERS' CONTAINERS. SUCH MATERIALS ARE TO BE KEPT AWAY FROM HEAT.
 - ALL FLAMMABLE MATERIALS TO BE USED AND STORED IN AN ADEQUATELY VENTILATED SPACE.
 - ALL ELECTRICAL POWER TO BE SHUT-OFF WHERE THERE IS EXPOSED CONDUIT.
 - ALL ELECTRICAL POWER IN THE CONSTRUCTION AREA TO BE SHUT OFF AFTER WORKING HOURS.
 - CONTRACTOR, AT ALL TIMES, TO MAKE SURE THERE IS NO LEAKAGE OF NATURAL GAS IN BUILDING, OR ANY FLAMMABLE GAS USED IN CONSTRUCTION.
- DUST CONTROL: (PLAN TO BE SUBMITTED AND APPROVED BY BPCA)
 - DEBRIS, DIRT, AND DUST TO BE KEPT TO A MINIMUM, AND BE CONFINED TO IMMEDIATE CONSTRUCTION AREA.
 - CONTRACTOR TO ISOLATE CONSTRUCTION AREA FROM OCCUPIED BUILDING AREAS BY MEANS OF 8'-0" HIGH CHAIN LINK CONSTRUCTION FENCE WITH PRIVACY SCREEN MESH.
 - DEBRIS, DIRT, AND DUST TO BE CLEANED UP AND CLEARED FROM SITE DAILY TO AVOID ANY EXCESSIVE ACCUMULATION.
 - CONTRACTOR SHALL COMPLY WITH ALL CITY, STATE AND LOCAL REGULATIONS REGARDING LEAD AND ASBESTOS.
- NOISE AFTER HOURS:
 - CONSTRUCTION OPERATIONS WILL BE CONFINED TO NORMAL WORKING HOURS: 8 A.M. TO 5 P.M., MONDAYS THROUGH FRIDAYS, EXCEPT LEGAL HOLIDAYS.
 - CONTRACTOR TO OBTAIN THE WRITTEN CONSENT OF ALL PARTIES AFFECTED BY HIS WORKING DURING OTHER THAN REGULAR HOURS.
- STRUCTURAL:
 - CONTRACTOR TO PROVIDE ADEQUATE TEMPORARY BRACING AND SHORING WHEREVER ANY STRUCTURAL WORK IS INVOLVED.
- ALL DEMOLITION OPERATIONS, REPAIR OPERATIONS, AND ALTERATION OPERATIONS TO BE DONE IN ACCORDANCE WITH NEW YORK CITY BUILDING CODE, CHAPTER 33, SECTION BC 3305 AND 3306.

ALTERNATES

ALTERNATE 1
PROVISION OF A FULL COVERAGE HEATED WEATHER ENCLOSURE TO ENCAPSULATE THE MONUMENT FOR THE DURATION OF THE WORK ALLOWING WORK TO PROCEED IN ALL WEATHERS.

ALTERNATE 2
INSTALLATION OF HEAVY-DUTY SIDEWALK SHED AT THE STREET ELEVATION AREAS FOR ALTERNATE 1 WORK IN COMPLIANCE WITH SECTION 27-1021 OF THE BUILDING CODE OF THE CITY OF NEW YORK FOR THE DURATION OF THE PROJECT, INCLUDING COMPLETE COVERAGE OF THE BRIDGE DECK WITH MOTION DETECTOR(S) WITH ACTIVATION SENSOR/MONITOR TO BE PROVIDED AT A REMOTE LOCATION TO BE CONFIRMED.

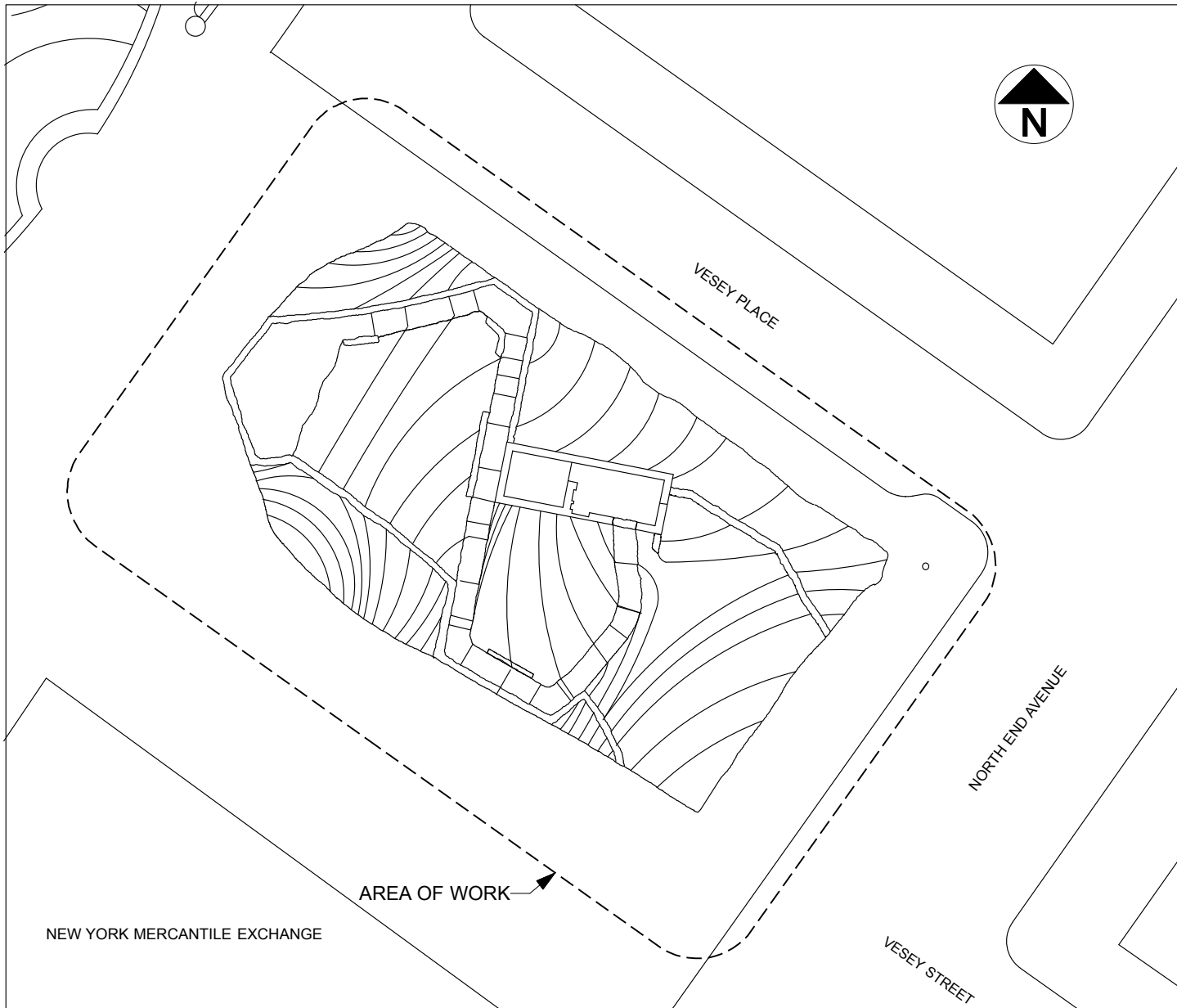
LEGEND

-
- REMOVE AND REPLACE ALL EXISTING PLANTER DRAINS INCLUDING ASSOCIATED PIPING TO NEAREST ELBOW BENEATH. INSTALL NEW FULL SIZE PROMENADE DRAIN WITH EXTENSION COLLAR DRAIN WITH INTERIOR LEAD CAULK CONNECTION INCLUDING ASSOCIATED DRAIN STRAINER ASSEMBLY PER ASSOCIATED DETAIL.
-
- EXISTING DRAIN/CATCH BASIN TO REMAIN. CONFIRM/COORDINATE FUNCTION WITH OWNERS.
-
- INSTALL NEW PAVING ON NEW COMPACTED FILL PER APPROVED SAMPLES. EDGES AND EXTENT OF THE MONUMENT PAVING ARE SUBJECT TO APPROVAL BY THE ARTIST AND OWNERS.
-
- FLASH ATTACHMENT BRACKETS FOR THE PREVIOUSLY REMOVED PERIMETER TETHER RAIL SYSTEM. REINSTALL PREVIOUSLY REMOVED, CATALOGUED AND STORED POSTS. INSTALL NEW CABLES, TURNBUCKLES AND TENSIONING DEVICES.
-
- REINSTALL PREVIOUSLY REMOVED WOOD FENCE POSTS SET IN METAL SLEEVES IN THE SOIL. PROVIDE NEW WIRE FENCE ATTACHED TO POSTS. PRECISE CONFIGURATION AND LOCATIONS TO BE CONFIRMED WITH THE ARTIST AND OWNERS. REPLACE WOOD POSTS AS NECESSARY PER APPLICABLE ALLOWANCE.
-
- EXISTING CMU/CONCRETE CORE WALLS ARE TO REMAIN. REMOVE AND REBUILD LOOSE OR DAMAGED PORTIONS VIF. NEW AND OR REPLACED SECTIONS ARE TO BE FULLY GROUTED AND DOWELLED TO THE EXISTING SECTIONS TO REMAIN.
-
- RESIN BASED WATERPROOFING IS TO TURN DOWN THE INSIDE FACE OF THE RAISED CONCRETE AREAS MINIMUM 2'-0" OR TO THE EXTENT POSSIBLE WITHOUT DISTURBING THE STRUCTURAL FILL AND WATERPROOF SHEETING MEMBRANE ABOVE.

PLOT PLAN

BLOCK #: 16
LOT #: 3
ZONING DISTRICT: BPC
ZONING MAP #: 12b

NOT TO SCALE



PROJECT:
**IRISH HUNGER MEMORIAL
RESTORATION**
VESEY GREEN
NEW YORK, NY 10004

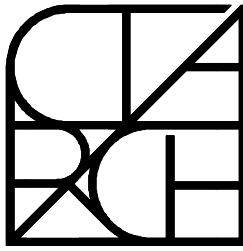
DRAWING TITLE:

TITLE SHEET

SEAL & SIGNATURE:	DATE:	16 JULY 2015
	PROJECT No:	14215
	DRAWING BY:	PG
	CHECKED BY:	FS
	DWG No:	
T-000.00		
CADD FILE No: 14215-T-000.00		1 of 23

LEGEND

- CAREFULLY REMOVE, CATALOG AND STORE OFF-SITE FOR REINSTALLATION, IRISH FIELD STONE FREESTANDING WALLS AND WALL CLADDING FROM SUPPORTING CONCRETE AND/OR CMU CORES TO REMAIN AT ALL WALLS IN THE MONUMENT AREAS INDICATED. CONTRACTOR TO SUBMIT PLANS FOR DOCUMENTING, CATALOGING AND REINSTALLATION OF STONES. NOTE ALL STONE IS TO BE REINSTALLED AT THE REPAIRED AND WATERPROOFED SUBSTRATES AND CORE WALLS. REMOVE EXISTING WALL TIES AND BACKING PLATES/FASTENERS EXPOSED BY REMOVAL OF THE FIELD STONE CLADDING. SHELF ANGLE SECTIONS ATTACHED TO THE CMU/CONCRETE CORE WALLS ARE TO REMAIN AND ARE TO BE PROTECTED IN PLACE FOR REUSE.
- REMOVE PLANT MATERIALS AT THE AREAS INDICATED PER INSTRUCTION/DIRECTION OF LANDSCAPE ARCHITECTS. COORDINATE REMOVALS WITH/THROUGH OWNER/BPCPC TO ALLOW THEM THE OPPORTUNITY TO REMOVE SELECT PLANTINGS FOR STORAGE OFF-SITE BY OTHERS. REFER TO LANDSCAPE PLANS DM-101 & DM-150. EXCAVATE ALL SOILS FROM THE WORK AREAS PER DIRECTION OF THE LANDSCAPE ARCHITECT, TO BE STORED OFF-SITE AT AN APPROVED FACILITY, FOR REPLACEMENT BACK ON THE MONUMENT UPON COMPLETION OF THE WATERPROOFING AND REPAIR OF THE UNDERLYING SUBSTRATES. REMOVE EXISTING WATERPROOFING ASSEMBLY FROM THE EXPOSED RAISED CONCRETE AREAS AND CMU/CONCRETE CORE WALLS. NOTE EXISTING RESIN BASED WATERPROOFING FIRMLY ADHERED AT SOLID CORE WALL LOCATIONS MAY REMAIN SUBJECT TO FIELD INSPECTION BY ARCHITECT AND MANUFACTURER. NOTE: CONTRACTOR IS TO CONFIRM FULL FUNCTION OF DRAINAGE BEFORE, DURING CONSTRUCTION AND AFTER SUBSTANTIAL COMPLETION.
- REMOVE EXISTING CONCRETE PAVING FOR REPLACEMENT INCLUDING ALL FILL LAYERS BENEATH ON THE ELEVATED CONCRETE AREAS TO ALLOW ACCESS TO AND WATERPROOFING OF THE UNDERLYING CONCRETE SUBSTRATES.
- REMOVE EXISTING CONCRETE PAVING FOR REPLACEMENT IN THIS AREA, FILL BENEATH TO REMAIN.
- TEMPORARILY REMOVE CATALOG AND STORE EXISTING POSTS AND CABLES FROM THE PERIMETER TETHER RAIL SYSTEM. ATTACHMENT BRACKETS ARE TO BE PROTECTED IN PLACE FOR APPLICATION OF WATERPROOFING SYSTEM AND REINSTALLATION OF THE TETHER RAIL SYSTEM.



CTA ARCHITECTS P.C.

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New York, New York 10001-6810
Tel: 212.243.7404 info@ctaarchitects.com

CLIENT
Hugh L. Carey
Battery Park City Authority
200 Liberty Street, 24th Floor
New York, New York 10282

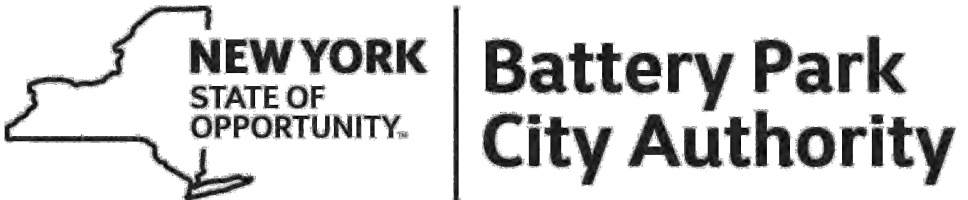
ARTIST
Brian Tolle
18 East 8th Street, #1C
New York, New York 10003

LANDSCAPE
SiteWorks Landscape Architecture
150 West 28th Street, 8th Floor
New York, New York 10001

STRUCTURAL
GACE Consulting Engineers PC
31 West 27th Street
New York, New York 10001

MEP
Collado Engineering
116 South Broadway
Tarrytown, New York 10591

DATE	REVISION	NO.
------	----------	-----



Battery Park
City Authority

Battery Park City Parks

Andrew M. Cuomo
Governor, State of New York

Dennis Mehiel
Chairman of the Board
Chief Executive Officer

Frank J. Branchini
Vice Chair

Donald Capoccia
Board Member

Martha J. Gallo
Board Member

Lester Petracca
Board Member

Hector Batista
Board Member

Shari C. Hyman
President
Chief Operating Officer

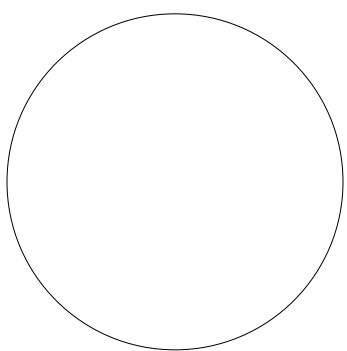
PROJECT:
**IRISH HUNGER MEMORIAL
RESTORATION**
VESEY GREEN
NEW YORK, NY 10004

DRAWING TITLE:

DEMOLITION

PLAN

SEAL & SIGNATURE:



DATE:	16 JULY 2015
PROJECT No:	14215
DRAWING BY:	PG
CHECKED BY:	FS
DWG No:	
DM-100.00	
CADD FILE No:	14215-DM-100.00
	2 of 23

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A200

2
A201

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A201

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A200

NOTE: THROUGH WALL DRAINAGE PIPES ARE TO BE REPLACED "LIKE IN KIND" PER AS-BUILT PLANS PROVIDED BY BPCA AND APPROVED BY LANDSCAPE ARCHITECT.

NOTE: ALL ELECTRICAL CONDUIT EXPOSED DURING EXCAVATION IS TO BE PROTECTED, CATALOGED, AND FUNCTION VERIFIED FOR REPLACEMENT AS PART OF THE CONSTRUCTION WORK. VERIFY EXACT LOCATIONS IN THE FIELD.

NOTE: CONCEALED STRUCTURAL BEAMS SUPPORTING THE CANTILEVERED SECTIONS BELOW, TO BE PROTECTED IN PLACE VIF.

NOTE: STONE PAVING, STONE AND GLASS WALL CLADDING ARE TO BE FULLY PROTECTED AT THE MONUMENT PASS-THROUGH/ENTRANCE CORRIDOR THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD.

NOTE: CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY PROTECTION, SECURITY AND PROTECTION OF THE PUBLIC THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS.

RIVER TERRACE

COTTAGE

LOWER FURROWS

MIDDLE FURROWS

NORTH END AVENUE

CAREFULLY REMOVE, CATALOG AND STORE OFF-SITE FOR REPLACEMENT, IRISH FIELD STONE CLADDING AND FREESTANDING UPPER WALL PORTION FROM SUPPORTING CONCRETE AND/OR CMU CORES AT THE COTTAGE WALL WEST GABLE AREA INDICATED TO ALLOW FLASHING OF THE UNDERLYING CONDITION AND SUPPORT LINTEL AT PASS-THROUGH. DO NOT DISTURB UNDERLYING REINFORCING BARS. NOTE: ALL STONE IS TO BE REINSTALLED AT THE REPAIRED AND WATERPROOFED SUBSTRATES.

CAREFULLY REMOVE, CATALOG AND STORE OFF-SITE FOR REPLACEMENT, IRISH FIELD STONE CLADDING AND FREESTANDING UPPER WALL PORTION FROM SUPPORTING CONCRETE AND/OR CMU CORES AT THE COTTAGE WALL IN THE MONUMENT AREAS INDICATED TO ALLOW FLASHING OF THE UNDERLYING CONDITION. DO NOT DISTURB UNDERLYING REINFORCING BARS. NOTE ALL STONE IS TO BE REINSTALLED AT THE REPAIRED AND WATERPROOFED SUBSTRATES. REF. A-704

REMOVE CONCRETE PAVING FROM WITHIN THE COTTAGE AREA INCLUDING UNDERLYING GRAVEL AND COMPACTED FILL TO EXPOSE THE UNDERLYING GRADE LEVEL CONCRETE SLAB.

PUBLIC BICYCLE SHARING PROGRAM BICYCLE RACKS EXIST AT THE NORTH SIDE OF THE CONSTRUCTION SITE/MONUMENT. CONTRACTOR IS RESPONSIBLE FOR PROTECTING SAME AND ENSURING FULL PUBLIC ACCESS TO AND USE OF SAME IS AVAILABLE THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS.

PLAZA AREA INCLUDING STONE/LIMESTONE PAVING IS NIC. CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF SAME THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS.

NOTE: CONTRACTOR IS RESPONSIBLE FOR PROTECTING THE COTTAGE WALLS AND FIELD STONE WALLS NOT BEING REMOVED IN POSITION THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD.

CAREFULLY REMOVE AND STORE STONE THRESHOLD FOR REINSTALLATION UPON COMPLETION OF WATERPROOFING DURING PAVING WORK.

NOTE: REMOVE PLANTINGS AND SOIL IN UNAFFECTED AREAS TO THE EXTENT NECESSARY ONLY TO REPLACE THE AT GRADE ENTRANCE PATH. RETAIN UNDERLYING FILL.

NOTE: REMOVE PLANTINGS AND SOIL IN UNAFFECTED AREAS TO THE EXTENT NECESSARY TO ALLOW ACCESS TO THE ADJACENT CONCRETE AND/OR CMU SUBSTRATE TO ALLOW PREPARATION OF AND APPLICATION OF WATERPROOFING TURNED DOWN SAME. PROVIDE SHORING AS REQUIRED TO REMAINING SOILS.

NOTE: SOILS AND PLANTINGS IN THE ON-GRADE NON-WORK AREAS ARE TO BE PROTECTED IN PLACE FOR THE DURATION OF THE CONSTRUCTION PERIOD. TEMPORARY HOOK-UP OF WATERING SYSTEMS AND DRAINAGE SYSTEMS IS TO BE SUPPLIED PER DIRECTION OF THE LANDSCAPE ARCHITECT.

NOTE: DO NOT DISTURB COMPACTED STRUCTURAL FILL AND DRAINAGE MEMBRANE LOCATED BETWEEN SOIL LAYER AND FILL LAYERS BELOW. VIF.

EXISTING CONCRETE CANTILEVER BEAM. PROTECT IN PLACE, DO NOT DISTURB. TYP.

EXISTING DRAIN TO BE REPLACED.

EXISTING DRAIN/CATCH BASIN TO REMAIN. CONFIRM/COORDINATE FUNCTION WITH OWNERS.

EXISTING DRAIN/CATCH BASIN TO REMAIN. CONFIRM/COORDINATE FUNCTION WITH OWNERS.

NOTE: CONTRACTOR IS RESPONSIBLE FOR PROTECTING THE EXISTING SUB-SURFACE DRAINAGE SYSTEM AND IS TO PREVENT DUST AND DEBRIS FROM ENTERING INTO AND ACCUMULATING IN THE DRAINAGE PIPING THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD. CONTRACTOR IS TO CONFIRM FULL FUNCTION OF DRAINAGE BEFORE, DURING CONSTRUCTION AND AFTER SUBSTANTIAL COMPLETION.

NOTE: CAREFULLY REMOVE, CATALOG AND STORE OFF-SITE FOR REPLACEMENT EXISTING BOULDERS, COUNTY-STONE AND OTHER MISCELLANEOUS LANDMARKS WITHIN THE MONUMENT SITE WHICH MAY BE DISTURBED BY THE CONTRACT WORK. VIF. ALL STONES ARE TO BE REPLACED BACK IN THEIR CURRENT LOCATIONS UPON COMPLETION OF THE CONTRACT WORK. FINAL LOCATIONS TO BE CONFIRMED BY THE ARTIST.

CAREFULLY REMOVE, CATALOG AND STORE OFF-SITE FOR REPLACEMENT EXISTING STANDING STONE VIF. ALL STONES ARE TO BE REPLACED BACK IN THEIR CURRENT LOCATIONS UPON COMPLETION OF THE CONTRACT WORK.

REMOVE, CATALOG AND STORE POSTS TO BE REINSTALLED.

1 DEMOLITION PLAN
Scale: 1/8" = 1'-0"

LEGEND

PREPARE EXPOSED CONCRETE AND CMU SURFACES TO RECEIVE NEW RESIN BASED WATERPROOFING PER MANUFACTURERS INSTRUCTIONS INCLUDING PREPARATION OF EXISTING RESIN-BASED WATERPROOFED AREAS TO REMAIN PER FIELD DIRECTION.

SOUND-TEST THE CONCRETE DECK EXPOSED BY THE DEMOLITION AND PATCH REPAIR AS REQUIRED PRIOR TO APPLICATION OF WATERPROOFING PER MANUFACTURERS REQUIREMENTS.

PREPARE EXISTING COLD-JOINTS AND THROUGH CRACKS IN THE UNDERLYING CONCRETE DECK PER MANUFACTURERS REQUIREMENTS AND INSTALL CONTINUOUS MINIMUM 6" WIDE RESIN BASED FLASHING STRIP PRIOR TO INSTALLATION OF RESIN BASED WATERPROOFING AT THE MAIN FIELD AREAS.

INSTALL RESIN BASED WATERPROOFING SYSTEM TO THE PREPARED CONCRETE DECK, CURBS, PENETRATIONS AND CONCRETE AND CMU CORE WALLS PER MANUFACTURER REQUIREMENTS AND PER APPLICABLE DETAILS. TYPICAL THROUGHOUT ALL RAISED MONUMENT AREAS.

INSTALL NEW DRAINAGE MAT ABOVE THE WATERPROOFED DECK AREAS THROUGHOUT.

REINSTALL SOIL PREVIOUSLY REMOVED AND STORED OFF-SITE PER DIRECTION OF LANDSCAPE ARCHITECTS. REFER TO LANDSCAPE ARCHITECT DRAWINGS FOR GRADING, SPRINKLER AND DRAINAGE SYSTEMS.

CONTRACTOR TO PERFORM WATER/FLOOD TESTING AT ALL COMPLETED PORTIONS OF WATERPROOFING MEMBRANE INSTALLATION PRIOR TO THE INSTALLATION OF OVERBURDEN.

EXISTING CMU/CONCRETE CORE WALLS ARE TO REMAIN. REMOVE AND REBUILD LOOSE OR DAMAGED PORTIONS VIF. NEW AND OR REPLACED SECTIONS ARE TO BE FULLY GROUTED AND DOWELLED TO THE EXISTING SECTIONS TO REMAIN.

REBUILD THE COTTAGE AND FIELDSTONE WALLS ABOVE THE COTTAGE ENTRANCE OVERLOOK REUSING THE STONE PREVIOUSLY REMOVED, CATALOGUED, AND STORED. REBUILDING IS TO INCORPORATE THE INSTALLATION OF WALL TIES/WALL-TIE SYSTEM.

INSTALL WALL TIES/WALL-TIE SYSTEM ON THE PREPARED CORE/SUBSTRATE WALLS AT A MINIMUM RATE OF 1-TIE PER 2 SQUARE FEET OF EXPOSED SURFACE AREA. NOTE ALL PENETRATIONS AND ATTACHMENTS FOR THE WALL TIES ARE TO BE FULLY WRAPPED AND WATERPROOFED WITH RESIN-BASED FLASHING PRIOR TO REBUILDING THE WALL FACINGS.

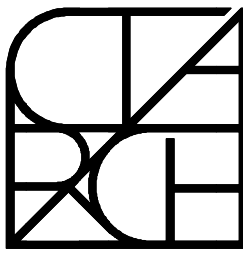
NOTE: REBUILD THE FIELDSTONE WALLS THROUGHOUT THE MONUMENT PER APPROVED SAMPLE PANELS REUSING THE FIELDSTONE PREVIOUSLY REMOVED, CATALOGUED, AND STORED. REBUILDING IS TO INCORPORATE THE INSTALLATION OF WALL TIES/WALL TIE SYSTEM AT THE RATE OF MINIMUM 1-TIE PER 2 SQUARE FEET OF EXPOSED SURFACE AREA.

NOTE: REFER TO LANDSCAPE ARCHITECT DRAWINGS FOR DETAILS OF THE WATERING SYSTEM AND ASSOCIATED VALVES ETC. TO BE INSTALLED.

NOTE: REFER TO LANDSCAPE ARCHITECT PLANS FOR DETAILS OF PLANTINGS AND LANDSCAPING.

NOTE: ALL STONE REBUILDING IS SUBJECT TO APPROVAL BY THE ARTIST AND OWNERS. CONTRACTOR MUST PROVIDE A MINIMUM OF TWO FULL SIZE MOCK-UPS, 6'-0"± IN LENGTH. MOCKUPS INCLUDE COTTAGE WALLS AND FIELD WALLS. MOCKUPS MAY BE APPLIED TO THE MONUMENT DIRECTLY AND IF SUCCESSFUL MAY BE FULLY INCORPORATED INTO THE COMPLETED WORK.

NOTE: REINSTALL PREVIOUSLY REMOVED, CATALOGUED AND STORED EXISTING BOULDERS, COUNTY-STONE AND OTHER MISCELLANEOUS LANDMARKS WITHIN THE MONUMENT SITE BACK IN THEIR PREVIOUS LOCATIONS UPON COMPLETION OF THE CONTRACT WORK. FINAL LOCATIONS TO BE CONFIRMED BY THE ARTIST.



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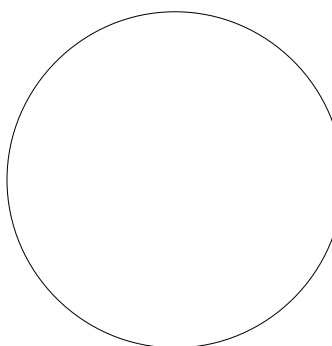
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PROJECT:
**IRISH HUNGER MEMORIAL
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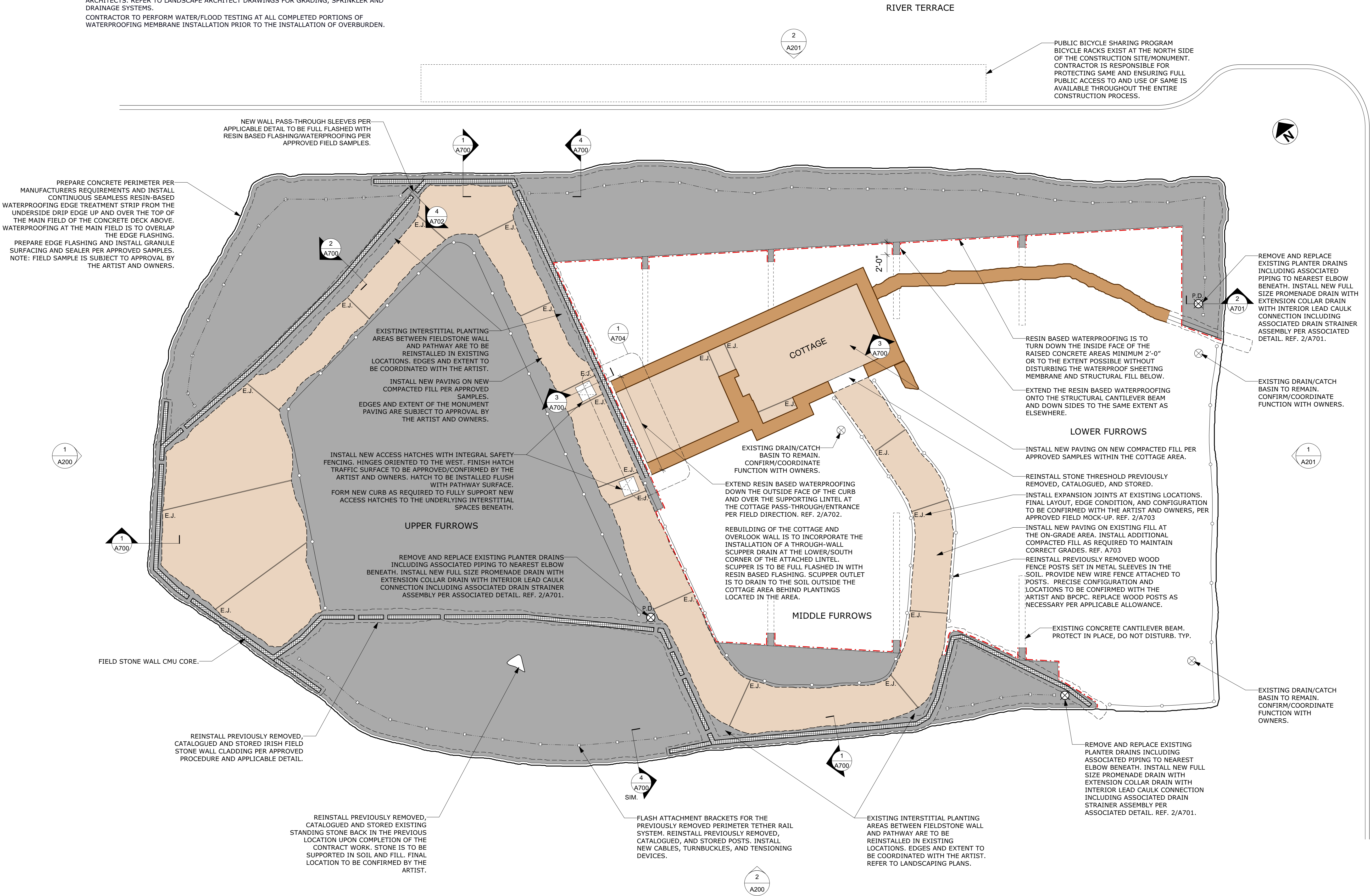
DRAWING TITLE:

WATERPROOFING
PLAN

SEAL & SIGNATURE:



DATE: 16 JULY 2015
PROJECT No: 14215
DRAWING BY: PG
CHECKED BY: FS
DWG No:
A-100.00
CADD FILE No: 14215-A-100.00 | 3 of 23



1 WATERPROOFING PLAN
Scale: 1/8" = 1'-0"

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NOTE: CLEAN ALL WATER STAINING/EFFLORESCENCE AT MONUMENT BASE CURTAIN WALL AND CANTILEVER SLAB UNDERSIDE THROUGHOUT PER SPECIFICATION AND APPROVED PROCEDURE.

NOTE: CONTRACTOR TO PERFORM WATER/FLOOD TESTING AT ALL COMPLETED PORTIONS OF WATERPROOFING MEMBRANE INSTALLATION PRIOR TO THE INSTALLATION OF OVERBURDEN.

FLASH ATTACHMENT BRACKET FOR THE PREVIOUSLY REMOVED PERIMETER TETHER RAIL SYSTEM. REINSTALL PREVIOUSLY REMOVED, CATALOGUED AND STORED POSTS. INSTALL NEW CABLES, TURNBUCKLES AND TENSIONING DEVICES.

PREPARE CONCRETE PERIMETER PER MANUFACTURERS REQUIREMENTS AND INSTALL CONTINUOUS SEAMLESS RESIN-BASED WATERPROOFING EDGE TREATMENT STRIP FROM THE UNDERSIDE DRIP EDGE UP AND OVER THE TOP OF THE MAIN FIELD OF THE CONCRETE DECK ABOVE. WATERPROOFING AT THE MAIN FIELD IS TO OVERLAP THE EDGE FLASHING.

NOTE: PREPARE EDGE FLASHING AND INSTALL GRANULE SURFACING AND SEALER PER APPROVED SAMPLES. NOTE FIELD SAMPLE IS SUBJECT TO APPROVAL BY THE ARTIST AND OWNERS.

CAREFULLY REMOVE, CATALOG AND STORE OFF-SITE FOR REPLACEMENT, IRISH FIELD STONE FREESTANDING WALLS AND WALL CLADDING FROM SUPPORTING CONCRETE AND/OR CMU CORES AT ALL WALLS IN THE MONUMENT AREAS INDICATED. NOTE ALL STONE IS TO BE REINSTALLED AT THE REPAIRED AND WATERPROOFED SUBSTRATES AND CORE WALLS.

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SOUND-TEST EXPOSED CONCRETE UNDERSIDE. PATCH PER APPROPRIATE DETAIL/CONTRACT ALLOWANCE.

SLIDING GATE AT MONUMENT ENTRANCE. PREPARE PRIME AND PAINT. FINISH COLOR TO BE APPROVED BY ARTIST AND OWNER.

1 WEST ELEVATION
Scale: 1/8" = 1'-0"

FLASH ATTACHMENT BRACKET FOR THE PREVIOUSLY REMOVED PERIMETER TETHER RAIL SYSTEM. REINSTALL PREVIOUSLY REMOVED, CATALOGUED AND STORED POSTS. INSTALL NEW CABLES, TURNBUCKLES AND TENSIONING DEVICES.

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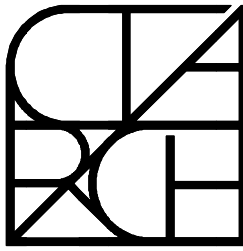
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2 SOUTH ELEVATION
Scale: 1/8" = 1'-0"



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City Authority

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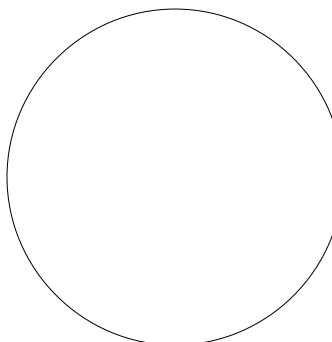
Shari C. Hyman
President
Chief Operating Officer

PROJECT:
**IRISH HUNGER MEMORIAL
RESTORATION**
VESEY GREEN
NEW YORK, NY 10004

DRAWING TITLE:

WEST & SOUTH
ELEVATIONS

SEAL & SIGNATURE:



DATE: 16 JULY 2015
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A-200.00

CADD FILE No: 14215-A-200.00 4 of 23

NOTE: CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY PROTECTION, SECURITY AND PROTECTION OF THE PUBLIC THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS.

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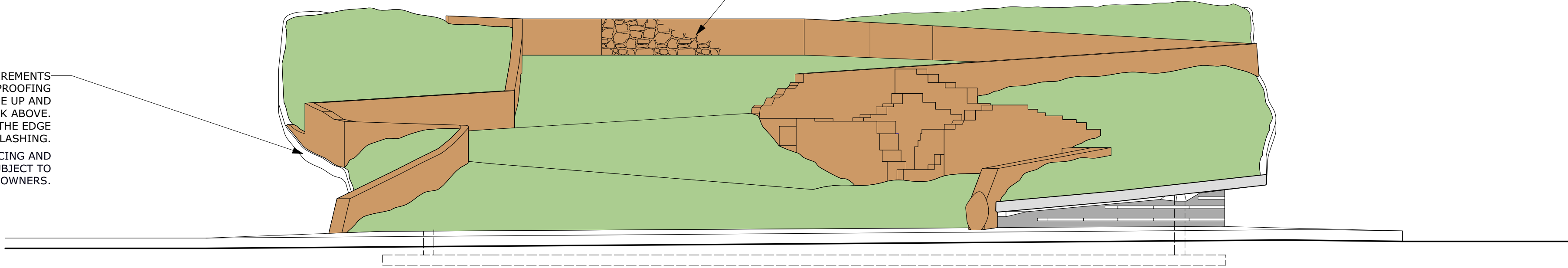
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1 EAST ELEVATION
Scale: 1/8" = 1'-0"

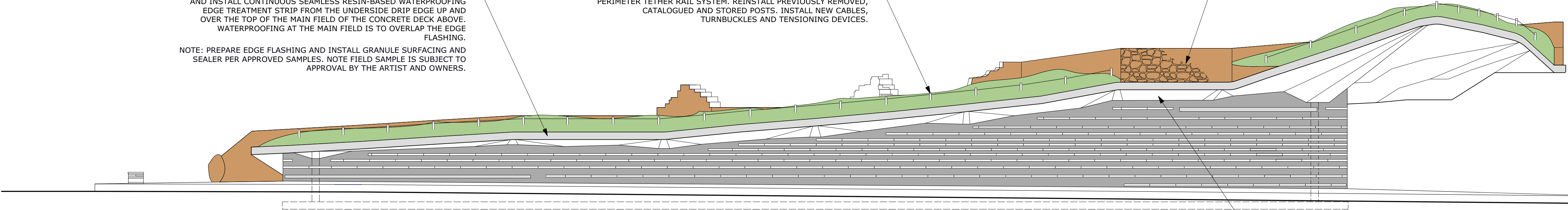
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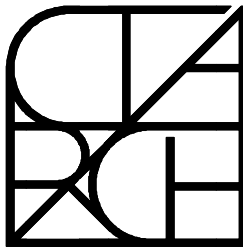
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2 NORTH ELEVATION
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SOUND-TEST EXPOSED CONCRETE UNDERSIDE. PATCH PER APPROPRIATE DETAIL/CONTRACT ALLOWANCE.



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PROJECT:

IRISH HUNGER MEMORIAL
RESTORATION

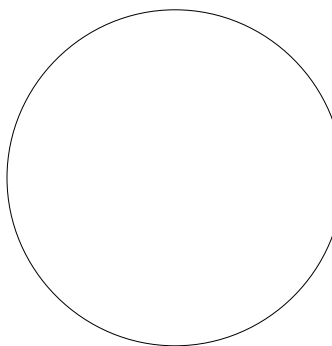
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EAST & NORTH

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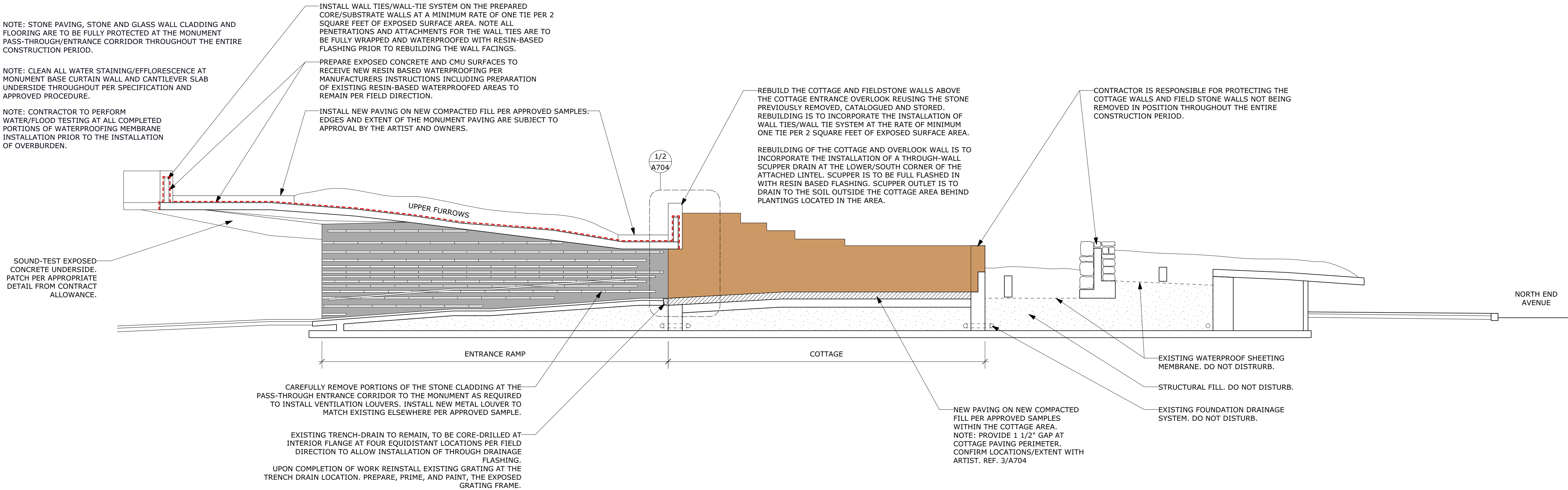
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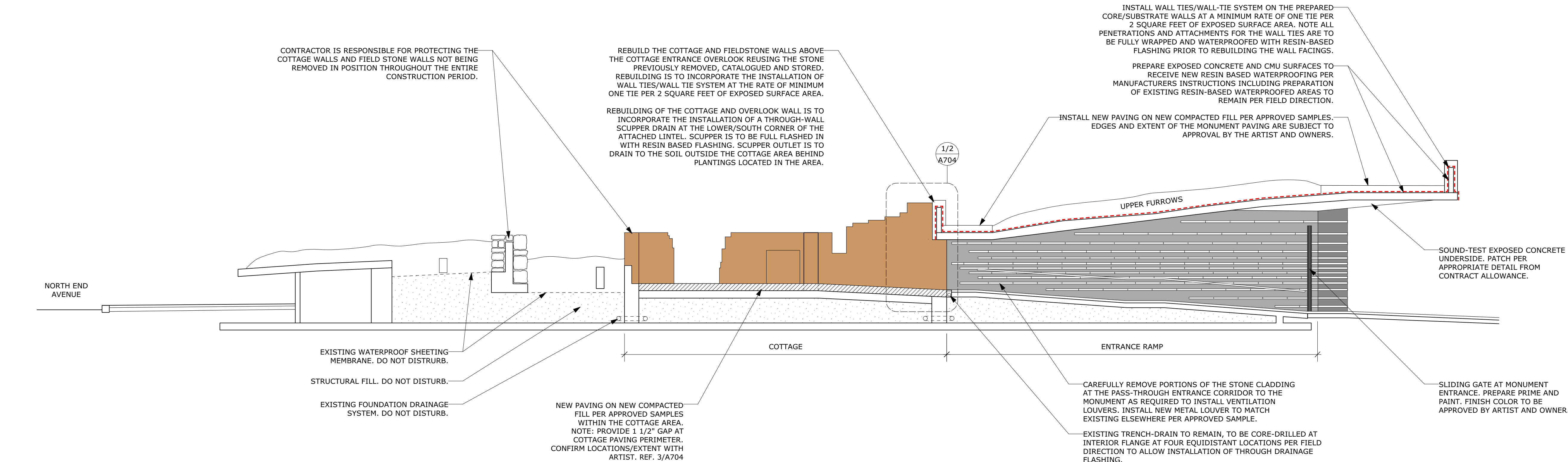
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NOTE: CLEAN ALL WATER STAINING/EFFLORESCENCE AT MONUMENT BASE CURTAIN WALL AND CANTILEVER SLAB UNDERSIDE THROUGHOUT PER SPECIFICATION AND APPROVED PROCEDURE.

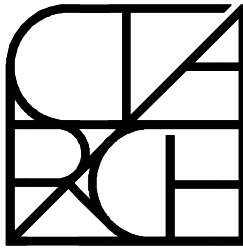
NOTE: CONTRACTOR TO PERFORM WATER/FLOOD TESTING AT ALL COMPLETED PORTIONS OF WATERPROOFING MEMBRANE INSTALLATION PRIOR TO THE INSTALLATION OF OVERBURDEN.



1 ENTRANCE RAMP - SOUTH ELEVATION
Scale: 1/8" = 1'-0"



2 ENTRANCE RAMP - NORTH ELEVATION
Scale: 1/8" = 1'-0"



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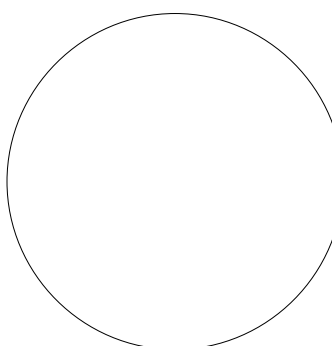
Shari C. Hyman
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NEW YORK, NY 10004

DRAWING TITLE:

ENTRANCE RAMP
ELEVATIONS

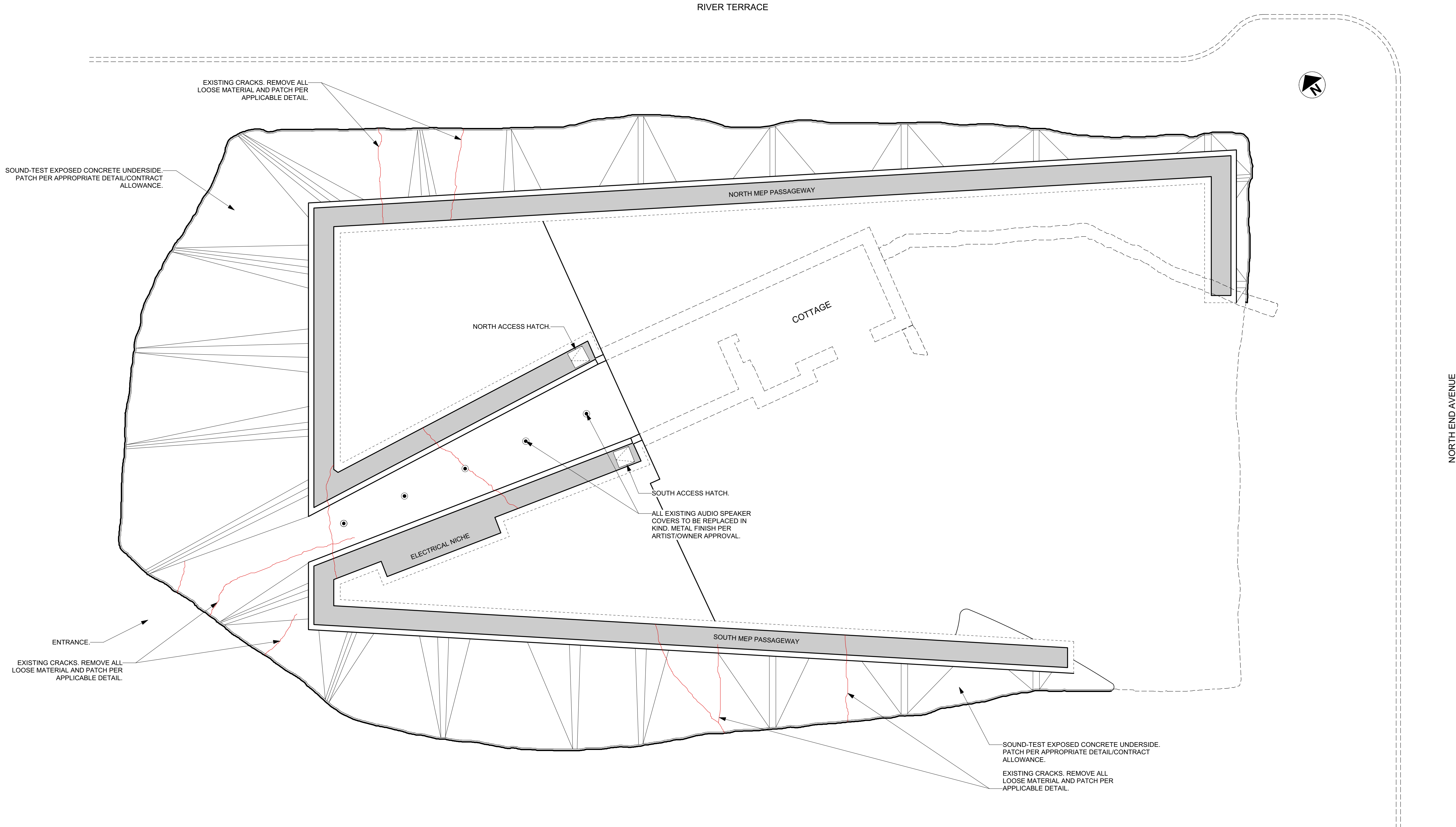
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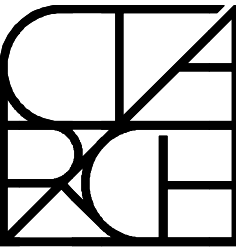
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PROJECT No:	14215
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CHECKED BY:	FS
DWG No:	
A-202.00	
CADD FILE No: 14215-A-202.00	6 of 23

NOTE: CLEAN ALL WATER STAINING/EFFLORESCENCE AT MONUMENT BASE CURTAIN WALL AND CANTILEVER SLAB UNDERSIDE THROUGHOUT PER SPECIFICATION AND APPROVED PROCEDURE.

NOTE: REFER TO ELECTRICAL DRAWINGS FOR SCOPE OF WORK AT MEP PASSAGEWAY INTERIORS.



1 REFLECTED CEILING PLAN
Scale: 1/8" = 1'-0"



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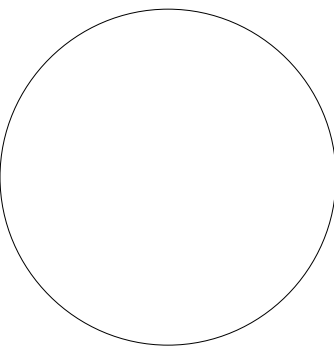
Hector Batista
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VESEY GREEN
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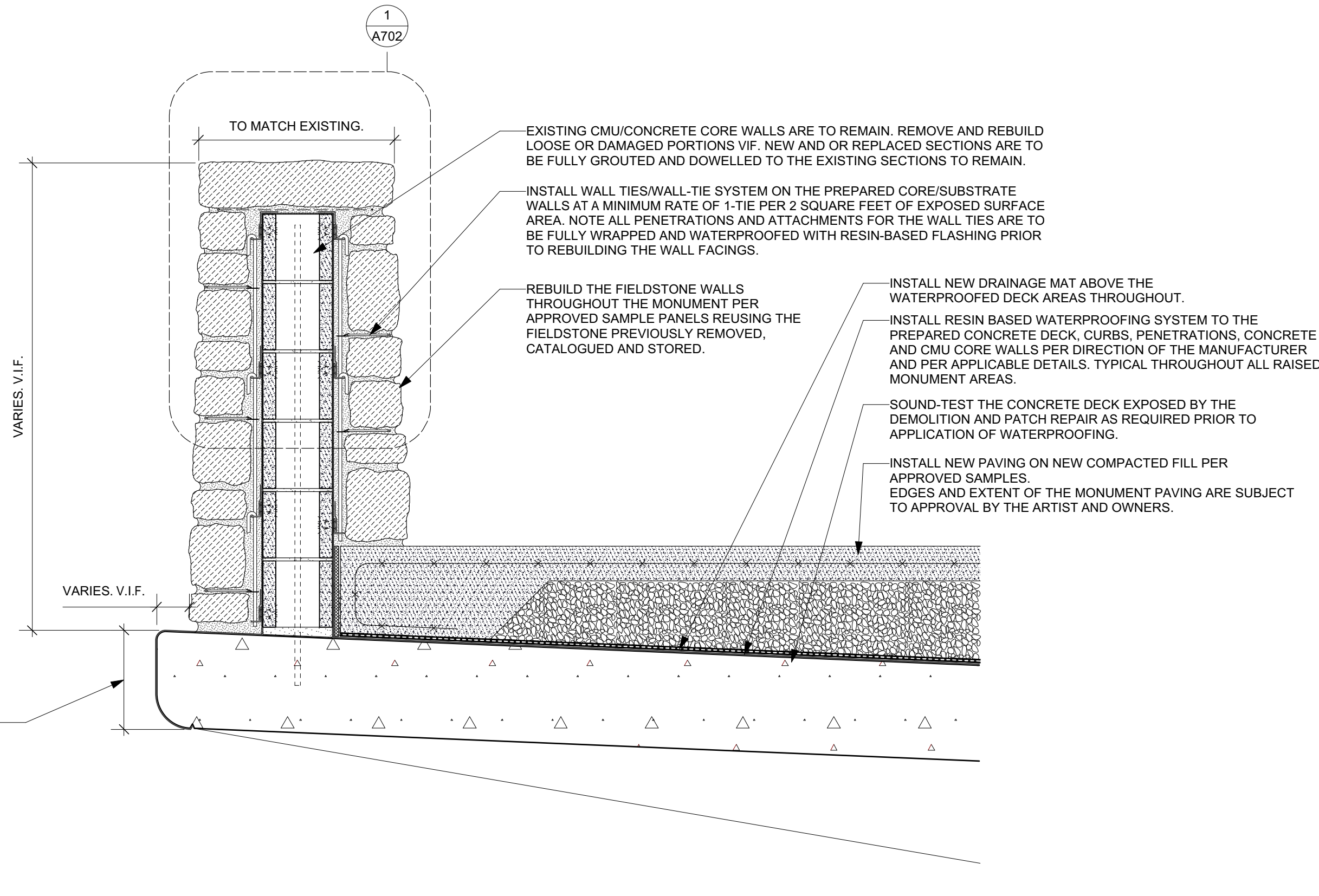
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PLAN**

SEAL & SIGNATURE:

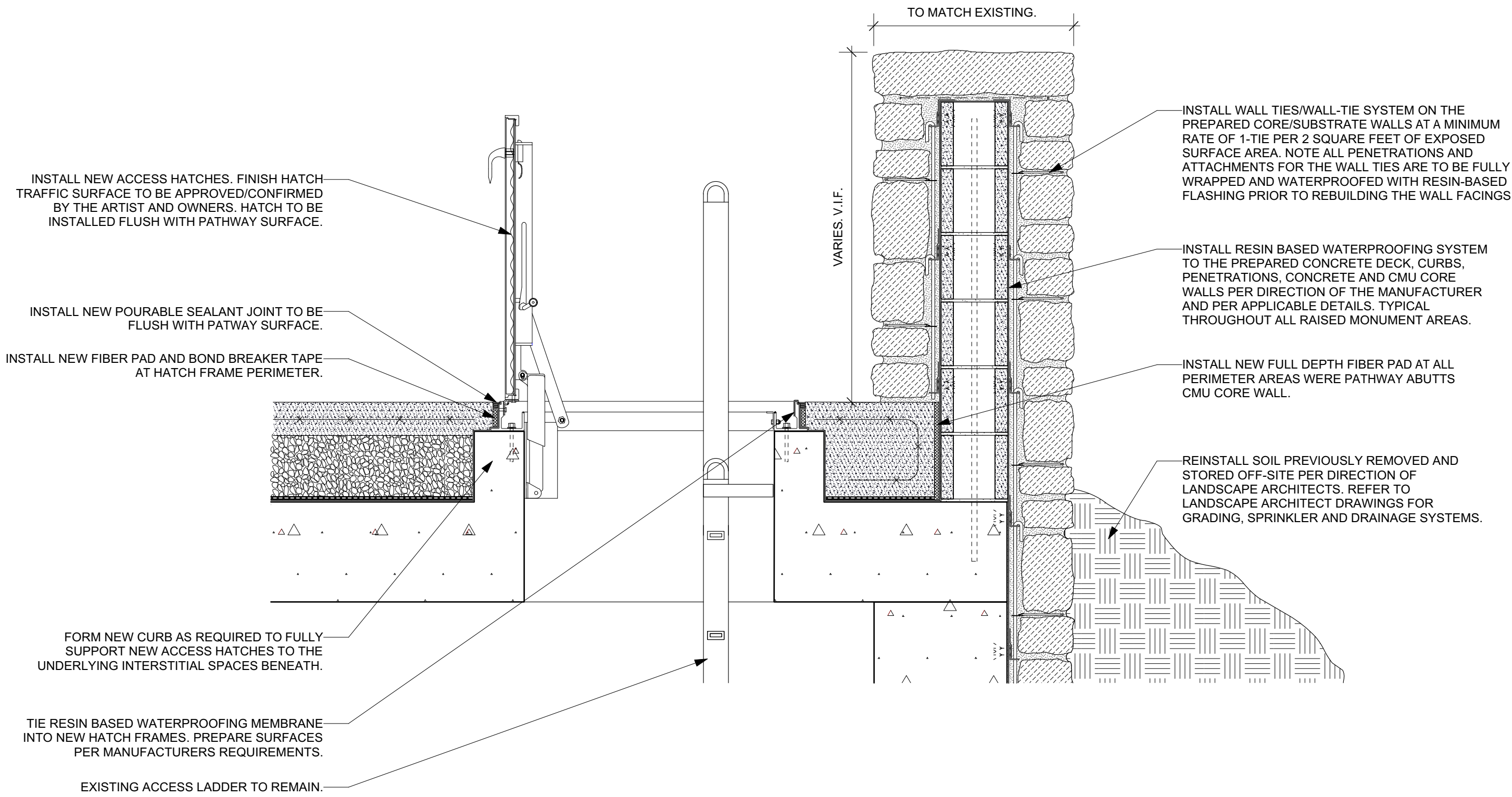


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PROJECT No: 14215
DRAWING BY: PG
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A-300.00
CADD FILE No: 14215-A-300.00 | 7 of 23

NOTE: ALL STONE REBUILDING IS SUBJECT TO APPROVAL BY THE ARTIST AND OWNERS. CONTRACTOR MUST PROVIDE A MINIMUM OF TWO FULL SIZE MOCK-UPS, 6'-0"± IN LENGTH. MOCKUPS INCLUDE COTTAGE WALLS AND FIELD WALLS. MOCKUPS MAY BE APPLIED TO THE MONUMENT DIRECTLY AND IF SUCCESSFUL MAY BE FULLY INCORPORATED INTO THE COMPLETED WORK.



1 FIELDSTONE WALL - CANTIEVER EDGE / PATH
Scale: 1" = 1'-0"



3 ACCESS HATCH / FIELDSTONE WALL
Scale: 1" = 1'-0"

EXISTING CMU/CONCRETE CORE WALLS ARE TO REMAIN. REMOVE AND REBUILD LOOSE OR DAMAGED PORTIONS V.I.F. NEW AND OR REPLACED SECTIONS ARE TO BE FULLY GROUTED AND DOWELLED TO THE EXISTING SECTIONS TO REMAIN.

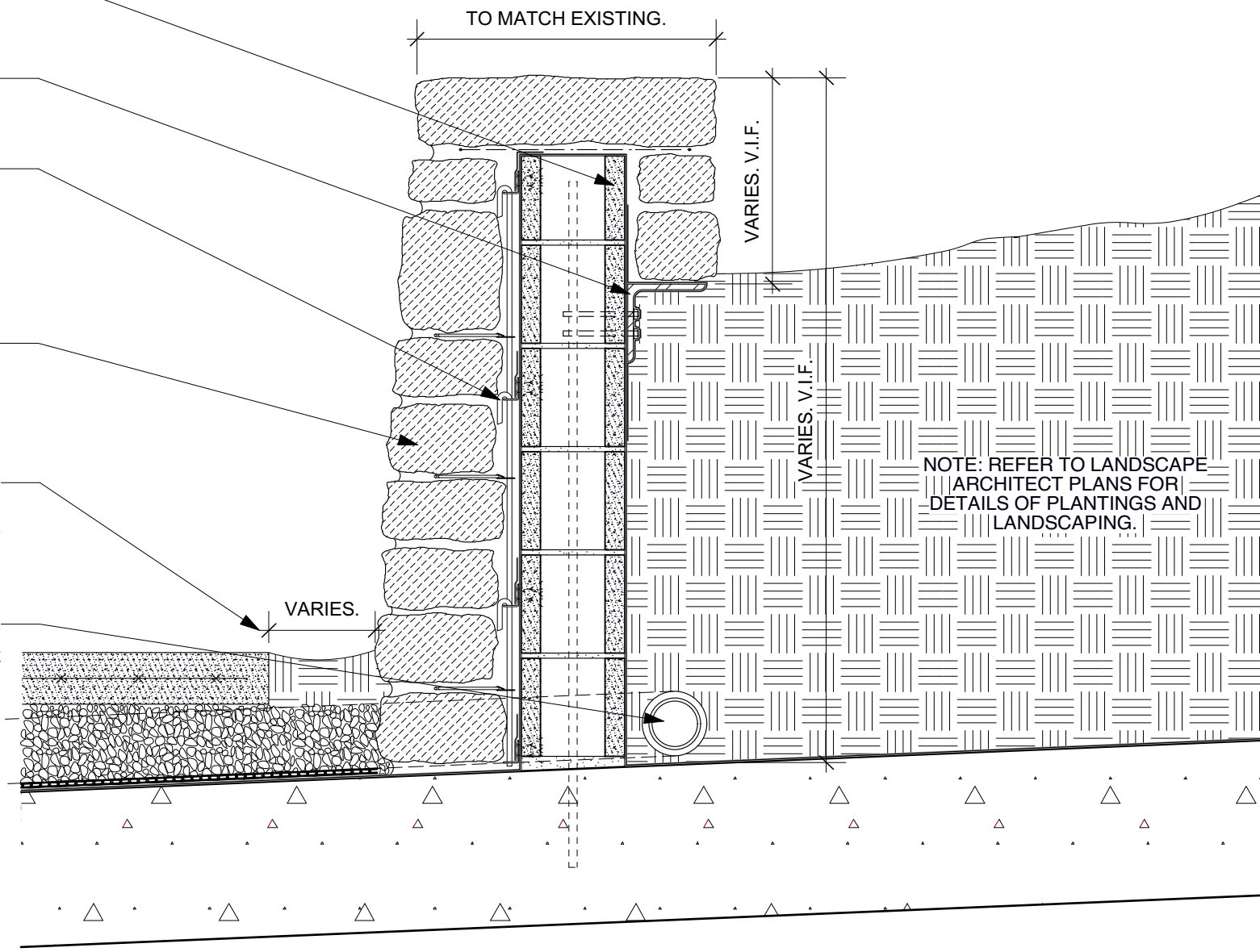
SHELF ANGLE SECTIONS ATTACHED TO THE CMU/CONCRETE CORE WALLS ARE TO REMAIN AND ARE TO BE PROTECTED IN PLACE FOR REUSE.

INSTALL WALL TIES/WALL-TIE SYSTEM ON THE PREPARED CORE/SUBSTRATE WALLS AT A MINIMUM RATE OF 1-TIE PER 2 SQUARE FEET OF EXPOSED SURFACE AREA. NOTE ALL PENETRATIONS AND ATTACHMENTS FOR THE WALL TIES ARE TO BE FULLY WRAPPED AND WATERPROOFED WITH RESIN-BASED FLASHING PRIOR TO REBUILDING THE WALL FACINGS.

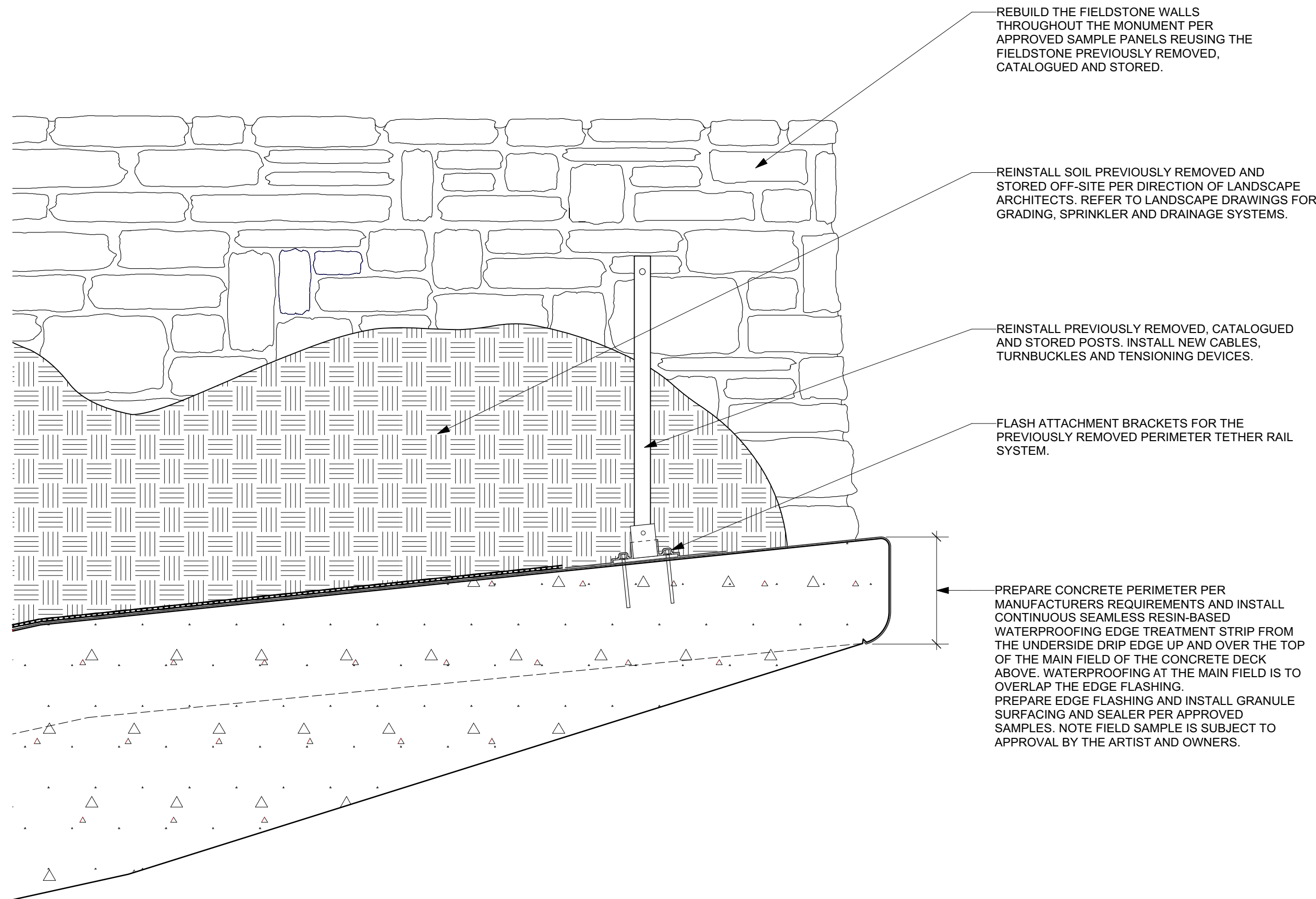
REBUILD THE FIELDSTONE WALLS THROUGHOUT THE MONUMENT PER APPROVED SAMPLE PANELS REUSING THE FIELDSTONE PREVIOUSLY REMOVED, CATALOGUED AND STORED.

EXISTING INTERSTITIAL PLANTING AREAS BETWEEN FIELDSTONE WALL AND PATHWAY ARE TO BE REINSTALLED IN EXISTING LOCATIONS. EDGES AND EXTENT TO BE COORDINATED WITH THE ARTIST.

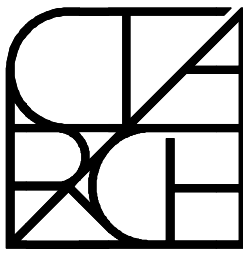
EXISTING DRAINAGE SYSTEM TO BE REPLACED. SEE LANDSCAPE DRAWINGS FOR SCOPE REGARDING DRAINAGE SYSTEM. REFER TO DRAINAGE AS-BUILT PLANS PROVIDED BY BPCA FOR LAYOUT OF EXISTING DRAINAGE PIPING.



2 FIELDSTONE RETAINING WALL - PATH / PLANTER
Scale: 1" = 1'-0"



4 PLANTER - CANTILEVER EDGE
Scale: 1" = 1'-0"



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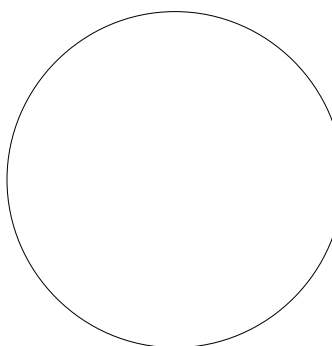
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Chief Operating Officer

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NEW YORK, NY 10004

DRAWING TITLE:

FIELDSTONE WALL
DETAILS

SEAL & SIGNATURE:



DATE: 16 JULY 2015
PROJECT No: 14215
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A-700.00
CADD FILE No: 14215-A-700.00 | 8 of 23



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**VESEY GREEN
NEW YORK, NY 10004**

DRAWING TITLE:

MISCELLANEOUS DETAILS

SEAL & SIGNATURE:

DATE: 16 JULY 2015

DATE:	10 OCT 2015
PROJECT No:	14215

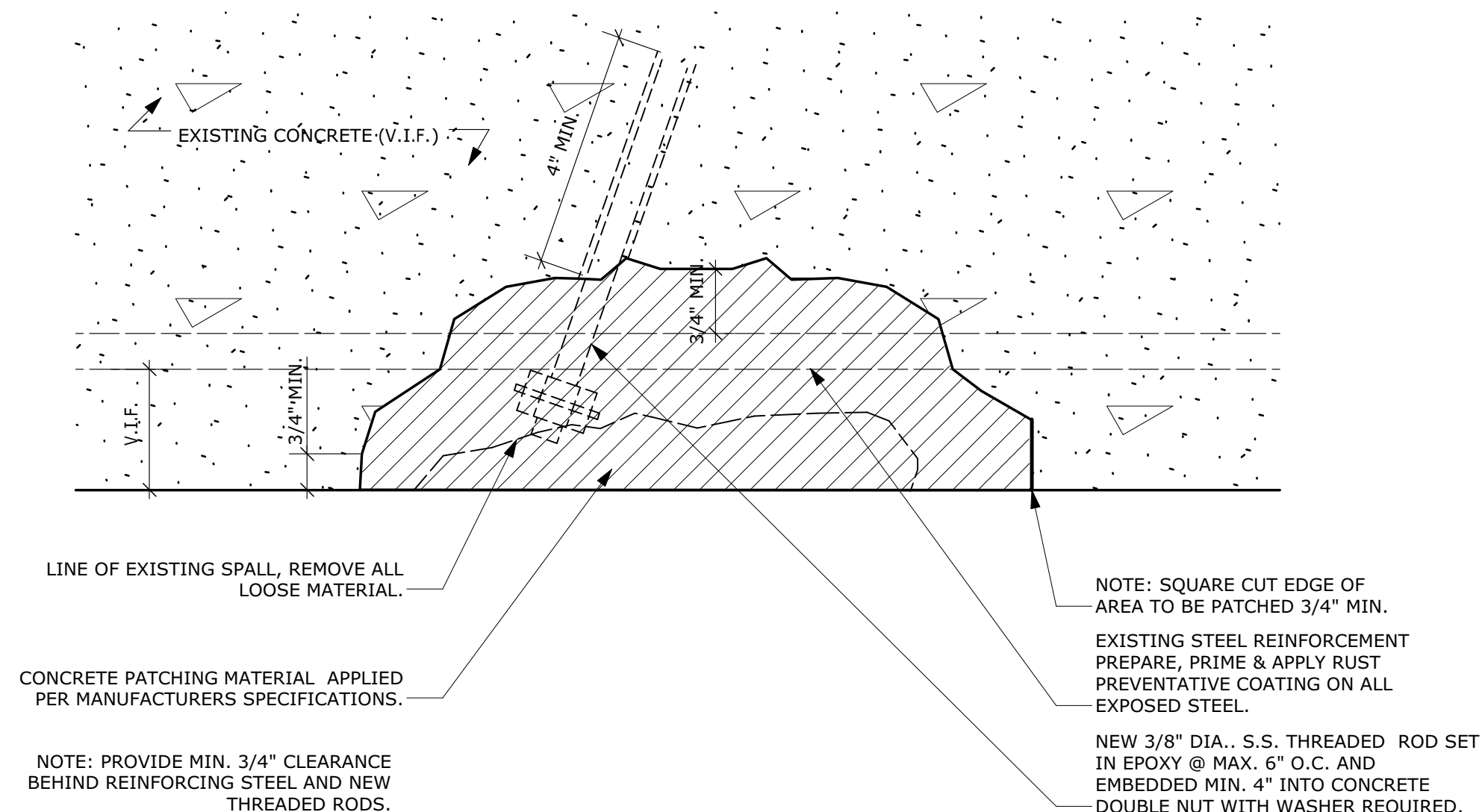
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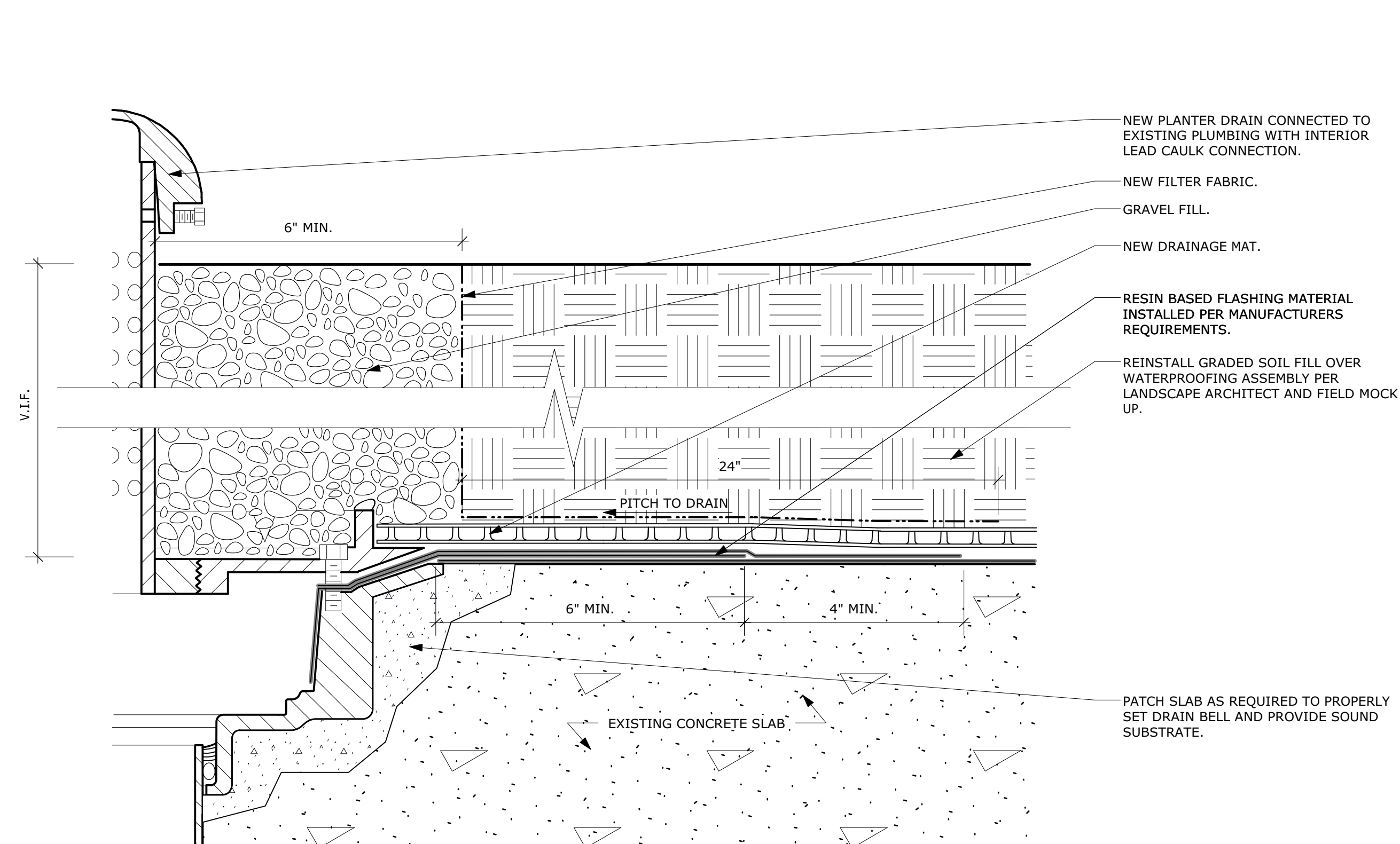
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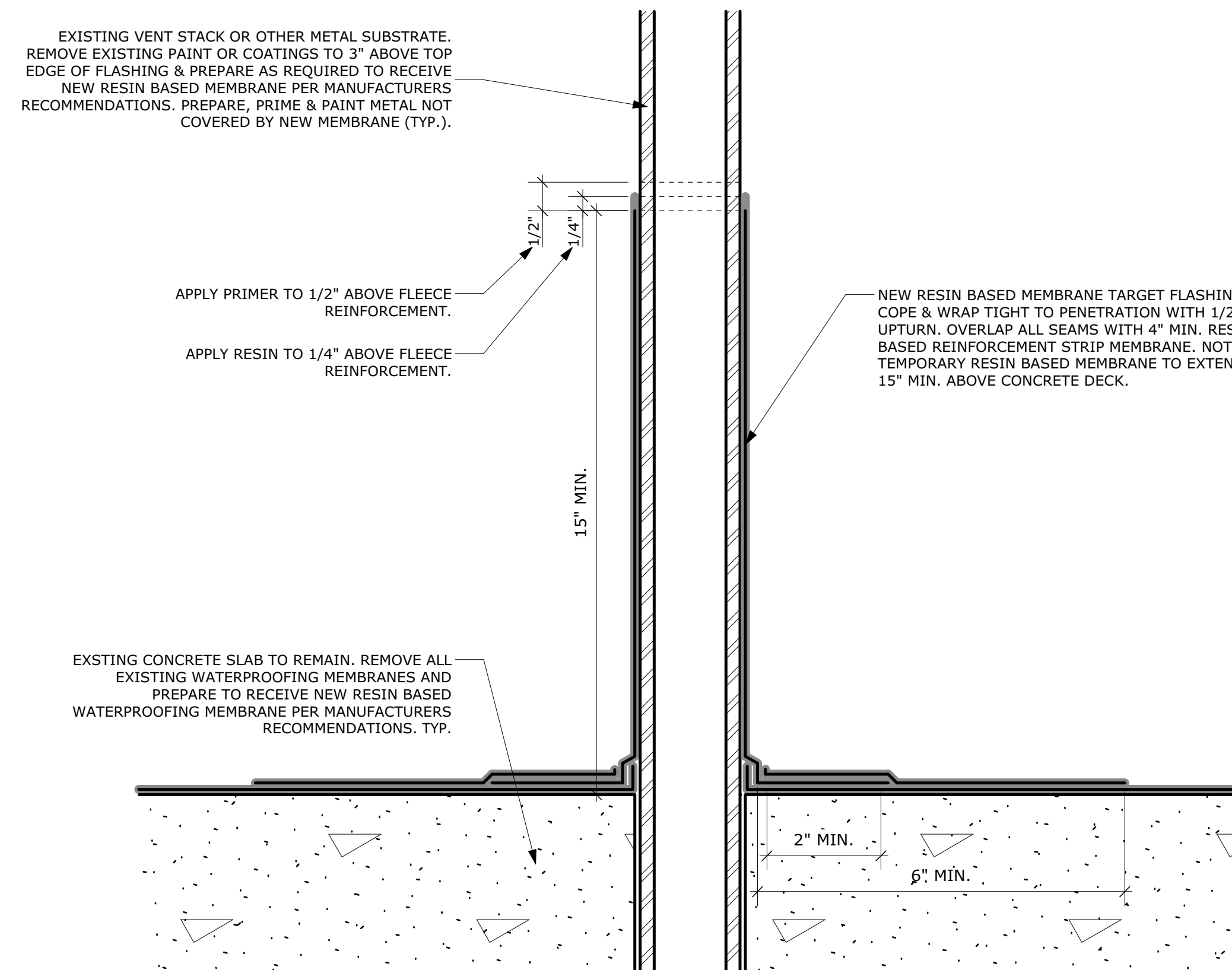
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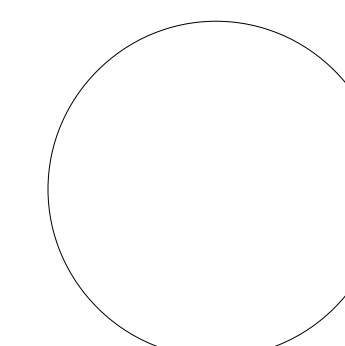
1 SECTION DETAIL AT CONCRETE PATCH - OVERHEAD
Scale: 1/2" = 1"



2 SECTION DETAIL AT NEW PLANTER DRAIN
Scale: 1/2" = 1"



3 SECTION DETAIL AT PIPE PENETRATION
SCALE: 6" = 1'-0"





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NEW YORK, NY 10004**

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FIELDSTONE WALL
DETAILS

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DATE: 16 JULY 2015

PROJECT No: 14215

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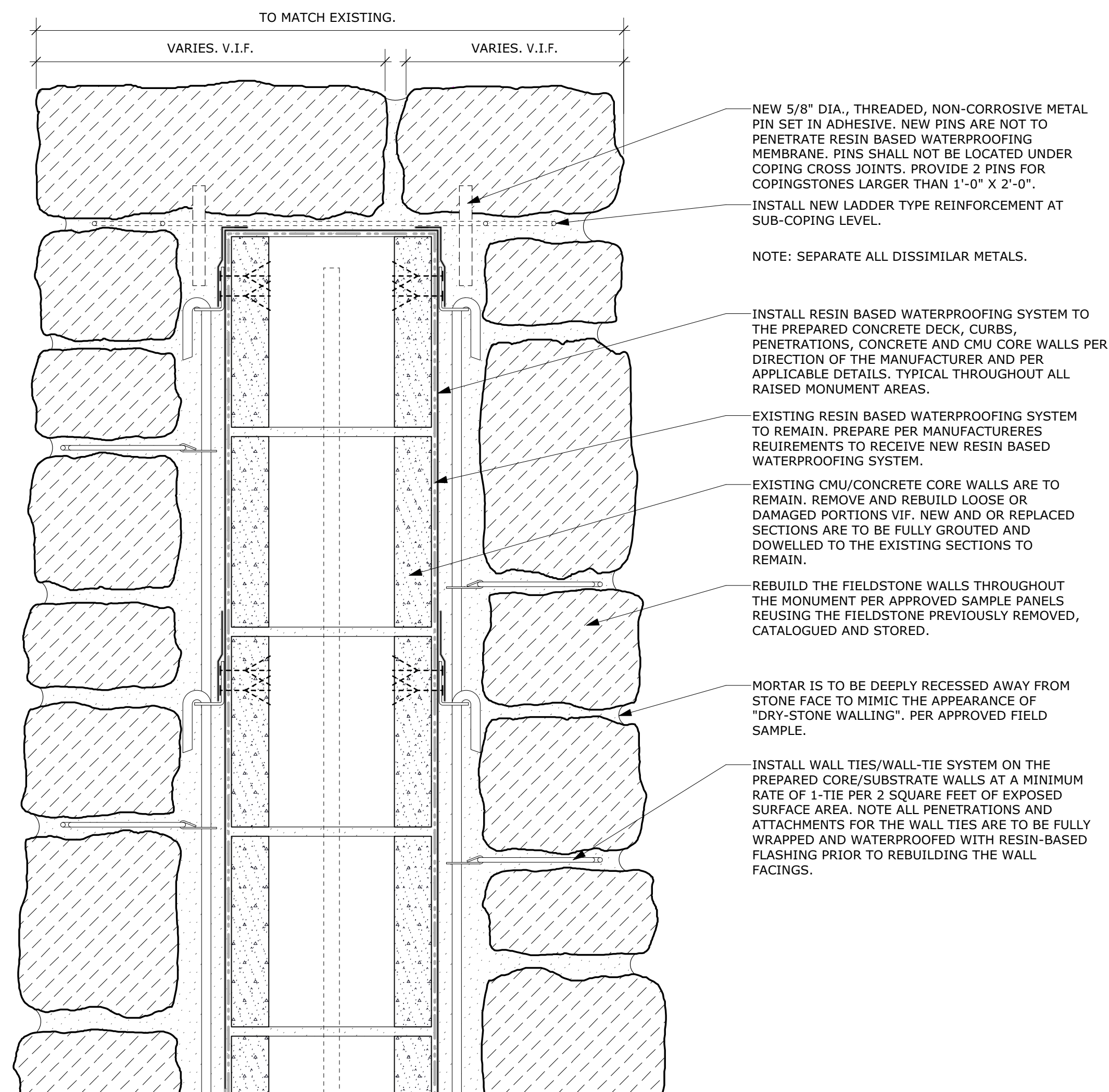
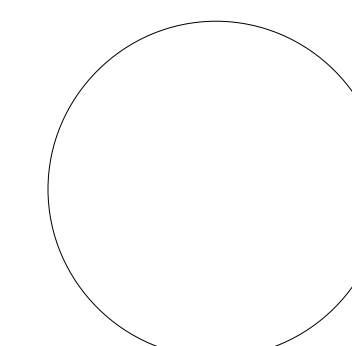
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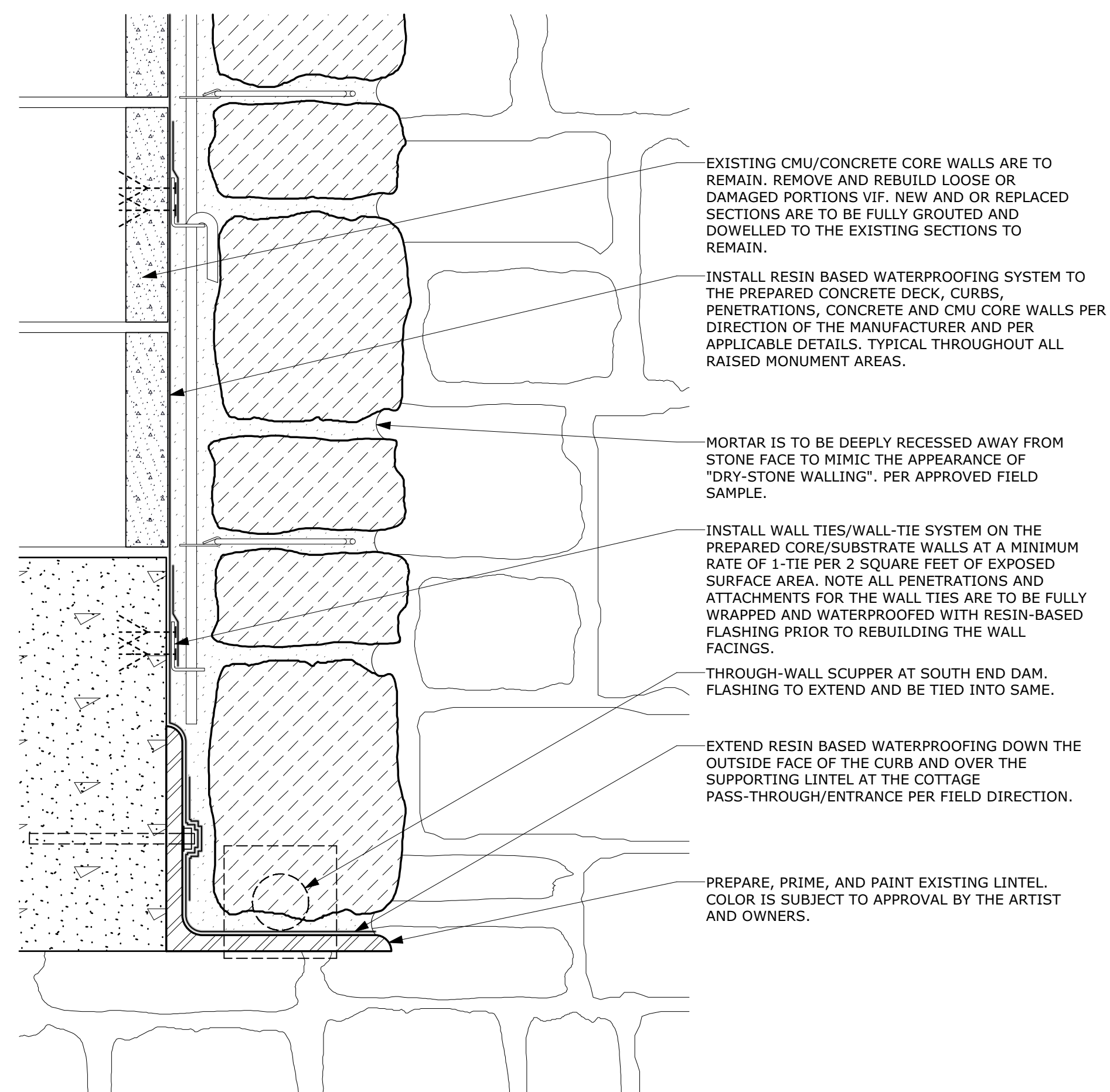
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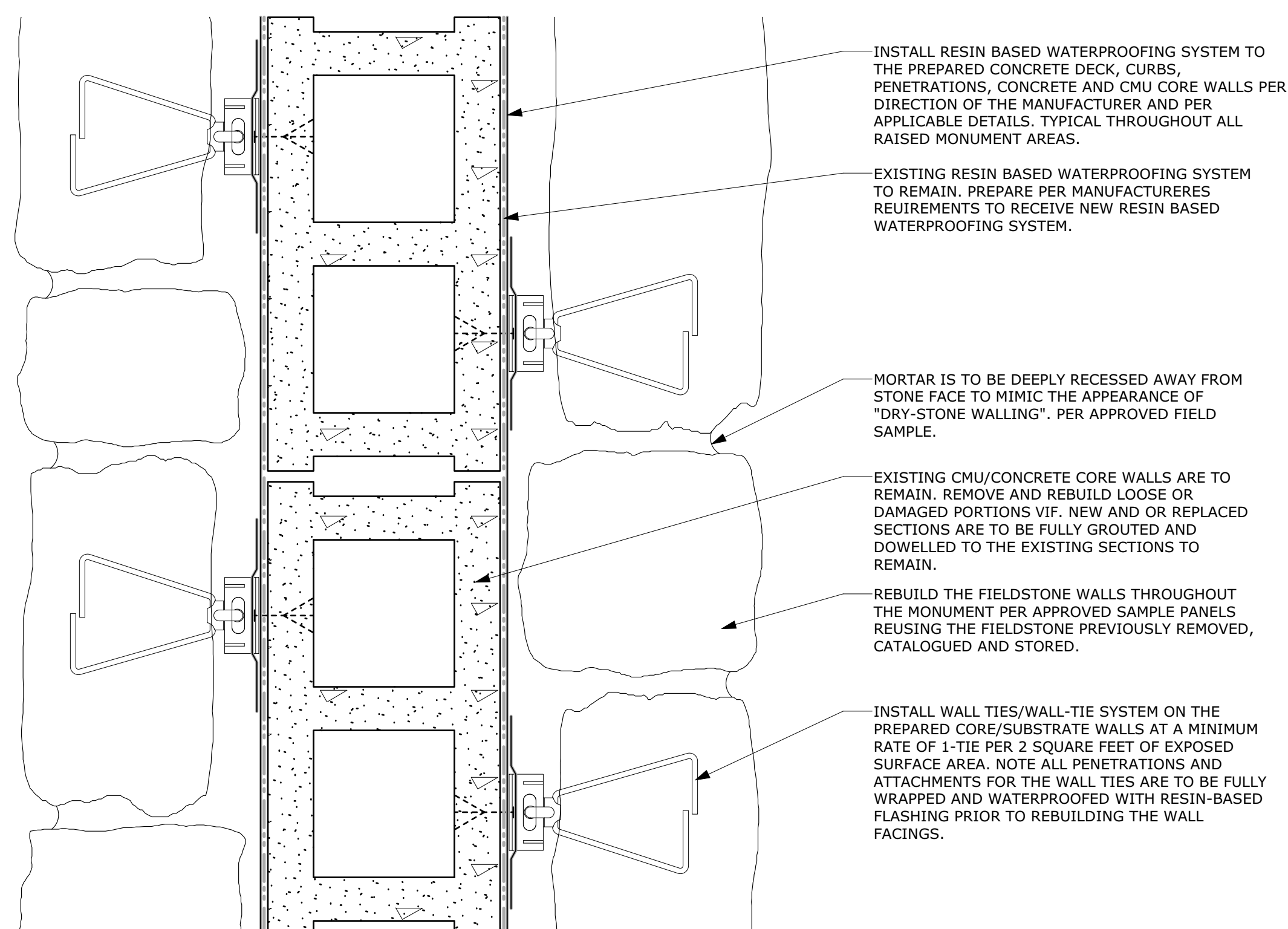
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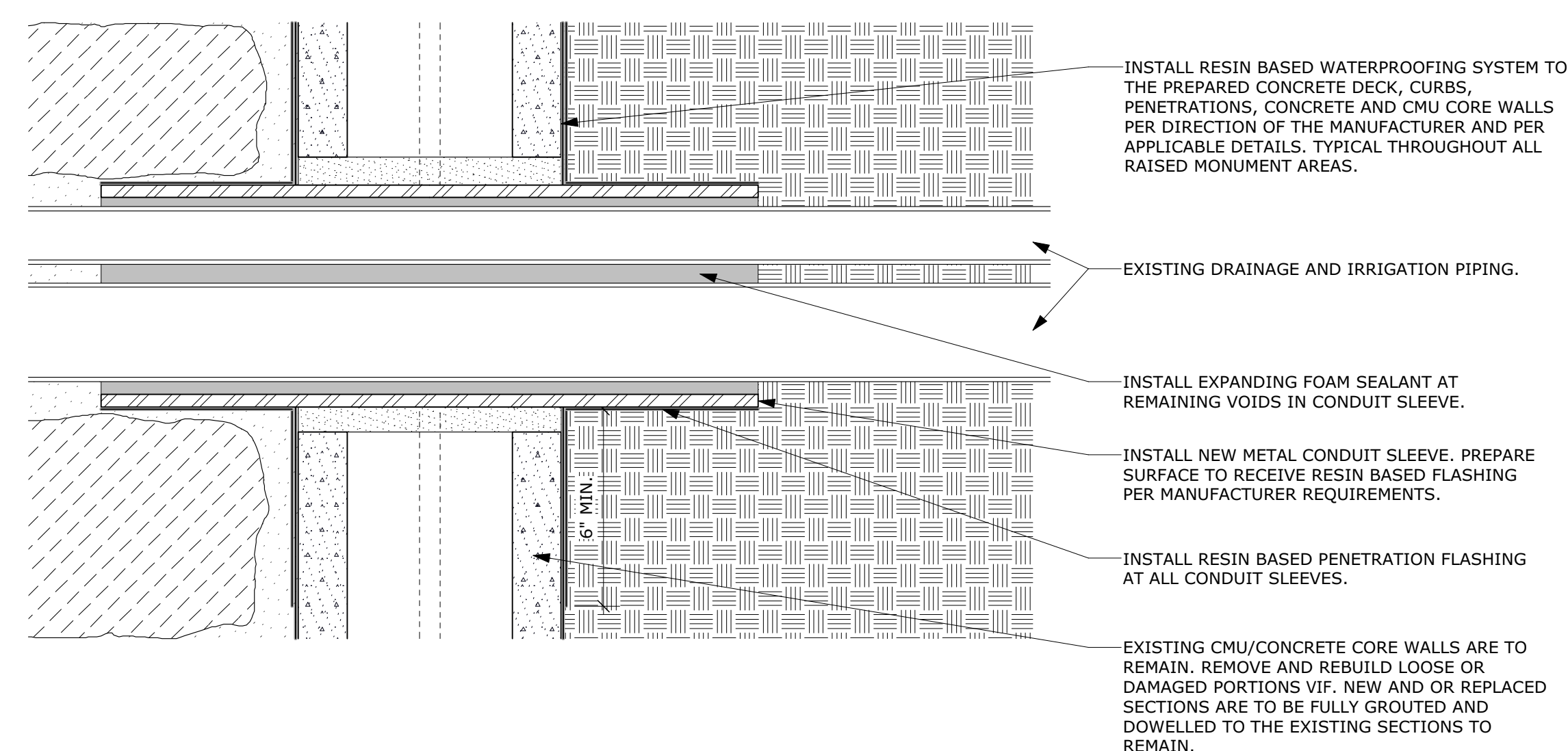
1 SECTION DETAIL AT FIELDSTONE WALL
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2 SECTION DETAIL AT COTTAGE THRESHOLD LINTEL
Scale: 1/2" = 1"



3 SECTION DETAIL AT FIELDSTONE WALL - PLAN
Scale: 1/2" = 1"



4 SECTION DETAIL AT FIELDSTONE WALL PENETRATION
Scale: 1/2" = 1"



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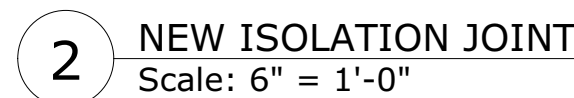
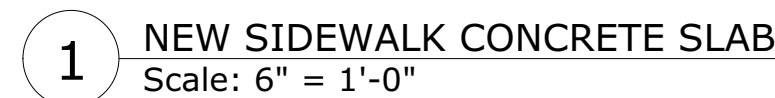
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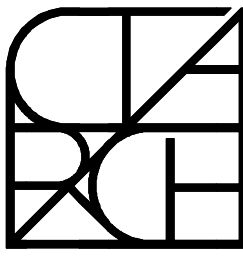
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DWG No:

A-703.00

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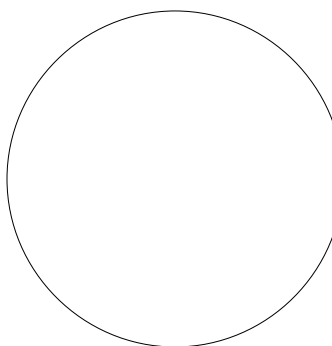
PROJECT:
**IRISH HUNGER MEMORIAL
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VESEY GREEN
NEW YORK, NY 10004

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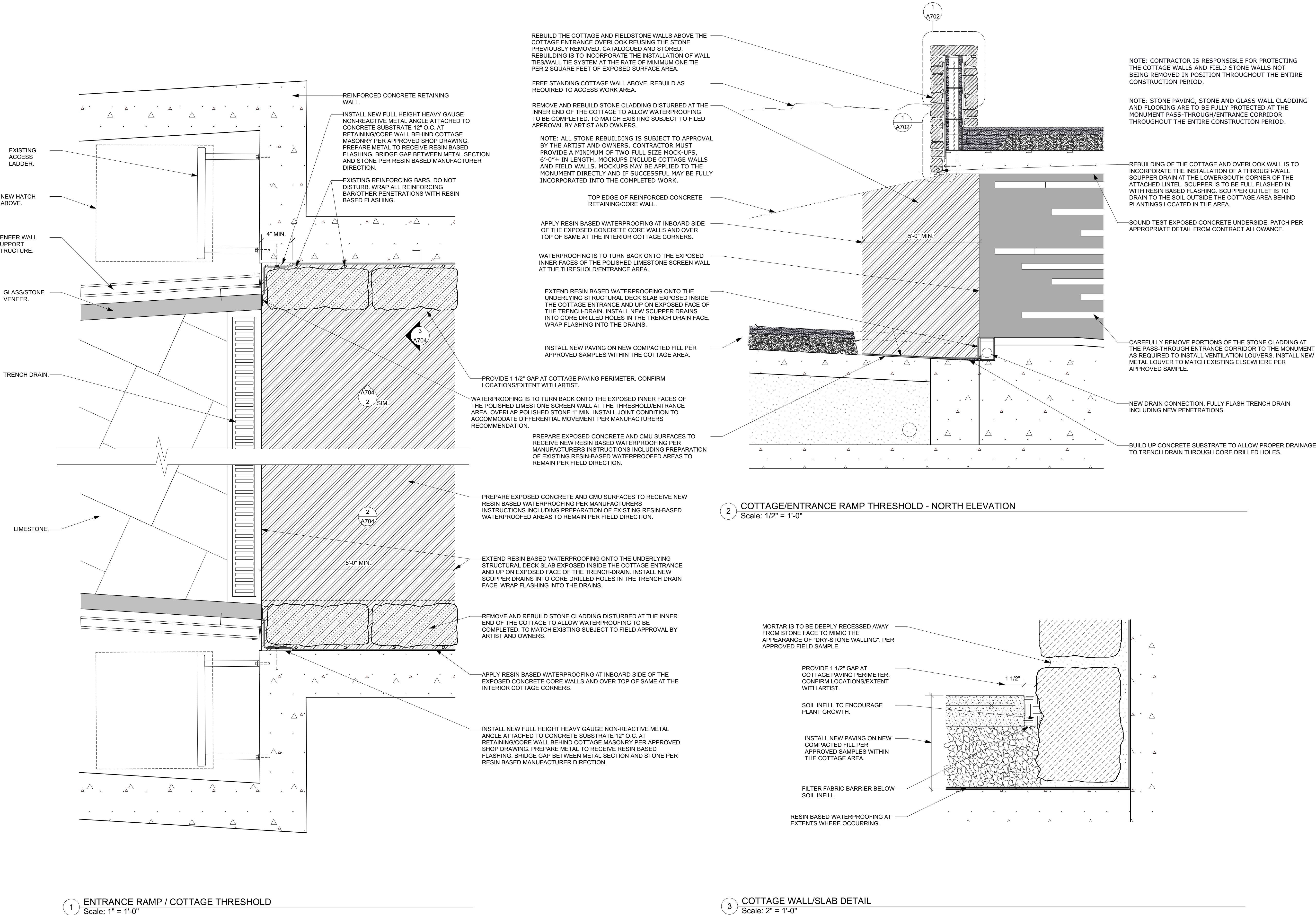
COTTAGE

DETAILS










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REMOVALS LEGEND

Remove planting, drainage, irrigation. Remove existing soil to drainage layer only and bag for off-site storage and re-installation upon completion of waterproofing		See details 1,2,3, Sheet DM-150
Irrigation Valve 'B' to be temporarily relocated - see plan		-
Irrigation Valve 'B' temporary location- see plan		-
Construction Fencing		-
Protect-in-Place - Planting (middle, lower furrow) area - Irrigation to remain active during construction in these areas only.		-
Protect-In-Place - POC for Irrigation		-
Protect-In-Place - Existing Irrigation Mainline to remain		-
Protect-in-Place - Irrigation valve to remain		-
Protect-In-Place - Landscape Drains		-

REMOVALS LEGEND

Remove planting, drainage, irrigation. Remove existing soil to drainage layer only and bag for off-site storage and re-installation upon completion of waterproofing

Irrigation Valve 'B' to be temporarily relocated - see plan

Irrigation Valve 'B' temporary location- see plan

Construction Fencing

Protect-in-Place - Planting (middle, lower furrow) area - Irrigation to remain active during construction in these areas only.

Protect-In-Place - POC for Irrigation

Protect-In-Place - Existing Irrigation Mainline to remain

Protect-in-Place - Irrigation valve to remain

Protect-In-Place - Landscape Drains

CONSTRUCTION LEGEND

1	Man Hole	See Drainage As-built Plans
2	Concrete Paving	See Architectural Plans
3	Stone Wall	See Architectural Plans
4	Pedestrian Protection Fencing	See Architectural Plans
5	Roof Drain	See Architectural Plans
6	Interstitial Space Wall	See Architectural Plans
7	Structural Cantilever Beam	See Architectural Plans
8	Safety Fence	See Architectural Plans

REMOVALS NOTES:

- Any existing or below grade elements that are not indicated on the plan which potentially conflict with demolition work shall immediately be brought to the Landscape Architect's attention before proceeding any further.
- No dangerous conditions shall be left without appropriate barriers, hazard warnings or indicators in full compliance with all governing codes and regulations.
- All pavement, walls, existing structures, or plant material not indicated for removal shall be fully protected from damage during the demolition process. Any damage occurring as a result of negligence or disregard for proper procedures shall be repaired at no cost to the owner.

Irrigation

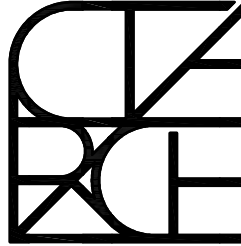
- Protect-in-place POC connection to provide irrigation to valves and landscape area that are to be irrigated during construction.
- Temporarily move irrigation heads for valves 'A' and 'B' to not be obstructed by construction protection fencing.
- Replace all removed irrigation upon completion of waterproofing with 'like in kind'. Install per irrigation As-builts provided by BPCA.

Drainage

- Remove drainage in areas depicted on plans and necessary for the construction of the waterproofing provided in the architectural plans.
- See Drainage As-built plans provided by BPCA for reference of existing drainage piping.
- Map all drainage material removed which include but may not be limited to drain line locations, type, size, impermeable PVC liner and document for the re-installation 'like in kind' upon completion of the waterproofing per architectural plans.
- Contractor is to confirm full function of drainage before, during construction and after substantial completion.

Boulder and Stones

- Carefully remove, catalog and store off-site for replacement of existing boulders, county-stone and other miscellaneous landmarks within the monument site which may be disturbed by the contract work, VIF. All stones are to be replaced back in their current locations upon completion of the contract work. See Architectural Plans and notes.
- Reinstall previously removed, catalogued and stored existing boulders, county-stone and other miscellaneous landmarks within the monument site back in their previous locations upon completion of the contract work. Final locations to be confirmed by the artist.



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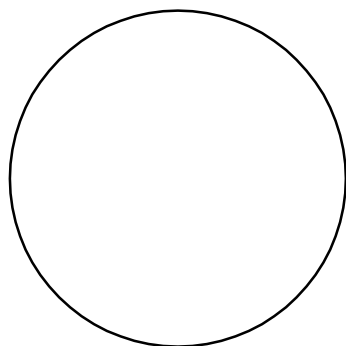
**IRISH HUNGER MEMORIAL
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DRAWING TITLE:

LANDSCAPE

DEMOLITION PLAN

SEAL & SIGNATURE:



DATE: 16 JULY 2015

PROJECT No: 14215

DRAWING BY: JD

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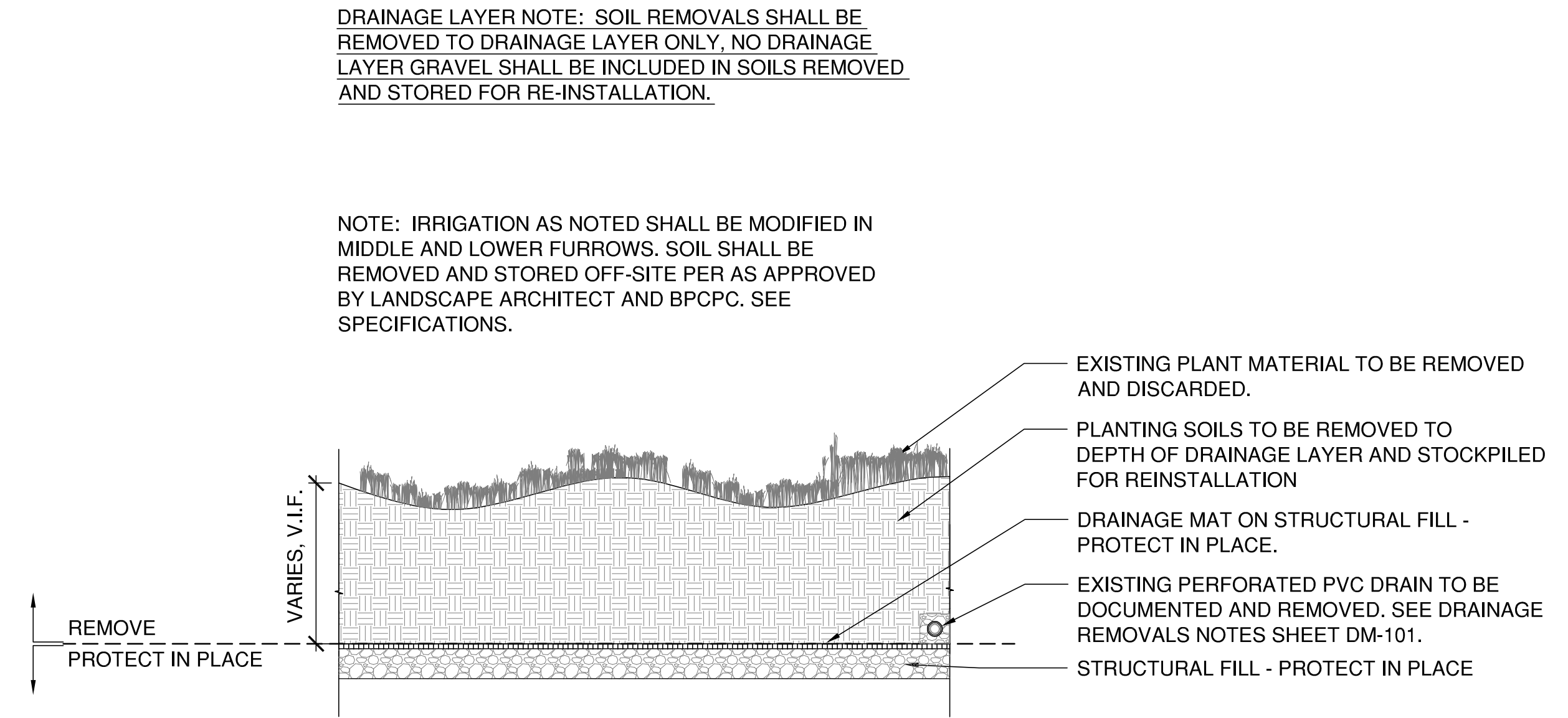
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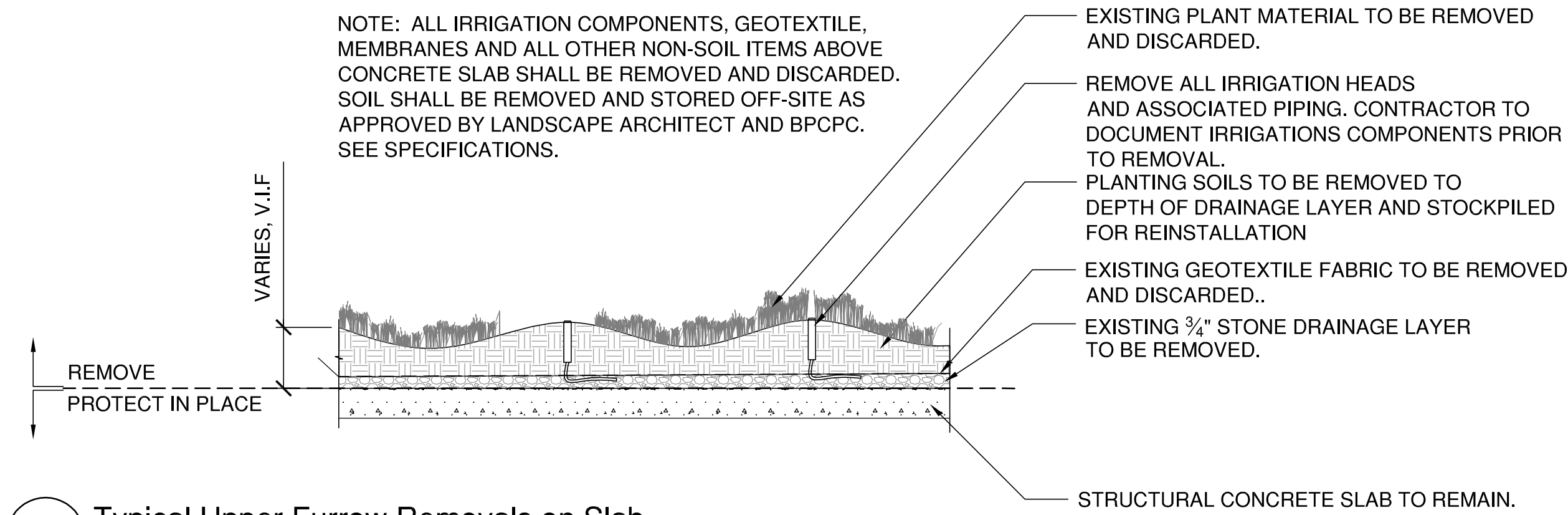
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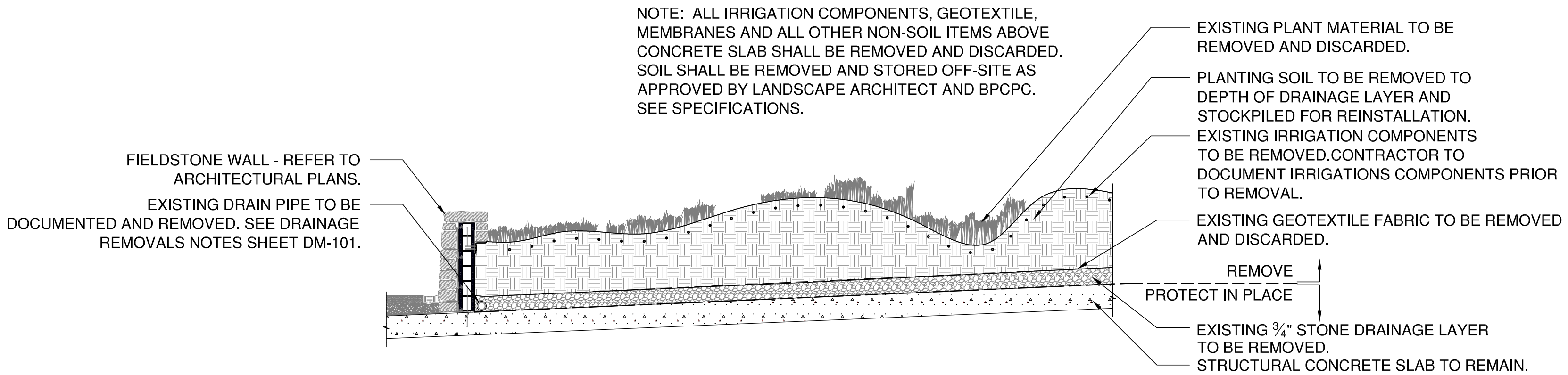
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3 Typical Lower / Middle Furrow Removals at Grade
SCALE: 1/4" = 1'-0"



2 Typical Upper Furrow Removals on Slab
SCALE: 1/4" = 1'-0"



1 Stone Wall and Rocky Area Removals on Slab
SCALE: 1/4" = 1'-0"



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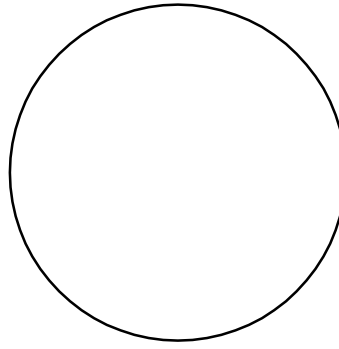
Lester Petracca
Board Member

Hector Batista
Board Member

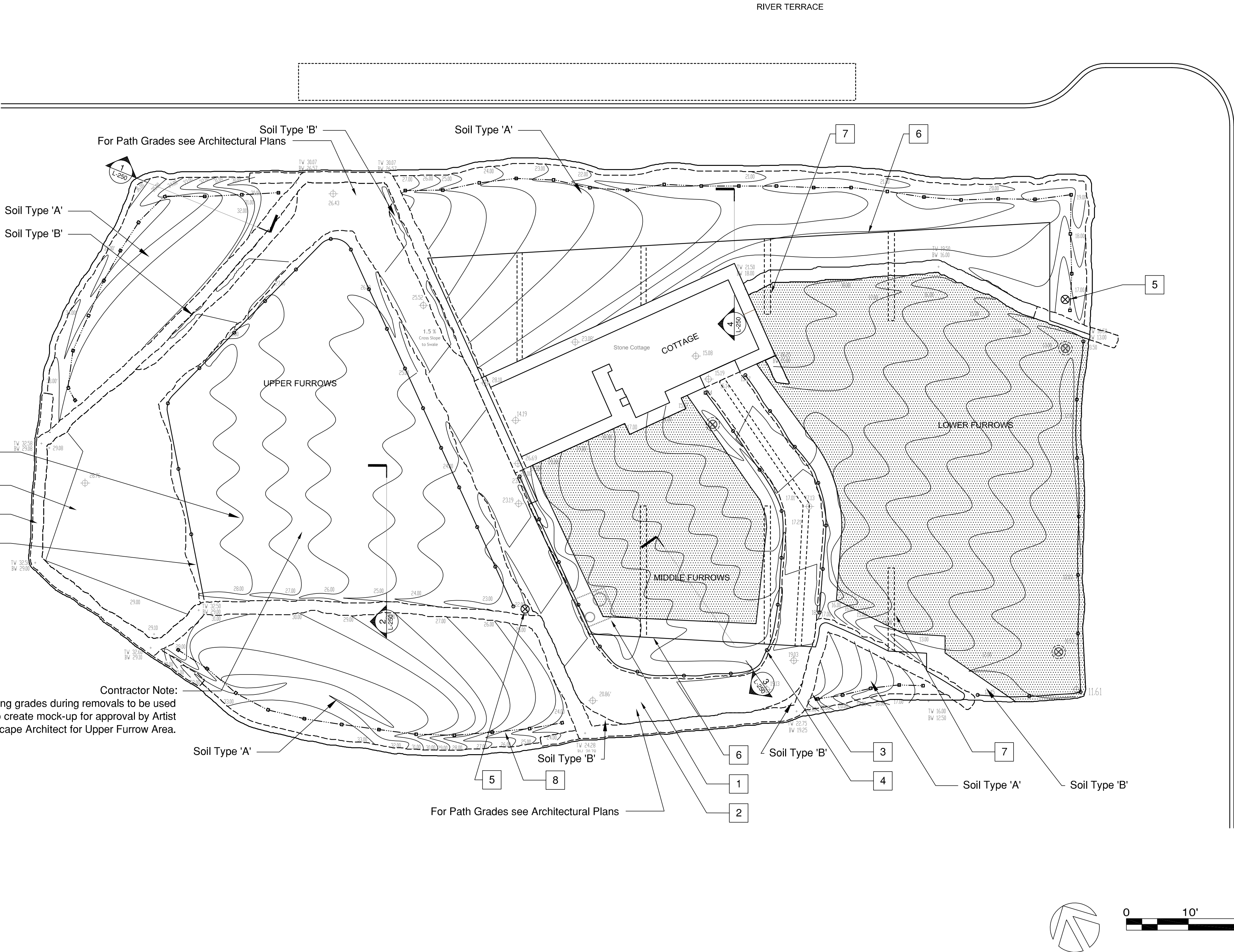
Shari C. Hyman
President
Chief Operating Officer

PROJECT:
IRISH HUNGER MEMORIAL RESTORATION
VESEY GREEN
NEW YORK, NY 10004

DRAWING TITLE:
LANDSCAPE DEMOLITION DETAILS

SEAL & SIGNATURE:	DATE: 16 JULY 2015
	PROJECT No: 14215
	DRAWING BY: JD
	CHECKED BY: AW
	DWG No:
CADD FILE No: 14 of 23	

DM-150.00



GRADING LEGEND

Protect-in-Place - Existing Grading Area		-
Protect-In-Place - Landscape Drains		-

CONSTRUCTION LEGEND

1	Man Hole	See Drainage As-built Plans
2	Concrete Paving	See Architectural Plans
3	Stone Wall	See Architectural Plans
4	Pedestrian Protection Fencing	See Architectural Plans
5	Roof Drain	See Architectural Plans
6	Interstitial Space Wall	See Architectural Plans
7	Structural Cantilever Beam	See Architectural Plans
8	Safety Fence	See Architectural Plans

Re-Installation post locations to be approved by BPCPC Representative

NOTES:

Drainage

Install drainage as per plans provided by contractor during removals phase of project. Landscape Architect to approve drainage layout prior to rough grading.

Irrigation

Install Irrigation per As-built drawings provided by BPCA and components documented during removals.

Grading

1. Rough grading to be completed and approved by Artist and Landscape Architect prior to installation of 8" Top Soil Layer.

2. Any modifications to the proposed grading as shown on these plans must be approved, in writing, by SiteWorks Landscape Architecture.

3. Location of existing drainage structures and pipes are approximate. The contractor shall field-verify locations and notify the Landscape Architect of any discrepancies.

4. Spot elevations on grading plan shall be met gradually and are subject to the Landscape Architect's approval.



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LANDSCAPE SiteWorks Landscape Architecture 150 West 28th Street, 8th Floor New York, New York 10001	MEP Collado Engineering 116 South Broadway Tarrytown, New York 10591
STRUCTURAL GACE Consulting Engineers PC 31 West 27th Street New York, New York 10001	

DATE	REVISION	NO.
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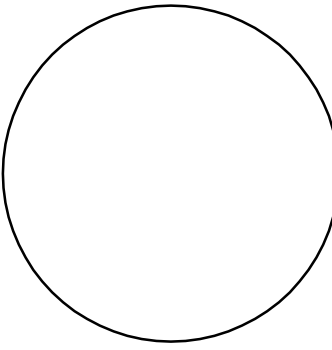


Battery Park
City Authority
Battery Park City Parks

- Andrew M. Cuomo
Governor, State of New York
- Dennis Mehiel
Chairman of the Board
Chief Executive Officer
- Frank J. Branchini
Vice Chair
- Donald Capoccia
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- Martha J. Gallo
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- Lester Petracca
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- Shari C. Hyman
President
Chief Operating Officer

PROJECT:
**IRISH HUNGER MEMORIAL
RESTORATION
VESEY GREEN
NEW YORK, NY 10004**

DRAWING TITLE:
**DIAGRAMMATIC
GRADING & SOILS
PLACEMENT PLAN**

SEAL & SIGNATURE:


DATE: 16 JULY 2015
PROJECT No: 14215
DRAWING BY: JD
CHECKED BY: AW
DWG No:
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CADD FILE No: | 15 of 23

CLIENT

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Tarrytown, New York 10591

DATE	REVISION	NO.
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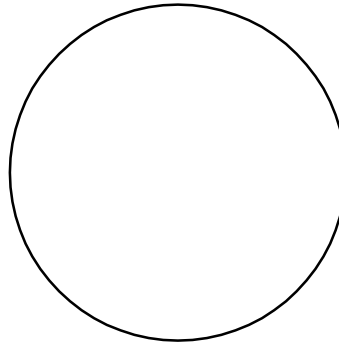
Lester Petracca
Board Member

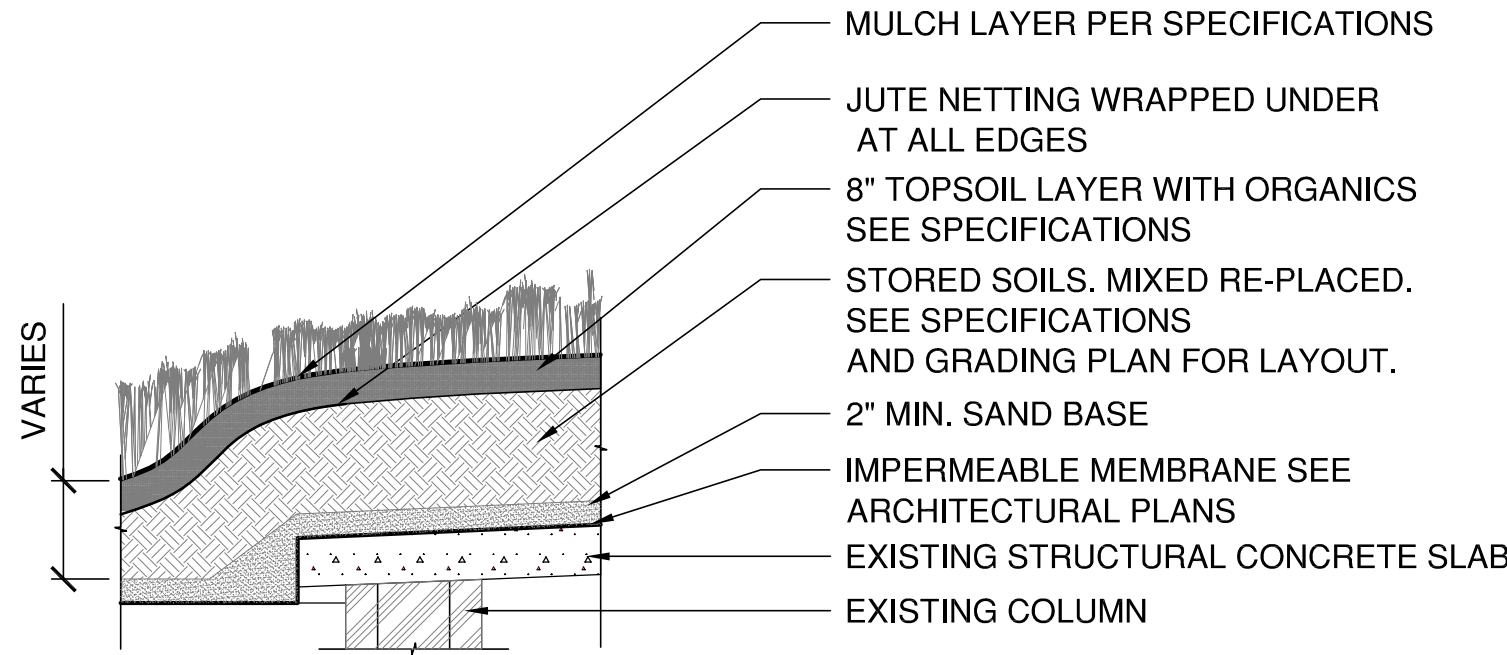
Hector Batista
Board Member

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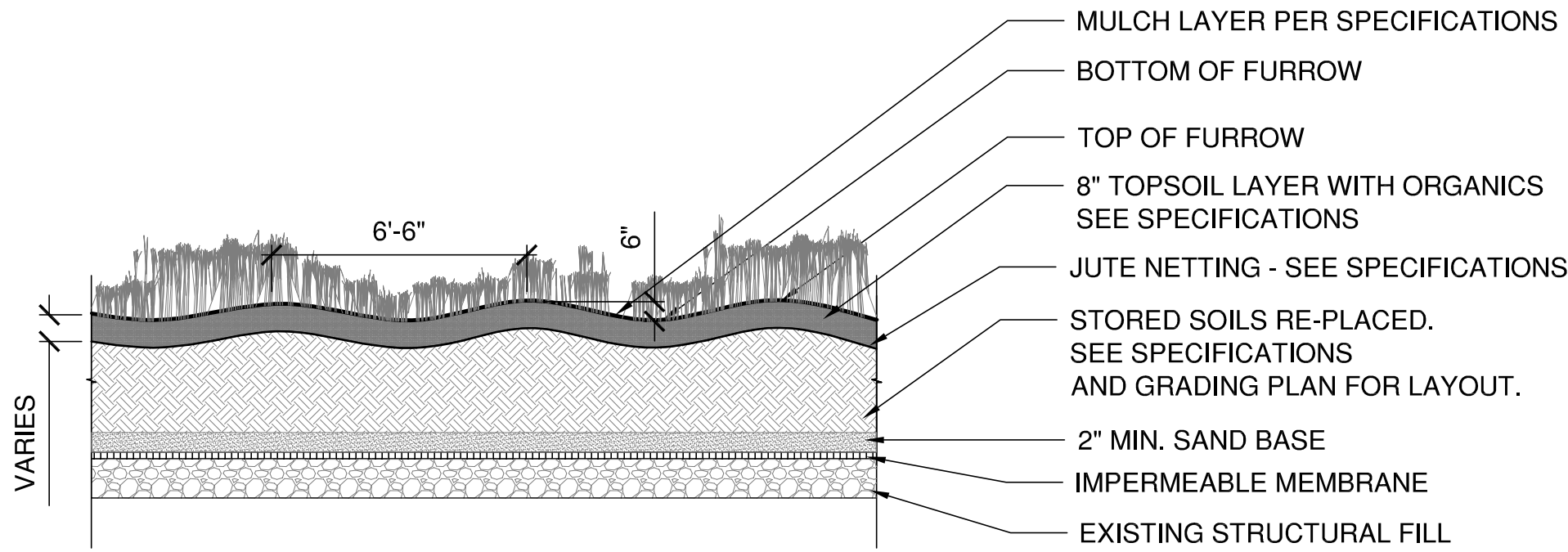
PROJECT:
**IRISH HUNGER MEMORIAL
RESTORATION
VESEY GREEN
NEW YORK, NY 10004**

DRAWING TITLE:
**GRADING & SOIL
PLACEMENT DETAILS**

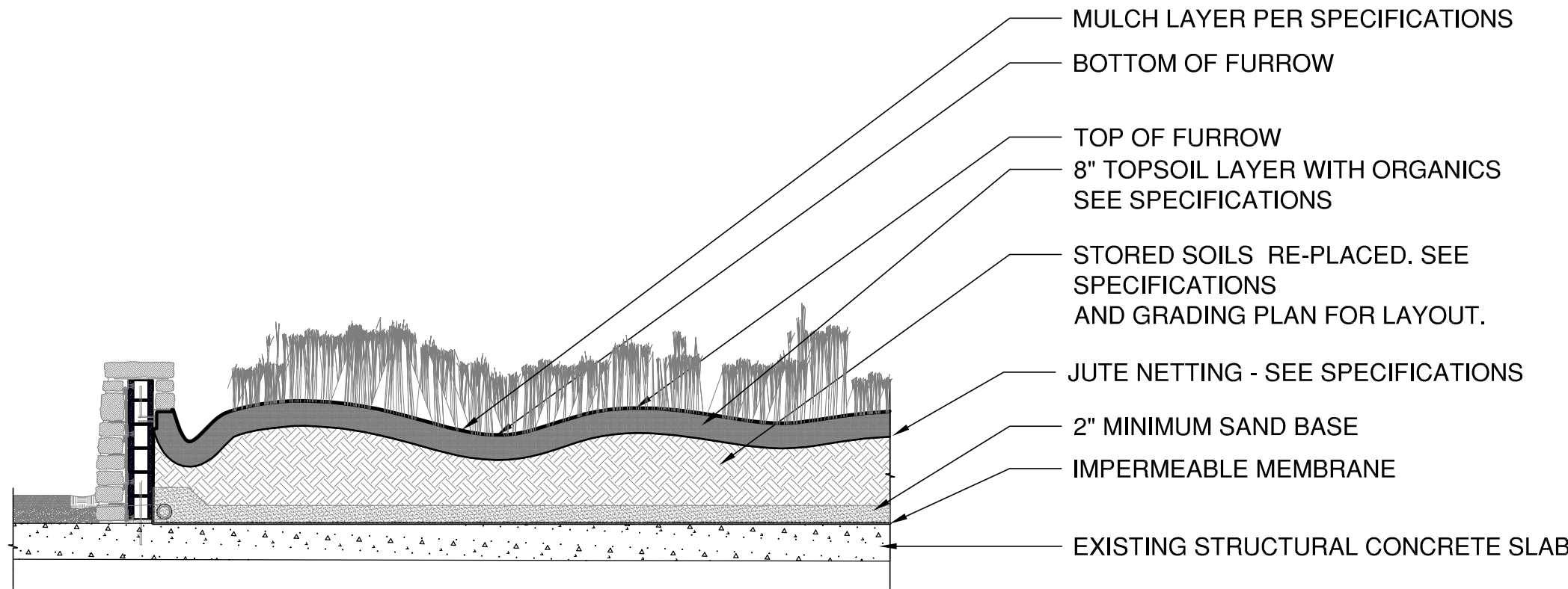
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CADD FILE No:		16 of 23



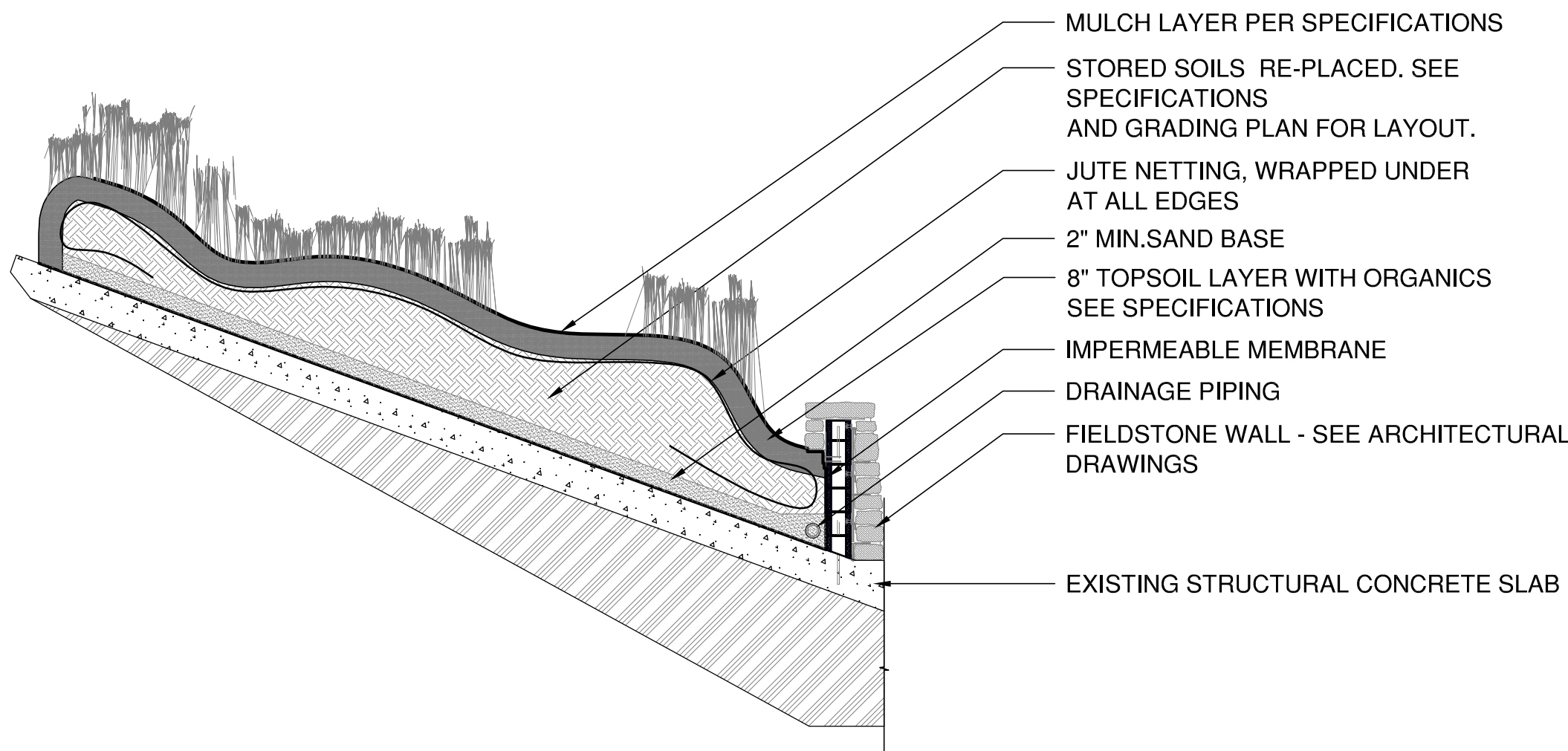
4 Section D-D: High Slope Edge Planting
SCALE: 1/4" = 1'-0"



3 Section C-C: Middle Furrow
SCALE: 1/4" = 1'-0"



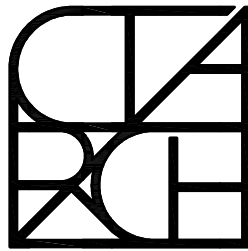
2 Section B-B: Upper Furrow
SCALE: 1/4" = 1'-0"



1 Section A-A: Upper Slopes Cantilever Edge Planting
SCALE: 1/4" = 1'-0"

PLANTING NOTES:

1. No substitutions will be acceptable unless approved in writing by the Landscape Architect and BPCPC.
2. Any discrepancy between actual field conditions and those shown on the plans are to be brought to the immediate attention of the Landscape Architect. Work shall not proceed until the discrepancy is resolved and written approval from both the owner and SiteWorks Landscape Architecture is obtained.
3. Contractor shall notify the Landscape Architect, in writing, of all soil or drainage conditions which the contractor considers detrimental to the growth of plants, prior to planting.
4. All plant pits shall be scarified to facilitate drainage and tested for percolation before plants are set in pits.
5. All plants shall be freshly dug; neither heeled-in plants nor plants from cold storage will be accepted.
6. Plant sizes specified are to be considered minimum. contractor shall notify the Landscape Architect of any discrepancy.
7. All plants shall be subject to inspection and approval by the Landscape Architect and BPCPC. The Landscape Architect reserves the right to reject unacceptable plant material on or after delivery to the site.
8. All topsoil shall be free of all soil-borne disease and pests, as well as weed seeds and bulbs.
9. All planting shall be mulched as per specifications immediately after planting. All mulch shall be free of any injurious substance and debris of any kind. Mulch shall be spread to the depths indicated on the drawings.
10. All plants shall be in accordance with Ansi Z60.1 latest edition.
11. Layout of plant material shall be placed in the filed under the supervision of the Landscape Architect and Battery Park City Parks Conservancy.
12. All plant material shall be sourced upon commencement of work.
13. Any plant material not available in the sizes indicated shall be contract grown.



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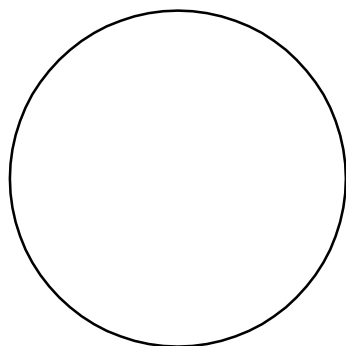
Shari C. Hyman
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PROJECT:
**IRISH HUNGER MEMORIAL
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NEW YORK, NY 10004**

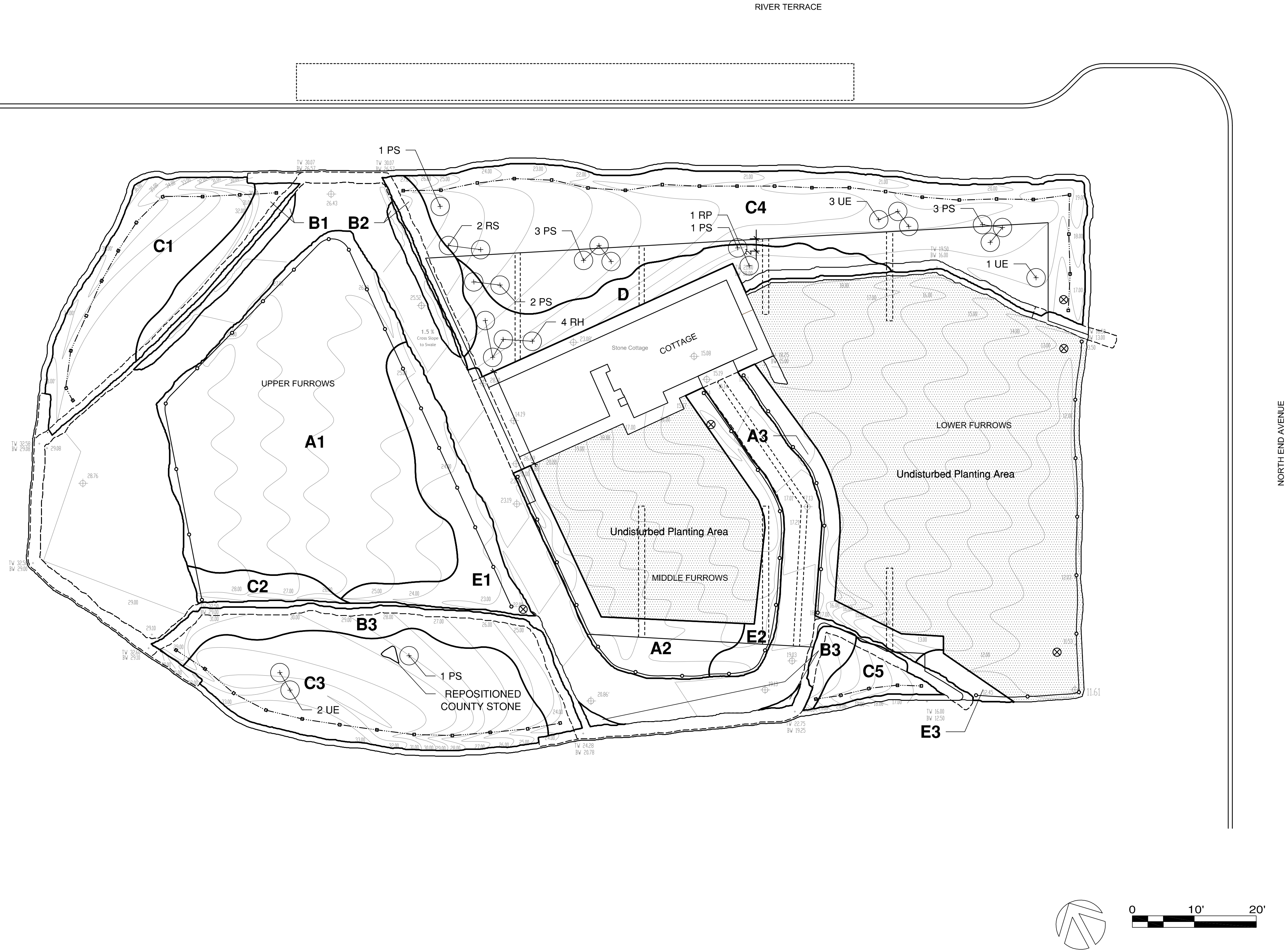
DRAWING TITLE:

PLANTING
PLAN

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DATE: 16 JULY 2015
PROJECT No: 14215
DRAWING BY: JD
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L-300.00
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MASTER PLANTING SCHEDULE

ABB.	QTY	BOTANICAL NAME	COMMON NAME	SIZE/FORM	SPACING	PLAN KEY	NOTES
HERBACEOUS ANNUALS AND PERENNIALS							
DP	72	Digitalis purpurea	Foxglove	#1 Cont.	18" o.c.	D	Must be straight species, no clones or hybrids.
GsG	242	Geranium sanguineum	Bloody Cranesbill	Quart	12" o.c.	A,B	
GsR	242	Geranium robertianum	Herb Robert	Quart	12" o.c.	A,B	Cool season plant
IP	427	Iris pseudoacorus	Yellow Flag	Quart	12" o.c.	E	
LV	3lb	Leuchanthemum vulgare	Oxeye Daisy	Seed		D	To be hand sown at time of planting.
MV	3lb	Matricaria vulgare	Chamomile	Seed		B	
PD	2lb	Papaver dubium	Long Headed Poppy	Seed		A,B	To be hand sown at time of planting.
PR	2lb	Papaver rhoeas	Corn Poppy	Seed		A,B	To be hand sown at time of planting.
PE	2lb	Potentilla erecta	Common Tormenil	Seed		B,C	To be hand sown at time of planting.
P	2lb	Primula veris	Primrose	Quart	12" o.c.	D	
RaC	522	Ranunculus acris 'Multiplex'	Meadow Buttercup	Quart	12" o.c.	B,C	Cool season plant
SaG	522	Sedum acre 'Golden Acre'	Golden Acre Stonecrop	Plug	6" o.c.	B	Stone Walls
SaM	82	Sedum album 'Murale'	Murale White Stonecrop	Plug	6" o.c.	B	Stone Walls
SRe	82	Sedum reflexum	Reflexed Stonecrop	Plug	6" o.c.	B	Stone Walls
SRo	82	Sedum roseum	Rosy Stonecrop	Plug	6" o.c.	B	Stone Walls
TsP	349	Thymus serpyllum 'Purple Carpet'	Purple Carpet Thyme	Quart	12" o.c.	B,C	Stone Walls
TpC	46	Thymus praecox 'Coccineus'	Coccineus Thyme	Quart	12" o.c.	B	Stone Walls
VP	3lb	Viola palustris	Marsh Violet	Seed		A,E	Cool season to be hand sown at planting.
VR	3lb	Viola riviniana	Dog Violet	Seed		A,E	Cool season to be hand sown at planting.
GRASSES, RUSHES, AND SEDGES							
AOp	529	Anthoxanthum odoratum	Sweet Vernal Grass	Plug	6" o.c.	A	
AO	3lb	Anthoxanthum odoratum	Sweet Vernal Grass	Seed		A	
ASp	529	Agrostis stolonifera	Creeping Bentgrass	Plug	6" o.c.	A,B	
AS	3lb	Agrostis stolonifera	Creeping Bentgrass	Seed		A,B	
BD	5lb	Buchloe dactyloides	Buffalograss	Seed		B	Dry rough areas and walls only.
CA	529	Carex anectens	Yellowfruit Sedge	Plugs	6" o.c.	A	
CAX	529	Carex anectens xanthrocarpa	Yellow Fox Sedge	Plugs	6" o.c.	A	
CSh	529	Carex shortiana	Short's Sedge	Plugs	6" o.c.	A	
CSt	529	Carex stricta	Tussock Sedge	Plugs	6" o.c.	A	
FOp	1587	Festuca ovina	Sheep Fescue	Plugs	6" o.c.	A	
FO	5lb	Festuca ovina	Sheep Fescue	Seed		A	
FRp	1058	Festuca rubra	Red Fescue	Plug	6" o.c.	A	
FR	5lb	Festuca rubra	Red Fescue	Seed		A	
JE	127	Juncus effusus	Common Rush	#1 Cont.	18" o.c.	E	
KM	1058	Koeleria macrantha	Prarie Junegrass	Plugs	6" o.c.	A	
KC	1058	Koeleria cristata	Crested hair-grass	Plugs	6" o.c.	A	
ML	3lb	Medicago lupulina	Black Medic	Seed		A	To be hand sown at time of planting.
TR	3lb	Trifolium repens	White Clover	Seed		A	To be hand sown at time of planting.
DWARF SHRUBS AND WOODY PLANTS							
CvK	1216	Calluna vulgaris 'Kinlochruel'		Quart	12" o.c.	C	NOTES
EtG	456	Erica tetralix 'George Frazer'		Quart	12" o.c.	C	
EdK	456	Erica x darleyensis 'Kramer's Rote'		Quart	12" o.c.	C	NOTES
PS	11	Prunus spinosa	Blackthorn	#1 Cont.	See Plan	See Locations on Plan	Containerize and protect existing plants.
RH	4	Rosa hibernica	Smith Rose	#1 Cont.	See Plan	See Locations on Plan	Containerize and protect existing plants.
RP	1	Rosa pimpinellifolia	Burnet Rose	#1 Cont.	See Plan	See Locations on Plan	NOTES
RS	2	Rosa spinosissima	Scotch Rose	#1 Cont.	See Plan	See Locations on Plan	Containerize and protect existing plants.
UE	6	Ulex europaeus	Common Gorse	#1 Cont.	See Plan	See Locations on Plan	Containerize and protect existing plants.
VINES							
CV	6	Clematis vitalba	Old Man's Beard	#1		At cottage	At cottage as directed in the field.

PLANTING SCHEDULE BY AREA

SYM.	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTE
AOp	420	Anthoxanthum odoratum	Sweet Vernal Grass	Plug	
AO	VIF	Anthoxanthum odoratum	Sweet Vernal Grass	Seed	
ASp	420	Agrostis stolonifera	Creeping Bentgrass	Plug	
AS	VIF	Agrostis stolonifera	Creeping Bentgrass	Seed	
CA	420	Carex anectens	Yellowfruit Sedge	Plugs	
CAX	420	Carex anectens xanthrocarpa	Yellow Fox Sedge	Plugs	
CSh	420	Carex shortiana	Short's Sedge	Plugs	
CSt	420	Carex stricta	Tussock Sedge	Plugs	
FOp	1259	Festuca ovina	Sheep Fescue	Plugs	
FO	VIF	Festuca ovina	Sheep Fescue	Seed	
FRp	840	Festuca rubra	Red Fescue	Plug	
FR	VIF	Festuca rubra	Red Fescue	Seed	
GsG	168	Geranium sanguineum	Bloody Cranesbill	Quart	
GsR	168	Geranium robertianum	Herb Robert	Quart	
KM	840	Koeleria macrantha	Prarie Junegrass	Plugs	
KC	840	Koeleria cristata	Crested hair-grass	Plugs	
ML	VIF	Medicago lupulina	Black Medic	Seed	
PD	VIF	Papaver dubium	Long Headed Poppy	Seed	
PR	VIF	Papaver rhoeas	Corn Poppy	Seed	
VP	VIF	Viola palustris	Marsh Violet	Seed	
VR	VIF	Viola riviniana	Dog Violet	Seed	
TR	VIF	Trifolium repens	White Clover	Seed	

SYM.	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTE
AOp	64	Anthoxanthum odoratum	Sweet Vernal Grass	Plug	
AO	VIF	Anthoxanthum odoratum	Sweet Vernal Grass	Seed	
ASp	64	Agrostis stolonifera	Creeping Bentgrass	Plug	
AS	VIF	Agrostis stolonifera	Creeping Bentgrass	Seed	
CA	64	Carex anectens	Yellowfruit Sedge	Plugs	
CAX	64	Carex anectens xanthrocarpa	Yellow Fox Sedge	Plugs	
CSh	64	Carex shortiana	Short's Sedge	Plugs	
CSt	64	Carex stricta	Tussock Sedge	Plugs	
FOp	192	Festuca ovina	Sheep Fescue	Plugs	
FO	VIF	Festuca ovina	Sheep Fescue	Seed	
FRp	128	Festuca rubra	Red Fescue	Plug	
FR	VIF	Festuca rubra	Red Fescue	Seed	
GsG	26	Geranium sanguineum	Bloody Cranesbill	Quart	
GsR	26	Geranium robertianum	Herb Robert	Quart	
KM	28	Koeleria macrantha	Prarie Junegrass	Plugs	
KC	28	Koeleria cristata	Crested hair-grass	Plugs	
ML	VIF	Medicago lupulina	Black Medic	Seed	
PD	VIF	Papaver dubium	Long Headed Poppy	Seed	
PR	VIF	Papaver rhoeas	Corn Poppy	Seed	
VP	VIF	Viola palustris	Marsh Violet	Seed	
VR	VIF	Viola riviniana	Dog Violet	Seed	
TR	VIF	Trifolium repens	White Clover	Seed	

PLANTING SCHEDULE BY AREA - Continued

SYM.	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTE
AOp	45	Anthoxanthum odoratum	Sweet Vernal Grass	Plug	
AO	VIF	Anthoxanthum odoratum	Sweet Vernal Grass	Seed	
ASp	45	Agrostis stolonifera	Creeping Bentgrass	Plug	
AS	VIF	Agrostis stolonifera	Creeping Bentgrass	Seed	
CA	45	Carex anectens	Yellowfruit Sedge	Plugs	
CAX	45	Carex anectens xanthrocarpa	Yellow Fox Sedge	Plugs	
CSh	45	Carex shortiana	Short's Sedge	Plugs	
CSt	45	Carex stricta	Tussock Sedge	Plugs	
FOp	136	Festuca ovina	Sheep Fescue	Plugs	
FO	VIF	Festuca ovina	Sheep Fescue	Seed	
FRp	91	Festuca rubra	Red Fescue	Plug	
FR	VIF	Festuca rubra	Red Fescue	Seed	
GsG	18	Geranium sanguineum	Bloody Cranesbill	Quart	
GsR	18	Geranium robertianum	Herb Robert	Quart	
KM	91	Koeleria macrantha	Prarie Junegrass	Plugs	
KC	91	Koeleria cristata	Crested hair-grass	Plugs	
ML	VIF	Medicago lupulina	Black Medic	Seed	
PD	VIF	Papaver dubium	Long Headed Poppy	Seed	
PR	VIF	Papaver rhoeas	Corn Poppy	Seed	
VP	VIF	Viola palustris	Marsh Violet	Seed	
VR	VIF	Viola riviniana	Dog Violet	Seed	
TR	VIF	Trifolium repens	White Clover	Seed	

B1185 SF

SYM.	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTE
ASp	43	Agrostis stolonifera	Creeping Bentgrass	Plug	
AS	VIF	Agrostis stolonifera	Creeping Bentgrass	Seed	
BD	VIF	Buchloe dactyloides	Buffalograss	Seed	
GsG	43	Geranium sanguineum	Bloody Cranesbill	Quart	
GsR	43	Geranium robertianum	Herb Robert	Quart	
MV	VIF	Matricaria vulgare	Chamomile	Seed	
PD	VIF	Papaver dubium	Long Headed Poppy	Seed	
PR	VIF	Papaver rhoeas	Corn Poppy	Seed	
PE	VIF	Potentilla erecta	Common Tormenil	Seed	
RaC	28	Ranunculus acris 'Multiplex'	Meadow Buttercup	Quart	
SaG	34	Sedum acre 'Golden Acre'	Golden Acre Stonecrop	Plug	
SaM	34	Sedum album 'Murale'	Murale White Stonecrop	Plug	
SRe	34	Sedum reflexum	Reflexed Stonecrop	Plug	
SRo	34	Sedum roseum	Rosy Stonecrop	Plug	
TsP	19	Thymus s. 'Purple Carpet'	Purple Carpet Thyme	Quart	
TpC	19	Thymus praecox 'Coccineus'	Coccineus Thyme	Quart	

B2180 SF

SYM.	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTE
ASp	42	Agrostis stolonifera	Creeping Bentgrass	Plug	
AS	VIF	Agrostis stolonifera	Creeping Bentgrass	Seed	
BD	VIF	Buchloe dactyloides	Buffalograss	Seed	
GsG	12	Geranium sanguineum	Bloody Cranesbill	Quart	
GsR	12	Geranium robertianum	Herb Robert	Quart	
MV	VIF	Matricaria vulgare	Chamomile	Seed	
PD	VIF	Papaver dubium	Long Headed Poppy	Seed	
PR	VIF	Papaver rhoeas	Corn Poppy	Seed	
PE	VIF	Potentilla erecta	Common Tormenil	Seed	
RaC	27	Ranunculus acris 'Multiplex'	Meadow Buttercup	Quart	
SaG	33	Sedum acre 'Golden Acre'	Golden Acre Stonecrop	Plug	
SaM	33	Sedum album 'Murale'	Murale White Stonecrop	Plug	
SRe	33	Sedum reflexum	Reflexed Stonecrop	Plug	
SRo	33	Sedum roseum	Rosy Stonecrop	Plug	
TsP	19	Thymus s. 'Purple Carpet'	Purple Carpet Thyme	Quart	
TpC	19	Thymus praecox 'Coccineus'	Coccineus Thyme	Quart	

B375 SF

SYM.	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTE
ASp	17	Agrostis stolonifera	Creeping Bentgrass	Plug	
AS	VIF	Agrostis stolonifera	Creeping Bentgrass	Seed	
BD	VIF	Buchloe dactyloides	Buffalograss	Seed	
GsG	5	Geranium sanguineum	Bloody Cranesbill	Quart	
GsR	5	Geranium robertianum	Herb Robert	Quart	
MV	VIF	Matricaria vulgare	Chamomile	Seed	
PD	VIF	Papaver dubium	Long Headed Poppy	Seed	
PR	VIF	Papaver rhoeas	Corn Poppy	Seed	
PE	VIF	Potentilla erecta	Common Tormenil	Seed	
RaC	11	Ranunculus acris 'Multiplex'	Meadow Buttercup	Quart	
SaG	14	Sedum acre 'Golden Acre'	Golden Acre Stonecrop	Plug	
SaM	14	Sedum album 'Murale'	Murale White Stonecrop	Plug	
SRe	14	Sedum reflexum	Reflexed Stonecrop	Plug	
SRo	14	Sedum roseum	Rosy Stonecrop	Plug	
TsP	8	Thymus s. 'Purple Carpet'	Purple Carpet Thyme	Quart	
TpC	8	Thymus praecox 'Coccineus'	Coccineus Thyme	Quart	

C1573 SF

SYM.	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTE
CvK	199	Calluna vulgaris 'Kinlochruel'	Kinlochruel Heather	Quart	
EtG	75	Erica tetralix 'George Frazer'	George Frazer Heath	Quart	
EdK	75	Erica x darleyensis 'Kramer's Rote'	Kramer's Rote Heath	Quart	
PE	VIF	Potentilla erecta	Common Tormenil	Seed	
RaC	75	Ranunculus acris 'Multiplex'	Meadow Buttercup	Quart	
TsP	50	Thymus serpyllum 'Purple Carpet'	Purple Carpet Thyme	Quart	

C2100 SF

SYM.	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTE
CvK	35	Calluna vulgaris 'Kinlochruel'	Kinlochruel Heather	Quart	
EtG	13	Erica tetralix 'George Frazer'	George Frazer Heath	Quart	
EdK	13	Erica x darleyensis 'Kramer's Rote'	Kramer's Rote Heath	Quart	
PE	VIF	Potentilla erecta	Common Tormenil	Seed	
RaC	13	Ranunculus acris 'Multiplex'	Meadow Buttercup	Quart	
TsP	9	Thymus serpyllum 'Purple Carpet'	Purple Carpet Thyme	Quart	

C3850 SF

SYM.	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTE
CvK	296	Calluna vulgaris 'Kinlochruel'	Kinlochruel Heather	Quart	
EtG	111	Erica tetralix 'George Frazer'	George Frazer Heath	Quart	
EdK	111	Erica x darleyensis 'Kramer's Rote'	Kramer's Rote Heath	Quart	
PE	VIF	Potentilla erecta	Common Tormenil	Seed	
RaC	111	Ranunculus acris 'Multiplex'	Meadow Buttercup	Quart	
TsP	74	Thymus serpyllum 'Purple Carpet'	Purple Carpet Thyme	Quart	

C41862 SF

SYM.	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTE
CvK	648	Calluna vulgaris 'Kinlochruel'	Kinlochruel Heather	Quart	
EtG	243	Erica tetralix 'George Frazer'	George Frazer Heath	Quart	
EdK	243	Erica x darleyensis 'Kramer's Rote'	Kramer's Rote Heath	Quart	
PE	VIF	Potentilla erecta	Common Tormenil	Seed	
RaC	243	Ranunculus acris 'Multiplex'	Meadow Buttercup	Quart	
TsP	162	Thymus serpyllum 'Purple Carpet'	Purple Carpet Thyme	Quart	

C5108 SF

SYM.	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTE
CvK	38	Calluna vulgaris 'Kinlochruel'	Kinlochruel Heather	Quart	
EtG	14	Erica tetralix 'George Frazer'	George Frazer Heath	Quart	
EdK	14	Erica x darleyensis 'Kramer's Rote'	Kramer's Rote Heath	Quart	
PE	VIF	Potentilla erecta	Common Tormenil	Seed	
RaC	14	Ranunculus acris 'Multiplex'	Meadow Buttercup	Quart	
TsP	9	Thymus serpyllum 'Purple Carpet'	Purple Carpet Thyme	Quart	

D 400 SF

SYM.	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTE
DP	72	Digitalis purpurea	Foxglove	#1	
LV	VIF	Leuchanthemum vulgare	Oxeye Daisy	Seed	
P	VIF	Primula veris	Primrose	Seed	

E1387 SF

SYM.	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTE
IP	267	Iris pseudoacorus	Yellow Flag	Quart	
JE	79	Juncus effusus	Common Rush	#1	

E2187 SF

SYM	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTE
IP	129	Iris pseudoacorus	Yellow Flag	Quart	
JE	38	Juncus effusus	Common Rush	#1	

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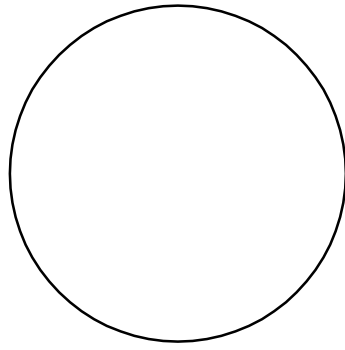
Hector Batista
Board Member

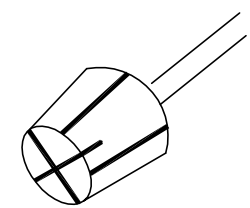
Shari C. Hyman
President
Chief Operating Officer

PROJECT:
**IRISH HUNGER MEMORIAL
RESTORATION
VESEY GREEN
NEW YORK, NY 10004**

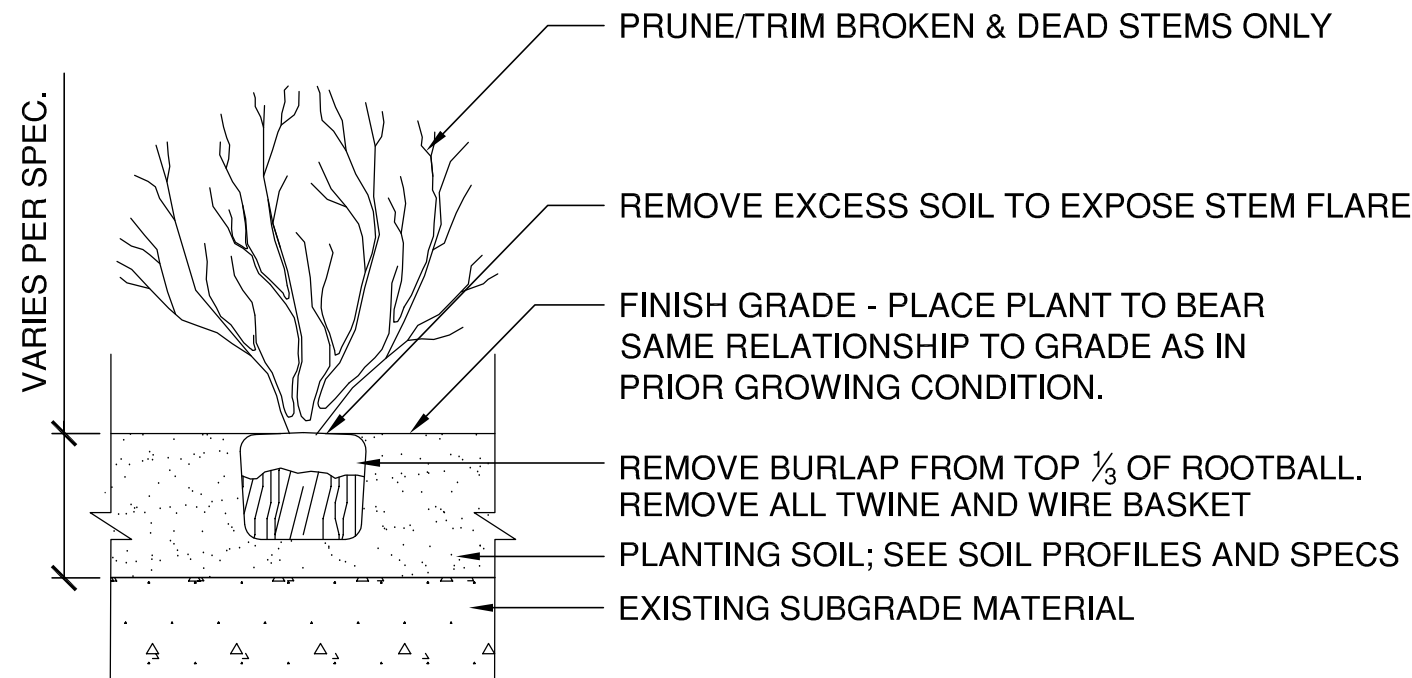
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PLANTING
DETAILS

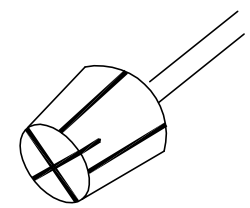
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CADD FILE No:		19 of 23



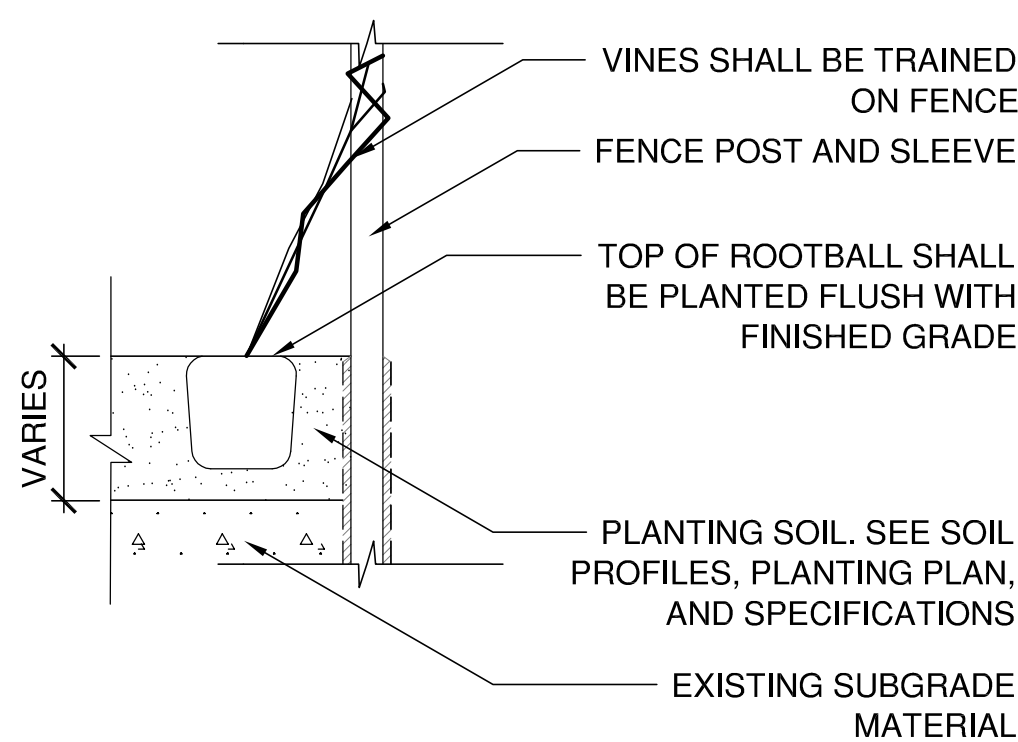
CUTTING PATTERN FOR ROOT
BOUND CONTAINER STOCK



3 Typical Shrub Planting
SCALE: 1/2" = 1'-0"



CUTTING PATTERN FOR ROOT
BOUND CONTAINER STOCK



2 Typical Vine Planting
SCALE: 1/2" = 1'-0"

Notes: Plug Planting

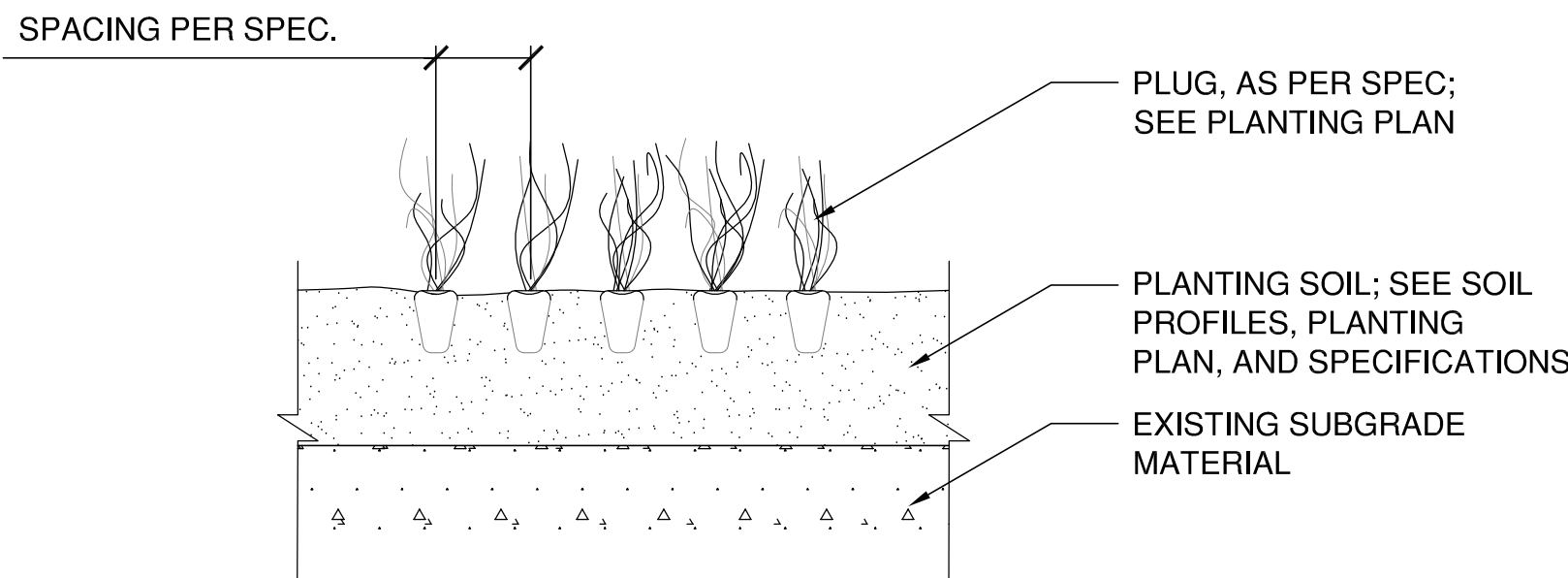
1. Plug roots should be white and rooted through sides and bottom and firmly contained therein. if not planted immediately after delivered to job site, the plants shall be stored out of direct sunlight and wind with their pots and associated root masses maintained moist through periodic watering until the time of planting.

2. After installing plug stock, firm into place, taking care not to deform.

3. See plan and specifications for plug placement and spacing.

Notes: Plug Acceptance Criteria

1. Provide plug stock with healthy root systems developed by transplanting or root pruning. The extracted root system shall conform to the container dimensions and not be pot bound. roots shall be white in color, firm to the touch, not have "rotten egg" odor, free of disease, insects larvae and defects such as knots, sun-scald, injuries, abrasions, or disfigurement. Any stock not satisfying the above criteria shall be replaced at the contractor's expense.



1 Typical Plug Planting
SCALE: 1/2" = 1'-0"

SYMBOLS LIST

	EXISTING FLUORESCENT CEILING MOUNTED FIXTURE FIXTURE TYPE 'B' CIRCUITING 'A#' <div><div>TYPICAL FIXTURE NOTATION</div></div>
	EXISTING FLUORESCENT CEILING MOUNTED FIXTURE TO BE REMOVED AND REPLACED WITH NEW FIXTURE TYPE 'B' CIRCUITING 'A#' <div><div>TYPICAL FIXTURE NOTATION</div></div>
	EXISTING 2 LAMP VAPORPROOF FLUORESCENT LIGHT FIXTURE 4'-0" NATIONAL, METALLUX OR EQUAL
	EXISTING 2 LAMP VAPORPROOF FLUORESCENT LIGHT FIXTURE 4'-0" NATIONAL, METALLUX OR EQUAL PROVIDE FIXTURE WITH EMERGENCY LIGHTING BALLAST.
	EXISTING WALL MOUNTED JUNCTION BOX (J-BOX) WITH HOMERUN CIRCUIT AND FLEXIBLE CONNECTION TO EQUIPMENT. USE SEALTITE FOR OUTDOOR CONNECTIONS.
	REMOVE EXISTING WALL MOUNTED JUNCTION BOX (J-BOX) AND REPLACE WITH NEW JUNCTION BOX.
	HOMERUN TC INDICATES LEADS TO RELAY AND TIME CLOCK CONTROLLED.
	FUSED DISCONNECT SWITCH. FUSE TO BE EQUAL TO OR LESS THAN THE WIRING AMPACITY.
	UNFUSED DISCONNECT SWITCH. SWITCH SIZE TO BE GREATER THEN OR EQUAL TO OVER CURRENT PROTECTION. U.O.N.

ELECTRICAL GENERAL NOTES

- DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. FOLLOW DRAWING IN LAYING OUT WORK AND CHECK DRAWINGS OF OTHER TRADES TO VERIFY SPACE CONDITIONS. MAINTAIN HEADROOM AND SPACE CONDITIONS.
- SECURE ALL SUPPORTS TO BUILDING STRUCTURE UTILIZING TOGGLE BOLTS (HOLLOW MASONRY), EXPANSION SHIELDS OR INSERTS (CONCRETE AND BRICK), MACHINE SCREWS (METAL), BEAM CLAMPS (FRAMEWORK), WOOD SCREWS (WOOD) OR PAN THRU STRAPS (METAL DECK). NAILS, RAWL PLUGS AND WOOD PLUGS ARE NOT PERMITTED. WHERE REQUIRED BY STRUCTURE, PROVIDE THRU BOLTS AND FISH PLATES. SUPPORT HORIZONTAL RUNS OF METALLIC RACEWAYS NOT MORE THAN 10 FT APART. RUN EXPOSED RACEWAYS PARALLEL WITH OR AT RIGHT ANGLES TO WALLS.
- RACEWAYS SHALL BE ALLOWED TO PASS OVER WATER, OR OTHER PIPING WHEN PULL BOXES ARE NOT REQUIRED.
- CUT CONDUIT ENDS SQUARE, REAM SMOOTH. PAINT MALE THREADS OF FIELD THREADED RACEWAYS WITH GRAPHITE BASE PIPE COMPOUND. DRAW UP TIGHT WITH RACEWAY COUPLING.
- LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS. PROVIDE FISH WIRE FOR ALL EMPTY CONDUITS.
- SET BOXES SQUARE AND TRUE WITH BUILDING FINISH.
- COVERS OF JUNCTION AND PULLBOXES SHALL BE READILY ACCESSIBLE.
- DO NOT PULL THERMOPLASTIC WIRES AT TEMPERATURES LOWER THAN 32°F (0°C).
- WIRE COLOR CODING: AS PER CODE. COLOR CODING SHALL MATCH EXISTING INSTALLATION.
- INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS: ONLY WITH WRITTEN CONSENT OF OWNER. MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES. ALARM AND EMERGENCY SYSTEMS ARE NOT TO BE INTERRUPTED.
- ALL LIGHT FIXTURES AND INSTRUMENTS THAT ARE REMOVED SHOULD BECOME THE PROPERTY OF THE CONTRACTOR FOR PROPER DISPOSAL AND SALVAGING/RECYCLING AS REQUIRED BY THE OWNER-BPCA.
- RUN EXPOSED RACEWAYS PARALLEL WITH OR AT RIGHT ANGLES TO WALLS.
- POWER INTERRUPTIONS AND CORE DRILLING ONLY PERMITTED BETWEEN THE HOURS OF 6 PM AND 8 AM. AS APPROVED BY BPCA.
- UPON COMPLETION OF THE WORK, A MARKED UP SET OF "AS-BUILT" DRAWINGS SHALL BE SUBMITTED TO THE OWNER OR ARCHITECT.

ELECTRICAL DEMOLITION NOTES

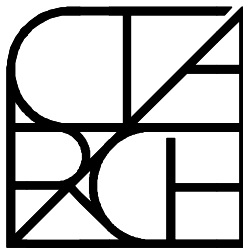
- THE CONTRACTOR SHALL INCLUDE IN THE BID ALL COSTS ASSOCIATED WITH REMOVALS AND RELOCATIONS OF ELECTRICAL WORK AS DESCRIBED IN THE SPECIFICATIONS WITH ALLOWANCES FOR EXPECTED OR UNFORESEEN DIFFICULTIES WHEN CONCEALED WORK HAS BEEN OPENED. NO CLAIMS FOR ADDITIONAL WORK ASSOCIATED WITH DEMOLITION WILL BE ACCEPTED, EXCEPT IN CERTAIN CASES CONSIDERED JUSTIFIABLE BY THE ARCHITECT.
- THE CONTRACTOR SHALL REMOVE AND/OR RELOCATE ALL EXISTING ELECTRICAL WORK WHICH INTERFERES WITH THE NEW ARCHITECTURAL AND ELECTRICAL LAYOUTS IN FULL COORDINATION WITH THE ARCHITECT'S DEMOLITION PLANS. ALL SYSTEMS WHICH ARE NO LONGER REQUIRED TO FUNCTION SHALL BE DE-ENERGIZED AND DISCONNECTED AT THE SOURCE OF THE POWER SUPPLY.
- THE CONTRACTOR SHALL PERFORM DEMOLITION AND REMOVAL WORK WITH MINIMUM INTERFERENCE WITH FUNCTIONING ELECTRICAL SYSTEMS. ALL AFFECTED SYSTEMS SHALL BE RECONNECTED AND RESTORED.
- DEMOLITION AND REMOVAL WORK SHALL BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER. THE CONTRACTOR SHALL PATCH, REPAIR OR OTHERWISE RESTORE ANY DAMAGED INTERIOR OR EXTERIOR BUILDING SURFACE TO ITS ORIGINAL CONDITION.
- WIRING SHALL BE REMOVED BACK TO THE NEAREST ELECTRICAL JUNCTION BOX THAT IS TO REMAIN.
- EXISTING PANEL DIRECTORIES AFFECTED BY THE ALTERATION WORK SHALL BE MODIFIED TO REFLECT THE BRANCH CIRCUIT WIRING CHANGES.
- PORTIONS OF FEEDER RUNS TO BE REMOVED OR ABANDONED AS A RESULT OF DEMOLITION WORK, BUT WHICH ARE REQUIRED TO REMAIN ENERGIZED, SHALL BE CUT AT CONVENIENT LOCATIONS, REROUTED AND RECONNECTED. NEW FEEDER EXTENSIONS SHALL MATCH EXISTING ONES IN ALL RESPECTS, CABLE TYPE, CONDUCTOR AMPACITY, CONDUIT SIZES, ETC.
- THE CONTRACTOR SHALL NOTIFY THE OWNER AT THE APPROPRIATE TIME OF THE PROJECT DEMOLITION AND PHASING SCHEDULE SO THAT REMOVAL OR RELOCATION OF AFFECTED UTILITIES MAY BE CARRIED OUT IN COORDINATION WITH THE PROJECT REQUIREMENTS. THE CONTRACTOR SHALL FOLLOW CLOSELY THE ARCHITECT'S DEMOLITION AND PHASING SCHEDULE AND PROCEED IN THE SPECIFIED SEQUENCE.
- ALL EXISTING MATERIAL AND EQUIPMENT IN USABLE CONDITION, WHICH IS TO BE REMOVED UNDER THIS CONTRACT, SHALL REMAIN PROPERTY OF THE OWNER OR SHALL BE DISPOSED OF BY THE ELECTRICAL CONTRACTOR, AS DIRECTED BY THE OWNER.
- MAINTAIN CONTINUITY OF CIRCUIT WIRING FOR ALL EXISTING DEVICES TO REMAIN.
- DISCONNECT AND REMOVE ALL CONDUIT AND CABLE BACK TO POWER SOURCE FROM DEVICES/FIXTURES SLATED FOR REMOVAL.

ELECTRICAL SCOPE OF WORK

- DISCONNECT AND REMOVE EXISTING NON-FUNCTIONING LIGHT FIXTURES IN THE INTERSTITIAL SPACE OF THE IRISH HUNGER MEMORIAL. A TOTAL OF APPROXIMATELY (31) TYPE 'B' AND (7) TYPE 'B-1' FIXTURES HAVE BEEN IDENTIFIED TO BE REMOVED ON THE PLANS.

TYPE 'B': \$_____ / FIXTURE
TYPE 'B-1': \$_____ / FIXTURE
- PROVIDE NEW SIMILAR QUANTITY OF TYPE 'B' AND TYPE 'B-1' LIGHT FIXTURES TO REPLACE THE EXISTING.
- REUSE EXISTING BRANCH CIRCUITING TO RECONNECT NEW LIGHT FIXTURE.
- PROVIDE A UNIT PRICE COST FOR DISCONNECTING AND REMOVING, PROVIDING A NEW LIGHT FIXTURE AND INSTALLING THE NEW LIGHT FIXTURE AS FOLLOWS:

TYPE 'B': \$_____ / FIXTURE
TYPE 'B-1': \$_____ / FIXTURE



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Shari C. Hyman
President
Chief Operating Officer

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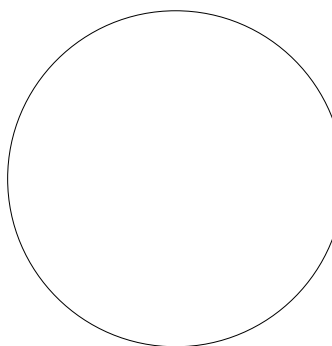
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RESTORATION

VESEY GREEN
NEW YORK, NY 10004

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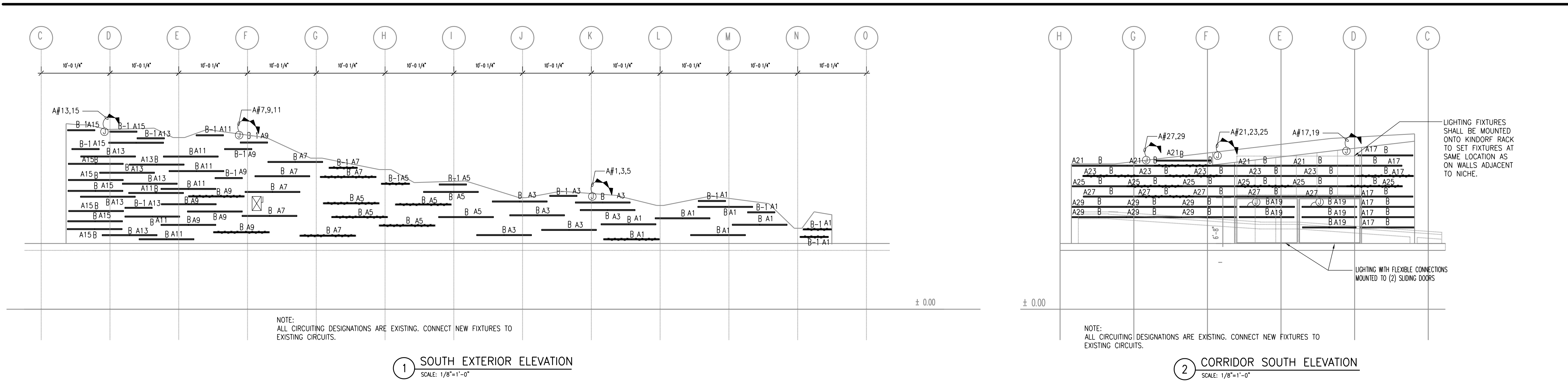
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DRAWING LIST

SEAL & SIGNATURE:



DATE: 16 JULY 2015
PROJECT No: 14215
DRAWING BY: SL
CHECKED BY: AH
DWG No:
E-001.00
CADD FILE No: 20 of 23

ELECTRICAL DRAWING LIST	
E-001.00	ELECTRICAL SYMBOLS, NOTES & DRAWING LIST
E-100.00	ELECTRICAL LIGHTING PLAN 1 OF 2
E-101.00	ELECTRICAL LIGHTING PLAN 2 OF 2
E-200.00	ELECTRICAL SPECIFICATIONS



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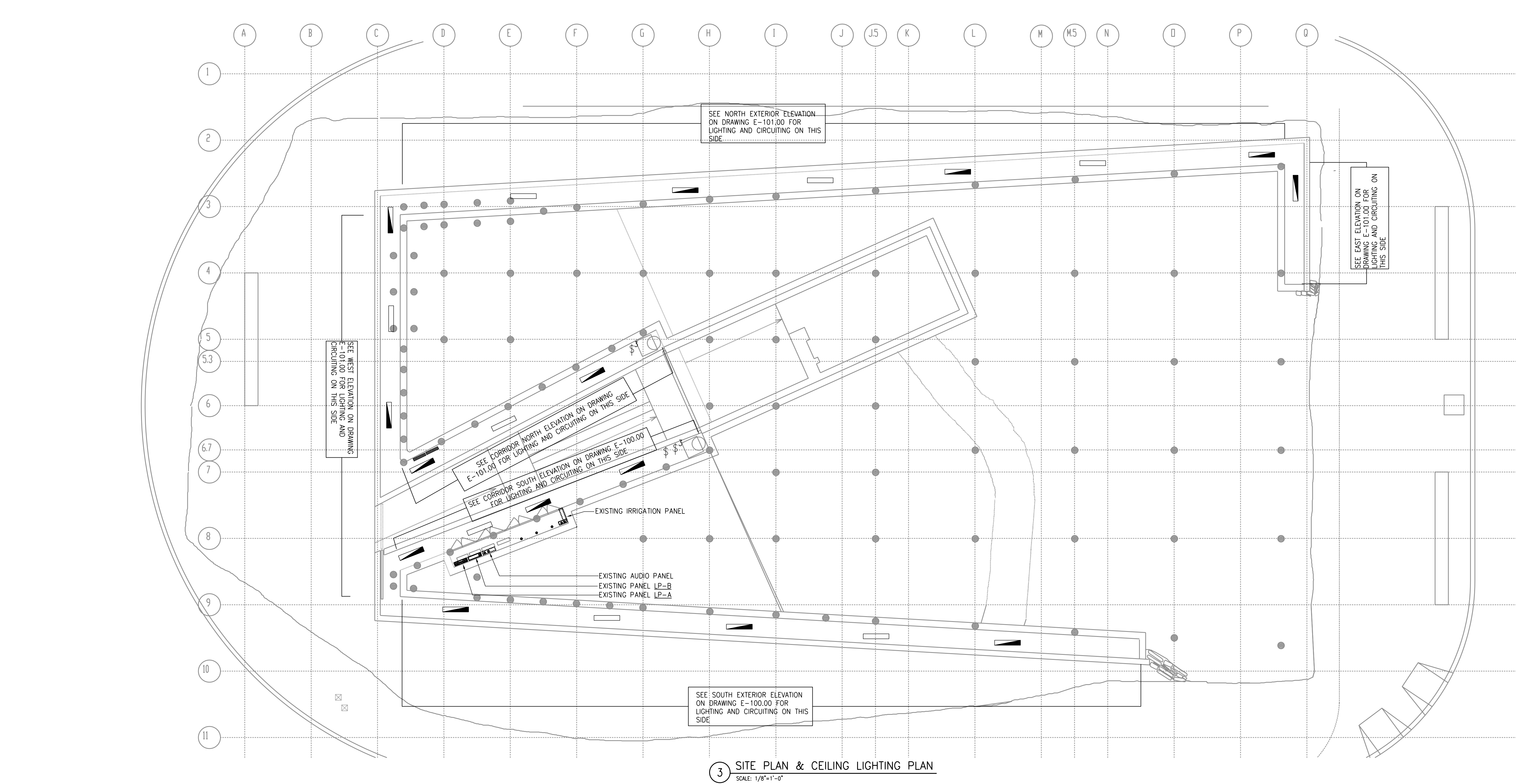
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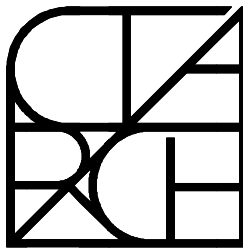
Hector Batista
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PROJECT:
IRISH HUNGER MEMORIAL RESTORATION
VESEY GREEN
NEW YORK, NY 10004

DRAWING TITLE:
ELECTRICAL LIGHTING
PLAN 1 OF 2

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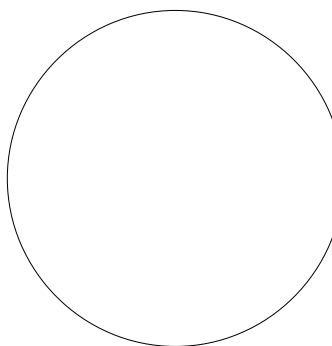
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**IRISH HUNGER MEMORIAL
RESTORATION**
VESEY GREEN
NEW YORK, NY 10004

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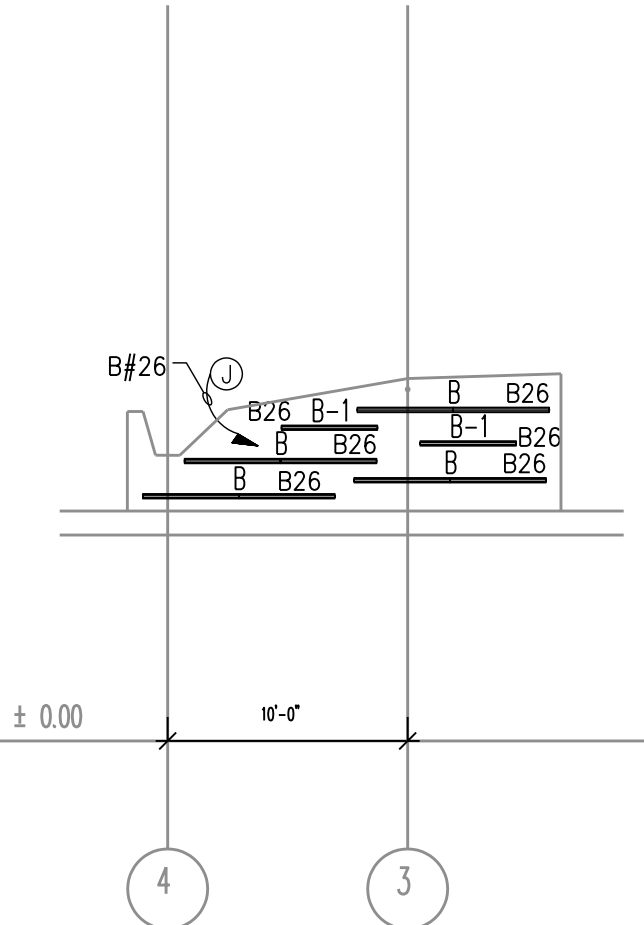
ELECTRICAL LIGHTING

PLAN 2 OF 2

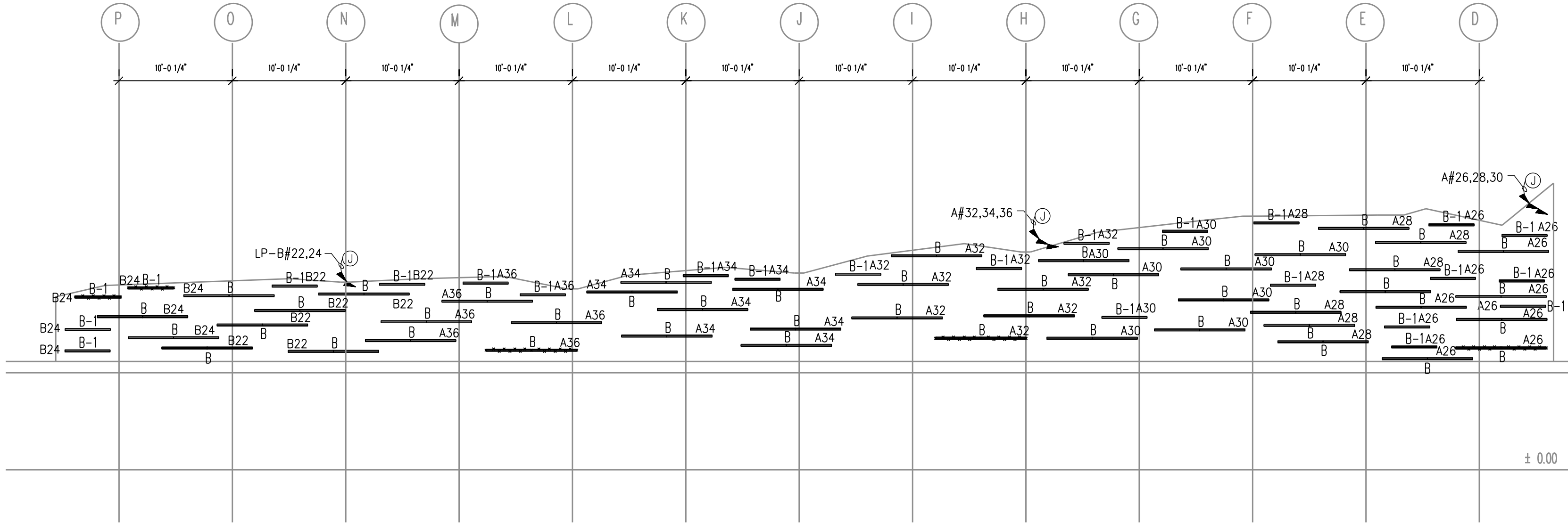
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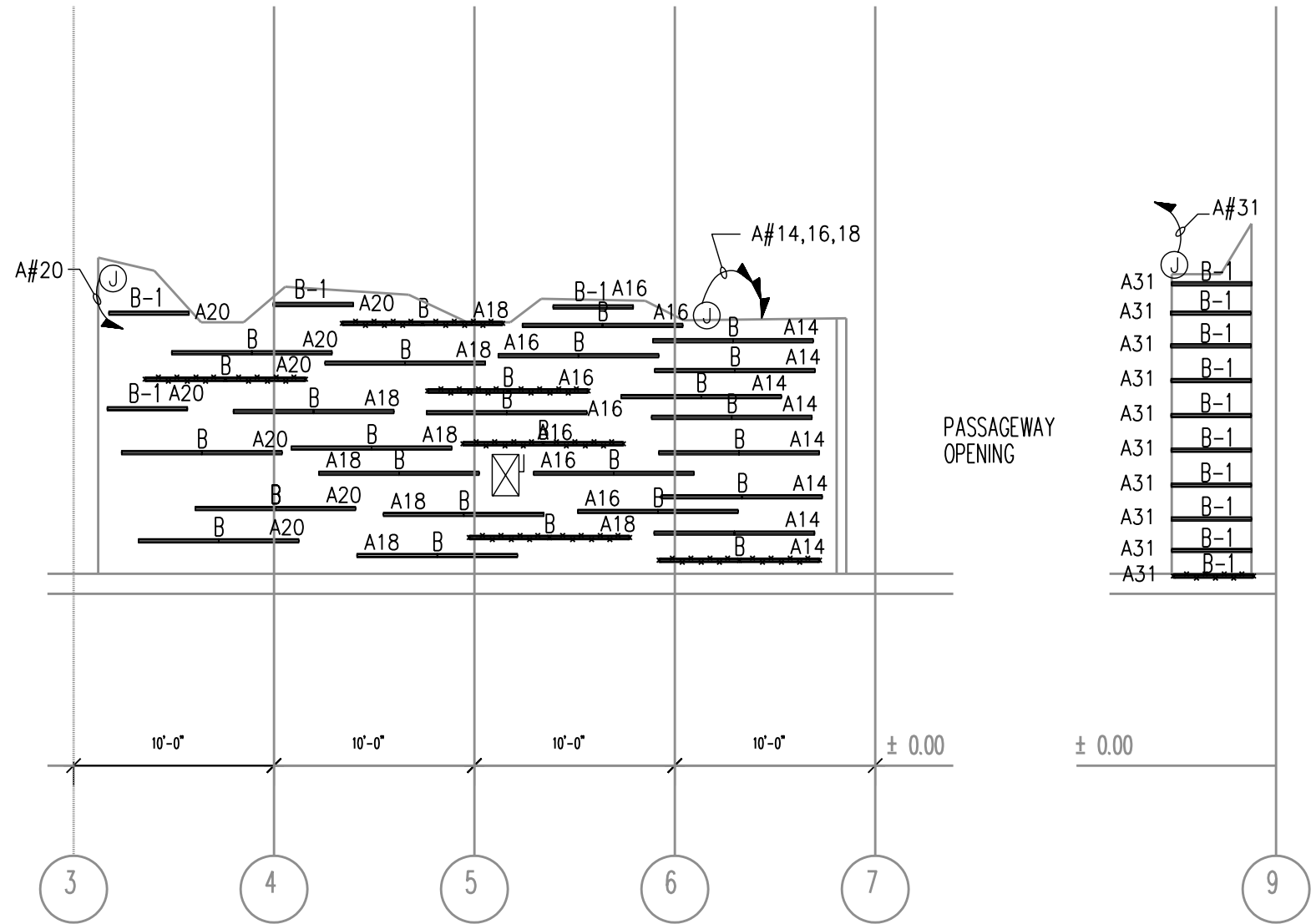


1 EAST ELEVATION
SCALE: 1/8"=1'-0"



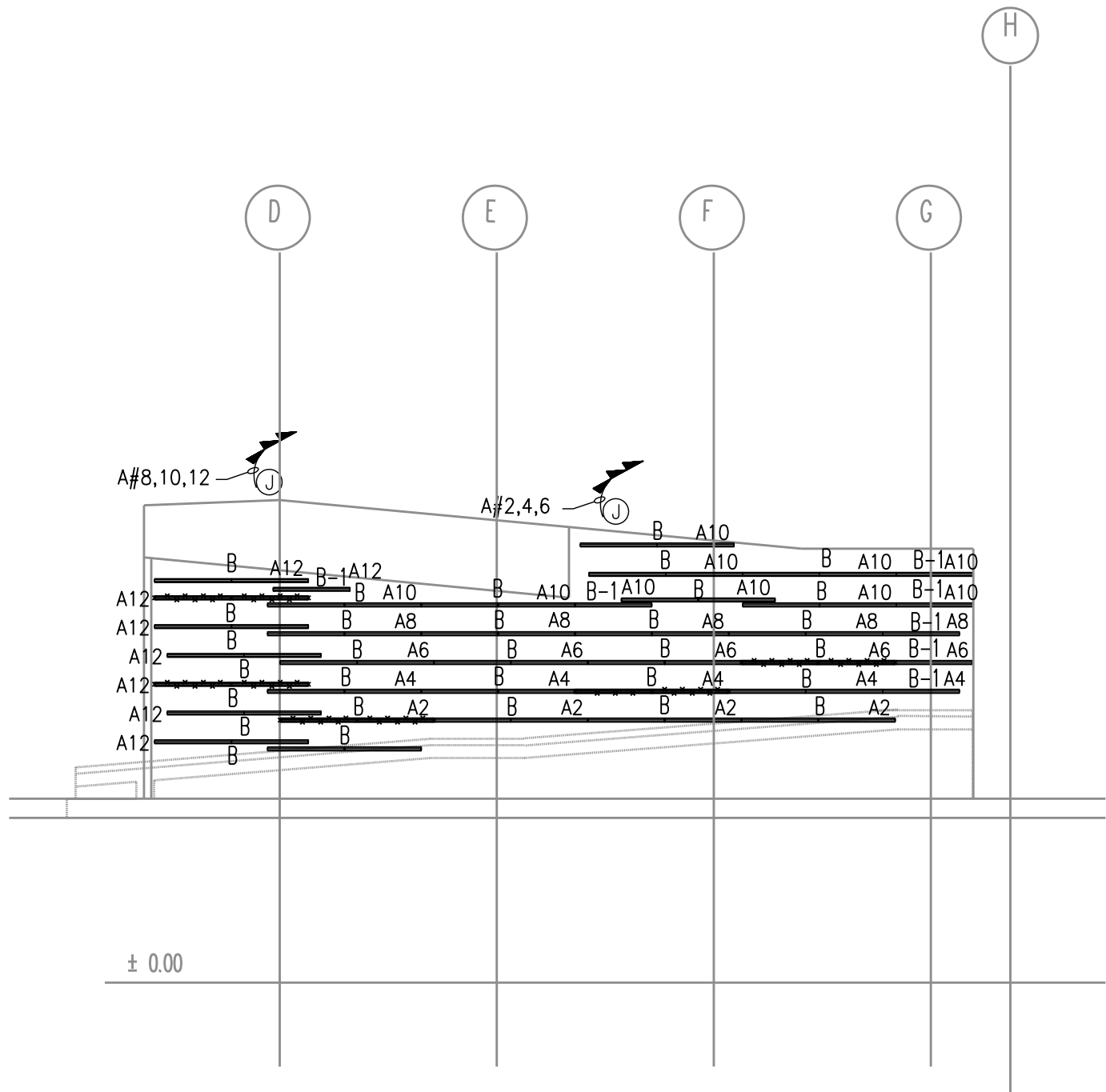
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EXISTING CIRCUITS.

2 NORTH EXTERIOR ELEVATION
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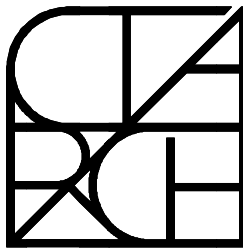
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3 WEST ELEVATION
SCALE: 1/8"=1'-0"



NOTE:
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EXISTING CIRCUITS.

4 CORRIDOR NORTH ELEVATION
SCALE: 1/8"=1'-0"



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PROJECT:
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RESTORATION**
VESEY GREEN
NEW YORK, NY 10004

DRAWING TITLE:

ELECTRICAL SPECIFICATIONS

SEAL & SIGNATURE:	DATE: 16 JULY 2015
	PROJECT No: 14215
	DRAWING BY: SL
	CHECKED BY: AH
	DWG No:
	E-200.00
CADD FILE No:	23 of 23

- ELECTRICAL WORK
1. GENERAL:
- A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.
- B. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIAL WHICH VIOLATES ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
- C. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. CONDUIT ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF CONDUIT TO AVOID OBSTRUCTIONS. COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED. MAINTAIN HEADROOM AND SPACE CONDITIONS.
- D. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
- E. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES, AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF OWNER. ALARM AND EMERGENCY SYSTEMS SHALL NOT BE INTERRUPTED. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.
- F. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.
- G. PROVIDE ALL NECESSARY FLASHING AND COUNTERFLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF CONDUIT AND EQUIPMENT.
- H. ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.
- I. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
- J. ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BATTERY PARK CITY AUTHORITY (BPCA) STANDARDS.
- K. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT A CAREFUL EXAMINATION OF THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC., WHICH AFFECT THIS WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. THE CONTRACTOR IS RESPONSIBLE TO INDICATE ANY DISCREPANCIES BETWEEN THE CONTRACT DRAWINGS AND ACTUAL FIELD CONDITIONS PRIOR TO SUBMITTAL OF BID. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION. THE ON-SITE INSPECTION SHALL VERIFY EXISTING CONDUIT (SIZES, CLEARANCES, ETC) AND CONDITIONS.
- L. INSURANCE: IN ACCORDANCE WITH BPCA REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
- M. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.
2. SCOPE OF WORK:
- A. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMITY WITH THE NATIONAL ELECTRICAL CODE (NEC) AND ALL OTHER APPLICABLE INDUSTRY, NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.
- B. ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLEMENTED OR SPECIFIED HEREIN.
- C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OF ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY OWNER INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.
- D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH ALL DEPARTMENTS HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.
3. SHOP DRAWINGS
- A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT, CONTRACTOR SHALL PROVIDE COMPLETE SETS OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INDICATING CAPACITY, DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.
- B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:
- PROJECT NAME AND LOCATION
 - NAME OF ARCHITECT AND ENGINEER
 - ITEM IDENTIFICATION
 - APPROVAL STAMP OF PRIME CONTRACTOR
- C. SUBMISSIONS:
- SUBMISSIONS 11 IN. X 17 IN. OR SMALLER: IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE ORIGINAL AND TWO COPIES. OTHERWISE, HE SHALL SUBMIT THREE COPIES. THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (TWO COPIES WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE.
 - SUBMISSIONS LARGER THAN 11 IN. X 17 IN.: SUBMIT THREE PRINTS TO THE ARCHITECT. THE ARCHITECT WILL FORWARD TWO PRINTS TO THE ENGINEER.

- D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:
- WIRE AND CABLE
 - LIGHTING FIXTURES.
4. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS
- A. UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.
- B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE RING BINDERS WITH CLEAR ACETATE COVERS. CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.
- C. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.
- D. REPRODUCIBLE "AS-BUILT" DRAWINGS SHALL BE PROVIDED INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. "AS-BUILT" DRAWINGS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF THE INSTALLATION.
5. GENERAL PROVISIONS FOR ELECTRICAL WORK:
- A. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES. WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.
- B. DEFINITIONS:
- "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
 - "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
 - "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.
 - "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.
 - "WIRING": RACEWAY, FITTINGS, WIRE, BOXES AND RELATED ITEMS.
 - "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.
 - "NE" OR "EQUAL": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.
 - "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.
- C. QUALITY ASSURANCE
- QUALITY AND GAUGE OF MATERIALS: NEW, BEST OF THEIR RESPECTIVE KINDS, FREE FROM DEFECTS AND LISTED BY UNDERWRITERS' LABORATORIES, INC., OR OTHER NATIONALLY APPROVED TESTING AGENCY AND BEARING THEIR LABEL. MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.
 - GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AS DEFINED IN PARAGRAPH 2.C.
 - CURRENT CHARACTERISTICS:
 - SERVICE: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.
 - DISTRIBUTION: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.
- E. PRODUCT DELIVERY, STORAGE AND HANDLING
- MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.
 - ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS SHALL BE PERMITTED. CHANGES OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW.
- F. MATERIALS
- CABLE TAGS: TAG EACH CONDUCTOR PASSING THROUGH SPLICE OR PULLBOX WITH A WHITE LINEN TAG, INDICATING POINT OF ORIGIN AND TERMINATION OF THE CIRCUIT.
 - INSERTS AND SUPPORTS:
 - INSERTS: STEEL, SLOTTED TYPE, FACTORY PAINTED.
 - SINGLE ROD: SIMILAR TO GRINNELL FIG. 281.
 - MULTI-ROD: SIMILAR TO FEE AND MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS.
 - CLIP FORM NAILS FLUSH WITH INSERTS.
 - MAXIMUM LOADING 75 PERCENT OF RATING.
 - SUPPORTS FROM BUILDING CONSTRUCTION: INSERTS, BEAM CLAMPS, STEEL FISHPLATES (IN CONCRETE FILL ONLY), CANTILEVER BRACKETS OR OTHER MEANS. SUBMIT FOR REVIEW.
 - GROUPED LINES AND SERVICES: TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS.
 - WHERE BUILDING CONSTRUCTION IS INADEQUATE: PROVIDE ADDITIONAL FRAMING. SUBMIT FOR REVIEW.
- G. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED BY ARCHITECT OR ENGINEER. UTILIZE GALVANIZED IRON PRIMER ON PANEL AND PULL BOXES; AFTER FABRICATION, UTILIZE HOT DIPPED GALVANIZED OR DIPPED IN ZINC BASED PRIMER FOR: OUTLET BOXES, JUNCTION BOXES, CONDUIT HANGERS, RODS, INSERTS AND SUPPORTS. ZINC BASED PRIMER WITH FINISH TO MATCH SURROUNDINGS SHALL BE USED FOR MARRED SURFACES OF STEEL EQUIPMENT AND RACEWAYS. A FIELD-APPLIED ZINC BASED PRIME COAT SHALL BE UTILIZED FOR STEEL OR IRONWORK.
- H. BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND ACCEPTANCE. PAINTED EXPOSED WORK SOILED OR DAMAGED; CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.
- I. FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL SWITCHES, RECEPTACLES AND LIGHT FIXTURES SHALL BE VERIFIED WITH ENGINEER.
6. RACEWAYS:
- A. PROVIDE RACEWAYS COMPLETE WITH BOXES, FITTINGS AND ACCESSORIES. CONDUIT OR TUBING SIZES REFERRED TO IN SPECIFICATIONS AND ON DRAWINGS ARE NOMINAL DIAMETERS. MINIMUM DIAMETER SHALL BE 3/4 IN.
- B. MATERIALS
- RACEWAYS:
 - RIGID STEEL CONDUIT: FULL-WEIGHT PIPE, GALVANIZED, THREADED.
 - LIQUIDTIGHT FLEXIBLE STEEL CONDUIT: CONTINUOUS SINGLE STRIP, GALVANIZED WITH OUTER LIQUIDTIGHT, NON-METALLIC JACKET.
 - WIREWAYS: WIRE SHALL BE AS NOTED, MINIMUM NO. 16 GAUGE STEEL WITH GROUND CONTINUITY. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.
 - SURFACE METAL RACEWAY: SIZE AS NOTED. BASE 0.04 IN., COVER 0.25 IN. MATERIAL SHALL BE STEEL. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.
 - FITTINGS AND ACCESSORIES:
 - RIGID STEEL: NONSPUT, THREADED, STEEL OR MALLEABLE IRON. ZINC DIE CAST NOT PERMITTED.

- FLEXIBLE METALLIC CONDUIT: ANGLE WEDGE TYPE WITH INSULATED THROAT.
 - BUSHINGS: METALLIC INSULATED TYPE.
- 3) BOXES:
- OUTLET BOXES: EXCEPT AS OTHERWISE REQUIRED BY CONSTRUCTION, DEVICES OR WIRING, BOXES SHALL BE STAMPED STEEL, 4 IN. SQUARE OR OCTAGON FOR FIXTURES. BOXES SHALL BE 1-1/2 IN. DEEP OR 3 IN. DEEP AS REQUIRED, SURFACE MOUNTED, FURNISH BLANK COVER.
 - JUNCTION AND PULL BOXES: GALVANIZED SHEET STEEL WITH SCREW-ON COVERS, EXCEPT AS NOTED. FURNISH WITH INSULATED SUPPORTS FOR CABLES. LOCATIONS SHALL BE AS NOTED OR REQUIRED AND ACCESSIBLE.

C. JUNCTION AND PULL BOXES SHALL BE LOCATED CLEAR OF OTHER TRADES. BOXES SHALL BE ACCESSIBLE. SUPPORT BOXES FROM BUILDING STRUCTURE, INDEPENDENT OF CONDUIT. SECURE TO BLACK IRON SUPPORT. MOTOR TERMINAL BOXES: COORDINATE WITH MOTOR BRANCH CIRCUIT CONDUIT AND WIRING; ADD BOX VOLUME WHERE REQUIRED.

7. WIRE AND CABLE:

- A. PROVIDE WIRE AND CABLE COMPLETE WITH ACCESSORIES. SIZE REFERENCE SHALL BE AWG EXCEPT AS NOTED.
- B. CONDUCTORS SHALL BE COPPER, ASTM STANDARD SOLID (NO. 10 AND SMALLER) OR STRANDED (NO. 8 AND LARGER). GENERAL USE CABLING SHALL BE NO. 12 MINIMUM. AT 120 VOLTS AND OVER 100 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM.

CONTROL AND ALARM CABLING, EXCEPT AS NOTED, SHALL BE NO. 14 MINIMUM. AT 120 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 12 MINIMUM.

C. INSULATION SHALL BE RUBBER AND THERMOPLASTIC MEETING ASTM AND IPCEA STANDARDS. TYPE THW OR THWN SHALL BE UTILIZED FOR BRANCH CIRCUITS EXCEPT AS NOTED. TYPE SFF-2 SHALL BE UTILIZED FOR BRANCH CIRCUITS LOCATED IN WIRING CHANNELS OF CONTINUOUS FLUORESCENT FIXTURES AND IN AMBIENT TEMPERATURES OVER 90 DEG C.

E. COLOR CODING SHALL BE AS FOLLOWS:

- 120/208 VOLT SYSTEM:
 - BLACK FOR A PHASE
 - RED FOR B PHASE
 - BLUE FOR C PHASE
- NEUTRAL WIRE SHALL UTILIZE WHITE OUTER COVERING THROUGHOUT. EQUIPMENT GROUND WIRE SHALL UTILIZE GREEN OUTER COVERING THROUGHOUT.

F. PROVIDE FLAMEPROOF LINEN OR FIBER TAGS IN ACCESSIBLE LOCATIONS. FOR BRANCH CIRCUITS INDICATE CIRCUIT NUMBER, PHASE AND POINTS OF ORIGIN. FOR CONTROL AND ALARM WIRING INDICATE TYPE (CONTROL OR ALARM), SIZE OF WIRE, AND POINTS OF ORIGIN AND TERMINATIONS.

G. TERMINATIONS, SPLICES AND TAPS UNDER 600 VOLTS: COPPER CONDUCTORS NO. 10 AND SMALLER SHALL UTILIZE COMPRESSION-TYPE OF TWIST-ON SPRING-LOADED CONNECTORS AND CLEAR NYLON-INSULATED COVERING. COPPER CONDUCTORS NO. 8 AND LARGER SHALL UTILIZE MECHANICAL BOLTED PRESSURE OR HYDRAULIC COMPRESSION TYPE USING MANUFACTURER'S RECOMMENDED TOOLING.

H. NOT MORE THAN 3 LIGHTING OR CONVENIENCE OUTLET CIRCUITS SHALL BE INSTALLED IN ONE CONDUIT UNLESS OTHERWISE INDICATED. PULL NO THERMOPLASTIC WIRES AT TEMPERATURES LOWER THAN 32 DEG F.

I. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS.

J. PERFORM CONTINUITY AND INSULATION TESTS. MEGGER TEST 10 PERCENT OF BRANCH CIRCUITS.

PERFORM TESTS PRIOR TO CONNECTING EQUIPMENT AND IN PRESENCE OF AUTHORIZED REPRESENTATIVES. SUBMIT WRITTEN REPORT OF RESULTS. CORRECT OR REPLACE CABLE TESTING BELOW MANUFACTURER'S STANDARDS.

8. LIGHTING FIXTURES:

- A. PROVIDE FIXTURES ("LUMINARIES"), COMPONENTS AND LAMPS. FIXTURES SHALL BE COMPLETELY FACTORY ASSEMBLED, WIRED AND EQUIPPED WITH ALL NECESSARY SOCKETS, BALLASTS, SUPPORTING HARDWARE AND ACCESSORIES. REFER TO DRAWINGS FOR INDIVIDUAL FIXTURE DESCRIPTIONS.
- B. FIXTURE CATALOG NUMBERS USED TO ILLUSTRATE EQUIPMENT TYPE DO NOT NECESSARILY DENOTE REQUIRED MOUNTING EQUIPMENT OR ACCESSORIES. PROVIDE ACCESSORIES TO SUIT.
- C. BALLAST: CLASS P, HIGH POWER FACTOR, LOWEST AVAILABLE NEMA RATED NOISE LEVEL, ET1 AND CBM APPROVED, ENERGY SAVING TYPE. TRIGGER START FOR 24-INCH LAMPS AND RAPID START FOR 48-INCH. TWO LAMP BALLASTS; NO THREE LAMP BALLASTS. BALLASTS SHALL BE ADVANCE MAGNETEK, UNIVERSAL OR EQUAL. ALL BALLASTS SHALL BE LOW TEMPERATURE AND CAPABLE OF OPERATION TO 0 DEGREES FAHRENHEIT.



CTA ARCHITECTS P.C.

PROJECT MANUAL

IRISH HUNGER MEMORIAL RESTORATION
VESEY GREEN
NEW YORK, NEW YORK 10004

16 July 2015

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SECTION 011000 - SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-I Specification sections, apply to work of this section.

1.02 PROJECT/WORK IDENTIFICATION:

A. General: Project name is "Irish Hunger Memorial Restoration" , as shown on Contract Documents prepared by Cutsogeorge Tooman & Allen Architects, P.C. Drawings and Specifications are dated 16 July 2013.

B. Contract Documents: Indicate the Work of the Contract and related requirements and conditions that have an impact on the project. Related requirements, restrictions and conditions to the Contract Documents include, but are not necessarily limited to the following:

1. Existing site conditions and restrictions on the use of the site.
2. Work performed prior to work under this Contract and work performed under a separate contract or Change Order but running in conjunction with work described in these Documents.
3. Alterations and coordination with existing work.
4. Alternates.

C. Summary by References: Work of the Contract can be summarized by references to the Contract, General Conditions, Supplementary Conditions, Specification Sections, Drawings, 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 material referenced by any of these. It is recognized that work of the Contract is also unavoidably affected or influenced by governing regulations, natural phenomenon including weather conditions and other forces outside the Contract Documents.

D. Abbreviated Written Summary: Briefly and without force and effect upon the Contract Documents, the work of the Contract can be summarized as follows:

1. Temporary protection, security and protection of the Public, protection of NIC Plaza and limestone paving areas throughout the entire construction process.
 2. Temporary protection of the public bicycle sharing program bicycle racks ensuring full public access to and use of same is available throughout the entire construction process.
 3. Carefully remove, catalog and store off-site for replacement, stone thresholds and Irish field stone freestanding walls and wall cladding from supporting concrete and/or CMU cores at affected walls in the monument areas. Note all stone is to be reinstalled at the repaired and waterproofed substrates and core walls.
 4. Removal of plant materials per instruction/direction of Landscape Architects. Coordinate removals with/through Owner/BPCPC to allow them the opportunity to remove select plantings for storage off-site by Others.
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5. Excavation of soils from the work areas to be stored off-site at an approved facility, for replacement back on the monument upon completion of the waterproofing and repair of the underlying substrates.
 6. Removal of concrete paving areas including underlying gravel and compacted fill to expose the underlying grade level concrete slab.
 7. Modifications to and flashing of existing trench-drain to remain.
 8. Careful removal of portions of the blank glass panels in the stone cladding at the pass-through entrance corridor to the monument to install ventilation louvers. Installation of louvers per approved shop drawing and sample.
 9. Protection in place of compacted structural fill and drainage membrane located between soil layer and fill layers below exposed by the excavation.
 10. Soils and plantings in the on-grade non-work areas are to be protected in place for the duration of the construction period. Temporary hook-up of watering systems and drainage systems is to be supplied per direction of the Landscape Architect.
 11. Temporarily remove catalog and store existing posts and cables from the perimeter tether rail system. Attachment brackets are to be protected in place for application of waterproofing system and reinstallation of the tether rail system.
 12. Protecting for the existing sub-surface drainage system. Full function must be confirmed before, during construction, and after Substantial and Final completion.
 13. Removal and replacement of existing metal vault hatches per approval of Owner and Artist.
 14. Removal and replacement of existing wood fence posts set in metal sleeves in the soil and wire fence at the work areas.
 15. Carefully remove, catalog and store off-site for replacement existing standing stone , boulders, County-stones and other miscellaneous landmarks within the monument site which may be disturbed by the contract work. VIF. All stones are to be replaced back in their current locations upon completion of the contract work.
 16. All electrical conduit exposed during excavation is to be protected, cataloged, and function verified for replacement as part of the construction work. Verify exact locations in the field.
 17. Replacement of through wall drainage pipes per field direction and per recommendations of the Landscape Architect.
 18. Removal of existing waterproofing assembly from the exposed raised concrete areas and CMU/Concrete core walls. Note existing resin based waterproofing firmly adhered at solid core wall locations may remain subject to field inspection by Architect and Manufacturer.
 19. Remove and replace roof drain including associated piping to nearest elbow beneath. Install new full size promenade drain with extension collar drain with interior lead caulk connection including associated drain strainer assembly.
 20. Remove existing wall ties and backing plates/fasteners exposed by removal of the field stone cladding for replacement.
-

21. Prepare exposed concrete and CMU surfaces to receive new resin based waterproofing per manufacturers instructions including preparation of existing resin-based waterproofed areas to remain per field direction.
 22. Existing CMU/concrete core walls are to remain. Remove and rebuild loose or damaged portions VIF. New and or replaced sections are to be fully grouted and dowelled to the existing sections to remain.
 23. Sound-test the concrete deck exposed by the demolition and patch repair as required prior to application of waterproofing.
 24. Prepare existing cold-joints and through cracks in the underlying concrete deck per manufacturers directing and install continuous minimum 6" wide resin based flashing strip prior to installation of resin based waterproofing at the main filed areas.
 25. Install resin based waterproofing system to the prepared concrete deck, curbs, penetrations and concrete and CMU core walls per direction of the manufacturer and per applicable details. Typical throughout all raised monument areas.
 26. Installation of waterproofing at the interior cottage corner junction and tie in with trench drain.
 27. Prepare concrete perimeter per manufacturers requirements and install continuous seamless resin-based waterproofing edge treatment strip from the underside drip edge up and over the top of the main field of the concrete deck above. Waterproofing at the main field is to overlap the edge flashing.
 28. Prepare edge flashing and install granule surfacing and sealer per approved samples. Note field sample is subject to approval by the Artist and Owners.
 29. Installation of new perforated pipe drainage system per approved shop drawing.
 30. Installation of new sprinkler/watering system per approved shop drawing. Watering system is to be tied into watering system remaining at the undisturbed areas.
 31. Rebuilding of Cottage and Fieldstone walls reusing the stone previously removed, catalogued and stored. Rebuilding is to incorporate the installation of wall ties/wall tie system at the rate of minimum 1-tie per 2 square feet of exposed surface area.
 32. Note all stone rebuilding is subject to approval by the Artist and Owners. Contractor must provide a minimum of two full size mock-ups, 6'-0"± in length. Mockups include Cottage walls and Field walls. Mockups may be applied to the monument directly and if successful may be fully incorporated into the completed work.
 33. Install wall ties/wall-tie system on the prepared core/substrate walls at a minimum rate of 1-tie per 2 square feet of exposed surface area. Note all penetrations and attachments for the wall ties are to be fully wrapped and waterproofed with resin-based flashing prior to rebuilding the wall facings.
 34. Rebuilding of the cottage and overlook wall is to incorporate the installation of a through-wall scupper drain at the lower/South corner of the attached lintel. Scupper is to be full flashed in with resin based flashing. Scupper outlet is to drain to the soil outside the cottage area behind plantings located in the area.
 35. Installation of new electrical conduit in areas exposed, flashing of same with resin based flashing.
 36. Form new curb as required to fully support new access hatches to the underlying interstitial spaces beneath. Install new access hatches. Hatch finish surface subject to approval by the Artist and Owners.
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37. Installation of new exposed aggregate concrete paving per samples approved by Artist and Owners, on new compacted fill. Note: Edges and extent of the monument paving are subject to approval by the Artist and Owners.
38. Reinstall stone threshold previously removed catalogued and stored.
39. Reinstall existing grating at the trench drain location. Prepare, prime and paint the exposed grating frame.
40. Flash attachment bracket for the previously removed perimeter tether rail system. Reinstall previously removed, catalogued and stored posts. Install new cables, turnbuckles and tensioning devices.
41. Reinstall soil previously removed and stored off-site per direction of Landscape Architects and BPCPC.
42. Reinstall previously removed, catalogued and stored existing standing stones, boulders, County-stones and other miscellaneous landmarks within the monument site back in their previous locations upon completion of the contract work.
43. Installation of new plans and plantings per approved planting schemes and shop drawings.
44. Reinstallation of previously removed wood fence posts set in metal sleeves in the soil and new wire fencing to match existing. Wood fence posts to be replaced as necessary per applicable allowance.
45. Prepare prime and paint sliding gate at monument entrance. Finish color to be approved by Artist and Owner.
46. Sound-test exposed concrete areas and underside. Prepare and patch per appropriate detail from Contract allowance.
47. Replacement of speaker covers for monument sound-system.
48. Replacement of light fixtures and associated conduit and wiring within the monument interstitial/mechanical spaces.
49. Prolonged water wash cleaning of masonry per specified and approved procedure.
50. Photographic documentation of existing conditions throughout work area, submitted digitally to Owner and Architect.
51. Perform water/flood testing at all completed portions of waterproofing membrane installation prior to the installation of overburden.

1.03 TESTING AND INTERIM CONTROL

- A. The Contractor shall bear the responsibility for independent testing to determine the presence of lead in any painted surface to be scraped, stripped or otherwise prepared. Testing is to be performed by laboratory tests of paint samples,(AAS for lead) in accordance with all pertinent regulations.
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B. The Contractor will be required to conform to all pertinent ordinances and regulations in the treatment of the area to be painted and the disposal of the debris resulting from the surface preparation. These regulations include but are not limited to the Lead Safe Work Practices (Safe Work Practices) contained in New York City Local Law 1 of 2004. Guides to conformance with these standards can be obtained from the NYC Department of Health (212) 226-5323. Questions about exterior paint scraping/removal protection requirements can be referred to The NYC Department of Health Lead Abatement Safety Unit (LASU) (212) 676-8186. Disposal of materials collected shall be in accordance all pertinent regulations. Disposal and transportation requirements are contained in New York State Department of Environmental Conservation *Environmental Compliance and Pollution Prevention Guide for Small Quantity Generators*, most recent edition. This manual can be obtained from the NYSDEC at (718) 482-4900.

C. The Contractor will be required to conform to all pertinent ordinances and regulations in the treatment of the area to be painted and the disposal of the debris resulting from the surface preparation including but not limited to Title 40: Protection of Environment – Part 745 of the United States Environmental Protection Agency (EPA). Disposal of materials collected shall be in accordance all pertinent regulations. Disposal and transportation requirements are contained in New York State Department of Environmental Conservation *Environmental Compliance and Pollution Prevention Guide for Small Quantity Generators*, most recent edition. This manual can be obtained from the NYSDEC at (718) 482-4900.

D. The Contractor shall bear the responsibility for independent testing to determine the presence of asbestos in any roofing or masonry surface, membranes, insulation, flooring, glazing compound, mastics, flashing or caulking to be scraped, stripped, removed or otherwise prepared. Testing is to be performed by either laboratory tests of material samples, or portable testing in accordance with all pertinent regulations. Test results made available to the Contractor by the Owner may not represent all affected surfaces and shall not be deemed to be a complete representation. The preceding list does not represent a comprehensive listing of all possible asbestos containing materials. Additional materials not listed may require testing and or abatement.

1.04 CONTRACTOR USE OF PREMISES:

A. General: The Contractor shall limit his/her use of the premises to the Work area, so as to allow for Owner occupancy and use by the public.

B. Use of the Site: Confine operations at the site to the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work while engaged in project construction.

C. Keep existing driveways and entrances serving the premises clear and available to the Owner and his/her employees at all times. Do not use these areas for parking or storage of materials.

D. Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to the areas indicated. If additional storage is necessary obtain and pay for such storage off site.

E. Contractor Use of the Existing Building: Maintain the existing building in a safe and weather tight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building during the construction period.

F. Protection: All pedestrian protection of public sidewalks, courtyards, rear yards, alleyways and fire exits, not specifically called out elsewhere in these Contract Documents, shall be the responsibility of the Contractor per applicable provisions of the New York City Building Code. Protection of all trees, plantings and sidewalk furniture is included in this requirement. Costs for protection over and above that specified should be entered in Item I of the Bid Form " Exceptions to Plans and Specifications." Costs listed must reference specific areas requiring additional protection and will be considered part of the Contractor's Bid.



- G. All temporary pedestrian protection/sidewalk sheds shall be installed and maintained in compliance with current law upon their installation and for the entire period in which sidewalk protection remains.
- H. Keep public areas such as sidewalk and street free from accumulation of waste material, rubbish or construction debris.
- I. Hours of Work: Per Battery Park City Authority direction.
- J. Emergency Contact: The Contractor shall maintain a system allowing for monument personnel to directly contact contractor's supervisory personnel in the event of an emergency situation at all times during the course of the project. The system will be capable of providing a response to a telephone call by Contractor's supervisory personnel within a maximum of one hour. The emergency contact system shall consist of two telephone numbers for Contractor's supervisory personnel as well as two pager numbers for Contractor's supervisory personnel. These numbers shall be distributed to the Owner, Architect, Owner's Representative as well as any other personnel as directed by the Owner or Owner's Representative. This information shall be provided at the commencement of the project on an 8-1/2" X 11" paper format.

1.05 OWNER OCCUPANCY:

- A. Full Owner Occupancy: The Owner will occupy the site and the existing building during the entire period of construction. Cooperate fully with the Owner or his/her representative during construction operations to minimize conflicts and to facilitate Owner usage. Perform the Work so as not to interfere with the Owner's operations.

1.06 COORDINATION:

- A. General: The Work of this Contract includes coordination of the entire work of the project, including preparation of general coordination drawings, diagrams and schedules, and control of site utilization, from beginning of construction activity through project close-out and warranty periods.

1.07 DESTRUCTIVE INSPECTION:

- A. The Architect reserves the right to require destructive inspections of completed work of up to 2.5% of the total contract amount. All required demolition, repair and reinstallation shall be performed at no additional cost.

1.08 PROJECT WARRANTY:

- A. At the time of Substantial Completion the Contractor shall provide the Owner with a written warrantee. The warrantee shall meet the requirements of section 3.5.2 of the Supplementary Conditions to the General Conditions described in these specifications.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION (Not applicable)

END OF SECTION 011000



SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-I Specification sections, apply to work of this section.

B. Reminder: General Conditions of the Contract include the following subparagraph pertaining to "Allowances":

"4.8.2.2 the Contractor's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the original allowance shall be included in the Contract Sum and not in the allowance;..."

C. Coordinate allowance work with related work to ensure that each selection is completely integrated and interfaced with related work.

1.02 DESCRIPTION OF REQUIREMENTS:

A. Definitions and Explanations: Certain requirements of the work related to each allowance are shown and specified in contract documents. The allowance has been established in lieu of additional requirements for that work, and further requirements thereof (if any) will be issued by change order.

B. Types of allowances scheduled herein for the work include the following:

1. Lump sum allowances.
2. Unit-cost allowances.

C. Selection and Purchase: At earliest feasible date after award of Contract, advise Architect/Engineer of scheduled date when final selection and purchase of each product or system described by each allowance must be accomplished in order to avoid delays in performance of the work.

D. As requested by the Architect/Engineer, obtain and submit proposals for the work of each allowance for use in making final selections; include recommendations for selection which are relevant to the proper performance of the work.

E. Purchase products and systems as specifically selected (in writing) by the Architect/Engineer.

F. Change Order Data: Where applicable, include in each change order proposal both the quantities of products being purchased and unit costs, along with total amount of purchases to be made. Where requested, furnish survey-of-requirements data to substantiate quantities. Indicate applicable taxes, delivery charges, and amounts of applicable trade discounts.

G. For unit-cost type allowances, submit a substantiated survey of quantities of materials, as shown in the "Schedule of Values", revised where necessary, and corresponding with change order quantities.

H. Unit-Cost Allowances: Each change order amount for unit-cost type allowance shall be based solely on the difference between the actual unit purchase amount and the unit allowance, multiplied by the final measure or count of work-in-place, with reasonable allowances, where applicable, for cutting losses, tolerances, mixing wastes, normal product imperfections and similar margins.



- I. Include installation costs in the purchase amount only where indicated as a part of the allowance.
- J. When requested, prepare explanations and documentation to substantiate the margins as claimed.
- K. Prepare and submit substantiation of a change in the scope of work (if any) claimed in the change orders related to unit-cost type allowances.
- L. Change Order Mark-Up: The amount of each change order resulting from final selection of products and systems covered by an allowance shall be the difference between purchase order amount and allowance, and shall not include Contractor's mark-up (or subcontractor's mark-up) except to the extent clearly demonstrated (by Contractor) that either scope of installation or nature of work required was changed from that which could have been foreseen from description of allowance and other information in contract documents. No mark-up is permitted for selection of higher or lower priced materials or systems, of same scope and nature as originally indicated. This is a procedural clarification of Paragraph 4.8.2.3 of General Conditions.
- M. Where it is not economically feasible to return unused material for credit and when so requested by the Architect/Engineer, prepare unused material for the Owner's storage, and deliver to the Owner's storage space as directed. Otherwise, disposal of excess material is the Contractor's responsibility.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 SCHEDULE OF ALLOWANCES:

Allowance No. 1: Allow for the installation of rapid setting patching mortar at a total of 10% of the area of the roof deck.

Allowance No. 2: Allow for the installation of 100 s.f. of shallow concrete repairs.

Allowance No. 3: Allow for the installation of 50 s.f. of poured concrete repairs.

Allowance No. 4: Allow for the installation and replacement of 20% of the field stone.

Allowance No. 5: Allow for the installation and replacement of 30% of the wood fence posts. As distributed by Wayside Fence, 63 Third Avenue, Bayshore, New York 11706.

Telephone (800) 847-7789

END OF SECTION 012100



SECTION 012300 - ALTERNATES AND UNIT PRICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-I Specification sections, apply to work of this section.
- B. Specific work described in the Schedule of Alternates and the unit prices below shall comply with all applicable sections of the Project Manual.

1.02 DESCRIPTION OF REQUIREMENTS:

- A. Definition: An alternate is the amount proposed by Bidders and stated on the Bid Form that will be added to or deducted from Base Bid amount if the Owner decides to accept a corresponding change in either scope of work or in products, materials, equipment, systems or installation methods described in Contract Documents.
- B. Coordination: Coordinate related work and modify or adjust adjacent work as required to ensure that work affected by each accepted alternate is complete and fully integrated into the project.
- C. Notification: Immediately following award of Contract, prepare and distribute to each party involved, notification of the status of each alternate. Indicate whether alternates have been accepted, rejected or deferred for consideration at a later date. Include a complete description of negotiated modifications to alternates, if any.
 - 1. The Owner reserves the right to select any of the alternates at any time prior to Substantial Completion unless remobilization to a work area is required. Alternates selected by the Owner after execution of the Contract for Construction shall be accepted through the issuance of a Change Order.
- D. Include as part of each alternate, miscellaneous devices, appurtenances and similar items incidental to or required for a complete installation whether or not mentioned as part of the alternate.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 SCHEDULE OF ALTERNATES:

- A. Alternate 1: Provision of a full coverage, heated weather enclosure to encapsulate the monument for the duration of the work allowing work to proceed in all weathers.
 - B. Alternate 2: Install a sidewalk shed for Base Bid Work in compliance with Section 27-1021 of the Building Code of the City of New York for the duration of the project. Include as part of this work a complete coverage of the bridge deck with motion detector(s) with activation sensor/monitor to be provided at a remote location to be confirmed. Work includes installation and maintenance of shed lighting in conformance with LL51/10
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3.02 UNIT PRICES:

- A. Installation of CMU masonry per wythe: Work shall include demolition and replacement of existing CMU masonry at a nominal 8" thickness, hollow configuration, fully grouted, including installation of new dowels, wall ties and necessary flashing. Per square foot unit price requested.
 - B. Repointing of finished stone masonry: Work shall include raking out mortar from joints to expose sound, un-weathered mortar. Brush, vacuum or flush joints to remove dirt and loose debris and mortar from masonry surfaces within raked-out joint, and installation of new tooled mortar to match adjacent profile, at the masonry joints in the polished ashlar stone monument base areas. Per square foot unit prices requested.
 - C. Patching of concrete: Work shall include sound testing of existing concrete, removal of existing material and proper preparation of substrate and perimeter for patches less than 2" in depth on average. Per square foot unit price requested.
 - D. Poured concrete repair: Work shall include sound testing of all exposed concrete, removal of existing material and proper preparation of substrate and perimeter, installation of stainless steel threaded rod with double nut and washer for patches over 2" in depth and / or greater than 1'-0" in length. Per square foot unit price requested.
 - E. Installation of rapid setting patching mortar/Patching of roof slab: Work shall include the removal of existing material and proper preparation of substrate and the installation of new rapid setting patching mortar. Per square foot unit price requested.
 - F. New resin flashing at roof penetrations: Work shall include preparation of all substrates and installation resin based flashing at roof penetration. Per location unit price requested.
 - G. Installation of new full-size drains: Work shall include removal of existing unit and proper installation of new drain, including lead flashing, new cast iron piping from the new drain connection to the nearest elbow, interior protection, and repair of interior finish to primed condition and, associated roof flashing tie-in. Per drain unit pricing requested.
 - H. Localized replacement of polished stone cladding units at monument base areas. Bond pattern and mortar to match existing per approved field sample. Subject to approval by the Artist and Architect. Per square foot pricing requested.
 - I. New organic matter. Per cubic yard price requested.
 - J. Installation of new sand for drainage layer. Per cubic yard price requested.
 - K. Installation of new blended planting soil. Per cubic yard price requested.
 - L. Installation of new perennial plants. Per quart pricing requested.
 - M. Installation of new perennial plants. Per plug pricing requested.
 - N. Installation of new shrub plants. Per 1 gallon container pricing requested.
 - O. Installation of new seed. Per pound unit pricing requested.
 - P. Temporary hook-up and relocation of watering system as necessary to provide function during construction. Per location unit price requested.
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CTA ARCHITECTS P.C.

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Irish Hunger Memorial Restoration

END OF SECTION 012300





SECTION 012500 - PRODUCTS AND SUBSTITUTIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-I Specification sections, apply to work of this section.

1.02 DESCRIPTION OF REQUIREMENTS:

A. Definitions: Definitions used in this paragraph are not intended to negate the meaning of other terms used in the contract documents, including such terms as, "specialties", "systems", "structure", "finishes", "accessories", "furnishings", "special construction" and similar terms. Such terms are self-explanatory and have recognized meanings in the construction industry.

B. "Products" are items purchased for incorporation in the Work, regardless of whether they were specifically purchased for the project or taken from the Contractor's previously purchased stock. The term "product" as used herein includes the terms "material", "equipment", "system" and other terms of similar intent.

C. "Named Products" are products identified by use of the manufacturer's name for a product, including such items as a make or model designation, as recorded in published product literature, of the latest issue as of the date of the contract documents.

D. "Materials" are products that must be substantially cut, shaped, worked, mixed, - finished, refined or otherwise fabricated, processed, or installed to form units of work.

E. "Equipment" is defined as a product with operational parts, regardless of whether motorized or manually operated, and in particular, a product that requires service connections such as wiring or piping.

F. Substitutions: The Contractor's requests for changes in the products, materials, equipment and methods of construction required by the contract documents are considered requests for "substitutions", and are subject to the requirements specified herein. The following are not considered as substitutions:

1. Revisions to the contract documents, where requested by the Owner or Architect are considered as "changes" not substitutions.

2. Substitutions requested during the bidding period, which have been accepted prior to the Contract Date, are included in the contract documents and are not subject to the requirements for substitutions as herein specified.

3. Specified Contractor options on products and construction methods included in the contract documents are choices available to the Contractor and are not subject to the requirements for substitutions as herein specified.

4. Except as otherwise provided in the contract documents, the Contractor's determination of and compliance with governing regulations and orders as issued by governing authorities do not constitute "substitutions" and do not constitute a basis for change orders.

G. Standards: Refer to Division-I section "Definitions and Standards" for the applicability of industry standards to the products specified for the project, and for the acronyms used in the text of the specification sections.

1.03 QUALITY ASSURANCE:

A. Source Limitations: To the fullest extent possible, provide products of the same generic kind, from a single source, for each unit of work.

B. Compatibility of Options: Compatibility of products is a basic requirement of product selection. When the Contractor is given the option of selecting between two or more products for use on the project, the product selected must be compatible with other products previously selected, even if the products previously selected were also Contractor options. The complete compatibility between the various choices available to the Contractor is not assured by the various requirements of the Contract documents, but must be provided by the Contractor.

1.04 SUBMITTALS:

A. Substitution Request Submittal:

1. Requests for Substitutions: Submit 3 copies of each request for substitution. In each request identify the product or fabrication or installation method to be replaced by the substitution; include related specification section and drawing numbers, and complete documentation showing compliance with the requirements for substitutions. Include the following information, as appropriate, with each request.

a. Provide complete product data, drawings and descriptions of products, and fabrication and installation procedures.

b. Provide samples where applicable or requested.

c. Provide a detailed comparison of the significant qualities of the proposed substitution with those of the work originally specified. Significant qualities include elements such as size, weight, durability, performance and visual effect where applicable.

d. Provide complete coordination information. Include all changes required in other elements of the work to accommodate the substitution, including work performed by the Owner and separate Contractors.

e. Provide a statement indicating the effect the substitution will have on the work schedule in comparison to the schedule without approval of the proposed substitution. Include information regarding the effect of the proposed substitution on the Contract Time.

f. Provide complete cost information, including a proposal of the net change, if any in the Contract Sum.

g. Provide certification by the Contractor to the effect that, in the Contractor's opinion, after thorough evaluation, the proposed substitution will result in work that in every significant respect is equal-to or better than the work required by the Contract documents, and that it will perform adequately in the application indicated.

B. Change Order Form: Submit requests for substitutions in the form and in accordance with procedures required for change order proposals.

C. Architect's Action: Within five (5) working days of receipt of the Contractor's request for substitution, the Architect will request additional information or documentation as may be needed for evaluation of the request. Within ten (10) working days of receipt of the request, or within five (5) working days of receipt of the requested additional information or documentation, whichever is later, the Architect will notify the Contractor of either the acceptance or rejection of the proposed substitution.

1. Acceptance will be in the form of a change order.

PART 2 - PRODUCTS

2.01 GENERAL PRODUCT COMPLIANCE:

A. Visual Matching: Where matching an established sample is required, the final judgment of whether a product proposed by the Contractor matches the sample satisfactorily will be determined by the Architect. Where there is no product available within the specified product category that matches the sample satisfactorily and also complies with other specified requirements, comply with the provisions of the contract documents concerning "substitutions" and "change orders" for the selection of a matching product in another product category, or for non-compliance with specified requirements.

B. Producer's Statement of Applicability: Where individual specification sections indicate require a "Statement of Applicability" from the manufacturer or other producer, submit a written-certified statement from the producer stating that the producer has reviewed the proposed application of the product on the project. This statement shall state that the producer agrees with or does not object to the Architect's specification and the Contractor's selection of the product for use in the Work. The statement shall also state that the proposed application of the product on the project is suitable and proper.

2.02 SUBSTITUTIONS:

A. Conditions: The Contractor's request for a substitution will be received and considered when extensive revisions to the contract documents are not required, when the proposed changes are in keeping with the general intent of the contract documents, when the requests are timely, fully documented and properly submitted, and when one or more of the following conditions is satisfied, all as judged by the Architect; otherwise the requests will be returned without action except to record non-compliance with these requirements.

1. The Architect will consider a request for substitution where the request is directly related to an "or equal" clause or similar language in the contract documents.

2. The Architect will consider a request for a substitution where a substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. These additional responsibilities may include such considerations as additional compensation to the Architect for redesign and evaluation services, the increased cost of other work by the Owner or separate contractors, and similar considerations.

3. The Architect will consider a request for substitution when the specified product or method cannot be provided in a manner which is compatible with other materials of the work, and where the Contractor certifies that the substitution will overcome the incompatibility.

4. The Architect will consider a request for substitution when the specified product or method cannot be properly coordinated with other materials in the work, and where the Contractor certifies that the proposed substitution can be properly coordinated.

5. The Architect will consider a request for substitution when the specified product or method cannot receive a warranty as required by the contract documents and where the contractor certifies that the proposed substitution receive the required warranty.

B. Work-Related Submittals: The Contractor's submittal of and the Architect's acceptance of shop drawings, product data or samples which relate to work not complying with requirements of the contract documents, does not constitute an acceptable or valid request for a substitution, nor approval thereof.



PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS:

A. General: Except as otherwise indicated in individual sections of these specifications, comply with the Manufacturer's instructions and recommendations for installation of the products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other work. Clean exposed surfaces and protect surfaces as necessary to ensure freedom from damage and deterioration at time of acceptance.

END OF SECTION 012500



SECTION 012900 - SCHEDULES, REPORTS, PAYMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-I Specification sections, apply to work of this section.

1.02 COORDINATION:

A. Coordinate both the listing and timing of reports and other activities required by provisions of this and other sections, so as to provide consistency and logical coordination between the reports. Maintain coordination and correlation between separate reports by updating at monthly or shorter time intervals. Make appropriate distribution of each report and updated report to all parties involved in the Work including the Architect, Owner, and BPCPC. In particular provide close coordination of the progress schedule, schedule of values, listing of subcontracts, schedule of submittals, progress reports, and payment requests.

1.03 FULLY-DEVELOPED PROGRESS SCHEDULE:

A. Bar-Chart Schedule: Based on the preliminary development of the progress schedule, if any, and on whatever updating and feedback may have occurred during the project start-up, secure critical time commitments for performing major elements of the work. Within 10 (ten) working days of the date established for "commencement of the work", submit a comprehensive bar-chart type progress schedule indicating, by stage-coded symbols, a time bar for each major category or unit of work to be performed at the site; include minor elements of work which are, nevertheless, involved in overall sequencing of the work. Arrange schedule to show graphically the major sequences of work necessary for the completion of related elements of work. Arrange the schedule to show how Substantial Completion is scheduled to allow for the Architect's procedure for Certification of Substantial Completion. Prepare and maintain the schedule on either a sheet of sufficient width (or else a series of sheets) to show the required data clearly for the entire Construction Time. Prepare the schedule on sheets of stable transparency, or other reproducible material, to permit reproduction for the required distribution.

B. Distribution: Following the initial submittal to and response by the Architect, print and distribute progress schedules to the Architect (3 copies), Owner, BPCPC, separate contractors, the principal subcontractors and suppliers or fabricators, and others with a need-to-know schedule-compliance requirement. Post copies in the project meeting room and temporary field office. When revisions are made, distribute updated issues to the same entities and post updated issues in the same locations. Delete entities from distribution when they have completed their assigned work and are no longer involved in the performance of scheduled work.



1.04 PROGRESS MEETINGS, REPORTING:

A. General: In addition to specific coordination and pre-installation meetings for each element of work, and other regular project meetings held for other purposes, hold a general progress meeting each month with time coordinated with preparation of the payment request. Require each entity then involved in planning, coordination or performance of work to be properly represented at each meeting. Review each entity's present and future needs including interface requirements, time, sequences, deliveries, access, site utilization, temporary facilities and services, hours of work, hazards and risks, housekeeping, change orders, and documentation of information for payment requests. Discuss whether each element of current work is ahead of schedule, on time, or behind schedule in relation with updated progress schedule. Determine how behind-schedule work will be expedited, and secure commitments from entities involved in doing so. Discuss whether schedule revisions are required to ensure that current work and subsequent work will be completed within Contract Time. Review everything of significance which could affect progress of the Work.

B. Initial Progress Meeting: Schedule initial progress meeting, recognized as "Pre-Construction Meeting", for a date not more than 10 (ten) working days after date of commencement of the Work. Use it as an organizational meeting, and review responsibilities and personnel assignments.

C. Reporting: Within 3 (three) working days after each progress meeting date, distribute copies of minutes-of-the-meeting to each entity present and to others who should have been present. Include brief summary (in narrative form) of progress of the Work since previous meeting and report.

D. Schedule Updating: Immediately following each progress meeting, where revisions to progress schedule have been made or recognized, revise progress schedule. Reissue revised schedule concurrently with report of each meeting.

E. Existing Conditions Photographs: Prior to beginning construction work the Contractor shall be responsible for photographing the existing conditions in the areas of work. Photographs shall be taken with a dated camera, marking each print with a clearly readable date. Copies of all photographs shall be sent to the Owner and the Architect prior to beginning work. Photographs can be taken in stages as work proceeds to different areas of the site.

1.05 UNIT PRICE COMPENSATION:

A. The Owner reserves the right to reject the Contractor's measurement of work-in-place which involves use of established unit prices, and to have this work measured by an independent surveyor acceptable to the Contractor at the Owner's expense.

1.06 PAYMENT REQUESTS:

A. General: Except as otherwise indicated, the progress payment cycle is to be regular, submitted on a monthly basis. Each application must be consistent with previous applications and payments. Certain applications for payment, such as the initial application, the application at Substantial Completion, and the final payment application involve additional requirements.

B. Payment Application Times: The "date" for each progress "payment" is as indicated in Owner-Contractor Agreement or, if none is indicated therein, it is the 15th day of each month. The period of construction work covered by each payment request is period indicated in Owner-Contractor Agreement or, if none is indicated therein, it is period ending 15 days prior to date for each progress payment, and starting day following end of preceding period.

C. Payment Application Forms: AIA Document G702 and Continuation Sheets; available from "Publications, a Division of The AIA Service Corporation", 1735 New York Avenue, NW, Washington, DC 20006 (also available at most local AIA chapter offices).

D. Application Preparation: Except as otherwise indicated, complete every entry provided for on the form, including execution by authorized persons. Incomplete applications will be returned by Architect without action. Entries must match current data of schedule of values and progress schedule and report. Listing must include amounts of change orders issued prior to last day of the "period of construction" covered by application.

E. Releases of Liens: With every payment application submitted a release of liens shall be included indicating that payment to all subcontractors, manufacturers, suppliers and other entities providing goods or services on this project and paid for by the Owner in previous applications have been made. The form submitted shall be identical to the form included in this Project Manual and entitled "Release and Waiver of Claims, Liens and Rights."

F. Initial Payment Application: The principal administrative actions and submittals which must precede or coincide with submittal of contractor's first payment application can be summarized as follows, but not necessarily by way of limitation:

1. Listing of subcontractors, principal suppliers and fabricators.
2. Progress schedule (preliminary if not final).
3. Schedule of unit prices.
4. Schedule of submittals (preliminary if not final).
5. Copies of acquired building permits and similar authorizations and licenses from governing authorities for current performance of the work.
6. Evidence satisfactory to the Owner that the Contractor's insurance coverage have been secured.
7. Initial progress report, including report of pre-construction meeting.

G. Application at Time of Substantial Completion: Following issuance of the Architect's final "Certificate of Final Completion" and also in part as applicable to prior certificates on portions of completed work as designated, a "special" payment application may be prepared and submitted by the Contractor. The principal administrative actions and submittals which must proceed or coincide with such special applications can be summarized as follows, but not necessarily by way of limitation:

1. Occupancy permits and similar approvals or certifications by governing authorities and franchised services, assuring Owner's full access and use of completed work.
 2. Warranties (guarantees), maintenance agreements and similar provisions of contract documents.
 3. Test/adjust/balance records, maintenance instructions, meter readings, start-up performance reports, and similar change-over information germane to Owner's occupancy, use, operation and maintenance of completed work.
 4. Final cleaning of the work.
 5. Application for reduction (if any) of retainage, and consent of surety.
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6. Advice to Owner on coordination of shifting insurance coverages, including proof of extended coverages as required.
7. Final progress photographs, where required.
8. Listing of Contractor's incomplete work, recognized as exceptions to Architect's/Engineer's certificate of substantial completion.
- H. Final Payment Application: The administrative actions and submittals which must precede or coincide with submittal of contractor's final payment application can be summarized as follows, but not necessarily by way of limitation:
 1. Completion of project closeout requirements.
 2. Completion of items specified for completion beyond time of substantial completion (regardless of whether special payment application was previously made).
 3. Assurance, satisfactory to Owner, that unsettled claims will be settled and that work not actually completed and accepted will be completed without undue delay.
 4. Transmittal of required project construction records to Owner.
 5. Proof, satisfactory to Owner, that taxes, fees and similar obligations of Contractor have been paid.
 6. Removal of temporary facilities, services, surplus materials, rubbish and similar elements.
 7. Consent of surety for final payment.
 8. Provision of the attached "Final Release and Waiver of Claims, Liens and Rights" form, signed and notarized and indicating a release of liens from all subcontractors, manufacturers and installers on this project.
- I. Application Transmittal: Submit 3 executed copies of each payment application. Transmit each copy with a transmittal form listing those attachments, and recording appropriate information related to application in a manner acceptable to Architect. Transmit to Architect by means ensuring receipt within 24 hours.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 012900



SECTION 013100- PROJECT COORDINATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-I Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK:

A. Minimum administrative and supervisory requirements necessary for coordination of work on the project include but are not necessarily limited to the following:

1. Coordination and meetings.
2. Administrative and supervisory personnel.
3. General installation provisions.
4. Conservation and salvage.

1.03 COORDINATION AND MEETINGS:

A. General: Prepare a written memorandum on required coordination activities. Include such items as required notices, reports and attendance at meetings. Distribute this memorandum to each entity performing work at the project site. Prepare similar memorandum for separate contractors where interfacing of their work is required.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION PROVISIONS:

A. Pre-Installation Conferences: Hold a pre-installation meeting at the project site well before installation of each unit of work that requires coordination with other work. Installer and representatives of the Manufacturers and Fabricators who are involved in or affected by that unit of work, and with its coordination or integration with other work that has preceded or will follow shall attend this meeting. Advise the Architect of scheduled meeting dates.

B. Record significant discussions of each conference, and record agreements and disagreements, along with the final plan of action. Distribute the record of meeting promptly to everyone concerned, including the Owner and Architect.

C. Do not proceed with the Work if the pre-installation conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene pre-installation conference at the earliest feasible date.



- D. Installer's Inspection of Conditions: Require the Installer of each major unit of work to inspect the substrate to receive work and conditions under which the Work is to be performed. The Installer shall report all unsatisfactory conditions in writing to the Contractor. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.
- E. Manufacturers Instructions: Where installations include manufactured products, comply with the Manufacturer's applicable instructions and recommendations for installation, to the extent that these instructions and recommendations are more explicit or more stringent than requirements indicated in the contract documents.
- F. Inspect each item of materials or equipment immediately prior to installation. Reject damaged and defective items.
- G. Provide attachment and connection devices and methods for securing work. Secure work true to line and level, and within recognized industry tolerances. Allow expansion and building movement. Provide uniform joint width in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable visual-effect choices to the Architect for final decision.
- H. Install each unit-of-work during weather conditions and project status which will ensure the best possible results in coordination with the entire work. Isolate each unit of work from incompatible work as necessary to prevent deterioration.
- I. Coordinate enclosure of the work with required inspections and tests, so as to minimize the necessity of uncovering work for that purpose.
- J. Mounting Heights: Where mounting heights are not indicated, mount individual units of work at industry recognized standard mounting heights and in compliance with all local building codes for the particular application indicated. Refer questionable mounting height choices to the Architect for final decision.

3.02 CLEANING AND PROTECTION:

- A. General: During handling and installation of work at the project site, clean and protect work in progress and adjoining work on the basis of continuous maintenance. Apply protective covering on installed work where it is required to ensure freedom from damage or deterioration at time of substantial completion.
 - B. Clean and perform maintenance on installed work as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
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C. Limiting Exposures of Work: To the extent possible through reasonable control and protection methods, supervise performance of the work in such a manner and by such means which will ensure that none of the work, whether completed or in progress, will be subjected to harmful, dangerous, damaging or otherwise deleterious exposure during the construction period. Such exposures include, where applicable, but not by way of limitation the following:

- Excessive static or dynamic loading.
- Excessive internal or external pressures.
- Excessively high or low temperatures.
- Thermal shock.
- Excessively high or low humidity.
- Air contamination or pollution.
- Water or ice.
- Solvents.
- Chemicals.
- Puncture.
- Abrasion.
- Heavy traffic.
- Soiling.
- Bacteria.
- Combustion.
- Electrical current.
- Incompatible interface.
- Destructive testing. Misalignment.
- Excessive weathering.
- Unprotected storage.
- Improper shipping or handling.
- Theft.
- Vandalism.

3.03 CONSERVATION AND SALVAGE:

A. General: It is a requirement for supervision and administration of the work that construction operations be carried out with the maximum possible consideration given to conservation of energy, water and materials. In addition maximum consideration shall be given to salvaging materials and equipment involved in performance of the work but not incorporated therein. Refer to other sections for required disposition of salvage materials that are the Owner's property.

END OF SECTION 013100



SECTION 013300 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-I Specification sections, apply to work of this section.

1.02 DESCRIPTION OF REQUIREMENTS:

A. General: This section specifies procedural requirements for non-administrative submittals including shop drawings, product data, samples and other miscellaneous work-related submittals. Shop drawings, product data, samples and other work-related submittals are required to amplify, expand and coordinate the information contained in the Contract Documents.

B. Refer to other Division-I sections and other contract documents for specifications on administrative, non-work-related submittals. Such submittals include, but are not limited to the following items:

1. Permits.
2. Payment applications.
3. Insurance certificates.
4. Listing of subcontractors.

C. Shop drawings are technical drawings and data that have been specially prepared for this project.

D. Standard information prepared without specific reference to a project is not considered to be shop drawings.

E. Product data includes standard printed information on manufactured products that has not been specially-prepared for this project, including but not limited to the following items:

1. Manufacturer's product specifications and installation instructions.
2. Standard color charts.
3. Catalog cuts.

F. Samples are physical examples of work, including but not limited to the following items:

1. Partial sections of manufactured or fabricated work.
2. Small cuts or containers of materials.

G. Miscellaneous submittals are work-related, non-administrative submittals that do not fit in the three previous categories, including, but not limited to the following:

1. Specially-prepared and standard printed warranties.
2. Overrun stock.

1.03 SUBMITTAL PROCEDURES:

A. General: Refer to the General Conditions for basic procedures for submittal handling:



- B. Coordination: Coordinate the preparation and processing of submittals with the performance of the work. Coordinate each separate submittal with other submittals and related activities such as testing, purchasing, fabrication, delivery and similar activities that require sequential activity.
- C. Coordinate the submittal of different units of interrelated work so that one submittal will not be delayed by the Architect's need to review a related submittal. The Architect reserves the right to withhold action on any submittal requiring coordination with other submittals until related submittals are forthcoming.
- D. Review Time: Allow sufficient time so that the installation will not be delayed as a result of the time required to properly process submittals, including time for re-submittal, if necessary. Advise the Architect on each submittal, as to whether processing time is critical to the progress of the work, and if the work would be expedited if processing time could be shortened.
- E. Allow two weeks for the Architect initial processing of each submittal. Allow a longer time period where processing must be delayed for coordination with subsequent submittals. The Architect will advise the Contractor promptly when it is determined that a submittal being processed must be delayed for coordination.
- F. Allow one week for reprocessing each submittal.
- G. Submittal Preparation: Mark each submittal with a permanent label for identification. Provide the following information on the label for proper processing and recording of action taken:
 - 1. Project name.
 - 2. Date.
 - 3. Name and address of Architect/Engineer.
 - 4. Name and address of Contractor.
 - 5. Name and address of subcontractor.
 - 6. Drawing number and detail references, as appropriate.
 - 7. Similar definitive information as necessary.
- H. Provide a space on the label for the Contractor's review and approval markings, and a space for the Architect "Action" marking.
- I. All submittals shall be submitted in triplicate.

1.04 SPECIFIC SUBMITTAL REQUIREMENTS:

- A. General: Specific submittal requirements for individual units of work are specified in the applicable specification section. Except as otherwise indicated in the individual specification sections, comply with the requirements specified herein for each type of submittal.
 - B. Drawings: Information required on shop drawings includes, dimensions, identification of specific products and materials which are included in the work, compliance with specified standards and notations of coordination requirements with other work. Provide special notation of dimensions that have been established by field measurement. Highlight, encircle or otherwise indicate deviations from the contract documents on the shop drawings.
 - C. Do not permit shop drawing copies without an appropriate final "Action" marking by the Architect to be used in connection with the work.
 - D. Preparation: Submit newly prepared information, drawn to accurate scale on sheets not less than 8 1/2" x 11". The maximum sheet size shall not exceed 36" x 48". Indicate the name of the firm that prepared each
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shop drawing and provide appropriate project identification in the title block. Provide a space not less than 20 sq. in. beside the title block for marking the record of the review process and the Architect "Action" marking.

E. Do not reproduce contract documents or copy standard printed information as the basis of shop drawings.

F. Initial Submittal: Provide one correctable translucent reproducible print and one blue-line or black-line print; the reproducible print will be returned.

G. Final Submittal: Provide 3 prints. 2 prints will be retained; the remainder will be returned. One of the prints returned is to be marked up and maintained by the Contractor as a "Record Document".

H. Product Data: General information required specifically as product data includes manufacturer's standard printed recommendations for application and use, compliance with recognized standards of trade associations and testing agencies, and the application of their labels and seals (if any), special notation of dimensions which have been verified by way of field measurement, and special coordination requirements for interfacing the material, product or system with other work.

I. Submittals: Product data submittal is required for information and record and to determine that the products, materials and systems comply with the provisions of the contract documents. Therefore, the initial submittal is also the final submittal, except where the Architect observes that there is noncompliance with the provisions of the contract documents and returns the submittal promptly to the Contractor marked with the appropriate "Action".

J. Initial Submittal: Except as otherwise indicated in individual sections of these specifications, submit 3 copies of each required product data submittal. The Architect will retain one copy, and will return and distribute the others marked with "Action" and corrections or modifications as required.

K. Installation Copy: Do not proceed with installation of materials, products and systems until a 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.

L. Samples: Submit samples for the Architect/Engineer's visual review of general generic kind, color, pattern, and texture, and for a final check of the coordination of these characteristics with other related elements of the work. Samples are also submitted for quality control comparison of these characteristics between the final sample submittal and the actual work as it is delivered and installed.

M. Refer to individual work sections of these specifications for additional sample requirements, which may be intended for examination or testing of additional characteristics. Compliance with other required characteristics is the exclusive responsibility of the Contractor; such compliance is not considered in the Architect review and "Action" indication on sample submittals.



N. Documentation required specifically for sample submittals includes a generic description of the sample, the sample source or the product name or manufacturer, compliance with governing regulations and recognized standards. In addition, indicate limitations in terms of availability, sizes, delivery time, and similar limiting characteristics.

O. Submittal: At the Contractor's option, and depending upon the nature of the anticipated response from the Architect, the initial submittal of samples may be either a preliminary submittal or a final submittal.

P. Warranties: Refer to section "Products and Substitutions" for specific general requirements on warranties, product bonds, workmanship bonds and maintenance agreements. In addition to copies desired for the Contractor's use, furnish 2 executed copies of such warranties, bonds or agreements.

Q. Material Safety Data Sheets: Provide Material Safety Data Sheets (M.S.D.S.) for all products showing compliance with all local Volatile Organic Compound (V.O.C.) limitations. Where specified products do not meet local requirements, contractor shall be responsible for providing alternate materials in compliance with substitution requirements in this Project Manual.

R. Project Binder: Copies of all submitted product data including M.S.D.S. shall be kept on site in a project specific binder for inspection at any time.

1.05 ARCHITECT/ENGINEER'S ACTION:

A. General: Except for submittals for the record and similar purposes, where action and return on submittals is required or requested, the Architect will review each submittal, mark with appropriate "Action", and where possible return within 2 weeks of receipt. Where the submittal must be held for coordination the Architect will so advise the Contractor without delay.

B. Action Stamp: The Architect will stamp each submittal to be returned with a uniform, self explanatory action stamp, appropriately marked and executed to indicate whether the submittal returned is for unrestricted use, final-but-restricted use (as marked), must be revised and resubmitted (use not permitted) or without action (as explained on the transmittal form).

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION (Not Applicable).

END OF SECTION 013300



SECTION 017700 - PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-I Specification sections, apply to work of this section.

1.02 DESCRIPTION OF REQUIREMENTS:

A. Definitions: Project closeout is the term used to describe certain collective project requirements, indicating completion of the Work that are to be fulfilled near the end of the Contract time in preparation for final acceptance and occupancy of the Work by the Owner, as well as final payment to the Contractor and the normal termination of the Contract.

B. Specific requirements for individual units of work are included in the appropriate sections in Divisions 2 through 16.

C. Time of closeout is directly related to "Substantial Completion"; therefore, the time of closeout may be either a single time period for the entire Work or a series of time periods for individual elements of the Work that have been certified as substantially complete at different dates. This time variation, if any, shall be applicable to the other provisions of this section.

1.03 PREREQUISITES TO SUBSTANTIAL COMPLETION:

A. General: Complete the following before requesting the Architect inspection for certification of substantial completion, either for the entire Work or for portions of the Work. List known exceptions in the request.

1. In the progress payment request that coincides with, or is the first request following, the date Substantial Completion is claimed, show either 100% completion for the portion of the Work claimed as "substantially complete", or list incomplete items, the value of incomplete work, and reasons for the Work being incomplete.

2. Include supporting documentation for completion as indicated in these contract documents.

3. Submit a statement showing an accounting of changes to the Contract Sum.

4. Submit specific Manufacturer's warranties, workmanship/maintenance bonds, maintenance agreements, final certifications and similar documents.

5. Complete final cleaning up requirements, including touch-up painting of marred surfaces.

B. Inspection Procedures: Upon receipt of the Contractor's request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled prerequisites.

1. Following the initial inspection, the Architect will either prepare the Certificate of Substantial Completion, or will advise the Contractor of work which must be performed before the certificate will be issued. The Architect will repeat the inspection when requested and when assured that the Work has been substantially completed.

2. Results of the completed inspection will form the initial "punch-list" for final acceptance.

1.04 PREREQUISITES TO FINAL ACCEPTANCE:



- A. General: Complete the following before requesting the Architect final inspection for certification of final acceptance, and final payment as required by the General Conditions. List known exceptions, if any, in the request.
1. Submit the final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 3. Submit a certified copy of the Architect final punch list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance and has been endorsed and dated by the Architect.
 4. Provide the attached "Final Release and Waiver of Claims, Liens and Rights" form, signed and notarized and indicating a release of liens from all subcontractors, manufacturers and installers on this project.
 5. Submit Installer's Warrantee meeting the requirements of Section 3.5.2 of the Supplementary Conditions to the General Conditions.
- B. Re-inspection Procedure: The Architect will re-inspect the Work upon receipt of the Contractor's notice that the work, including punch-list items resulting from earlier inspections, has been completed, except for these items whose completion has been delayed because of circumstances that are acceptable to the Architect.
1. Upon completion of re-inspection, the Architect will either prepare a certificate of final acceptance, or will advise the Contractor of work that is incomplete or of obligations that have not been fulfilled, but are required for final acceptance.
 2. If necessary, the re-inspection procedure will be repeated.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 CLOSEOUT PROCEDURES:

- A. As part of this instruction provide a detailed review of the following items:
1. Warranties, bonds, maintenance agreements and similar continuing commitments.

3.02 FINAL CLEANING:

- A. General: Special cleaning requirements for specific units of Work are included in the appropriate sections of Divisions 2 through 16. General Cleaning during the regular progress of the Work is required by the General Conditions and is included as part of the scope of work.
- B. Cleaning: Provide final cleaning of the Work at the time indicated. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of work to the condition expected from a normal, commercial building cleaning and maintenance program. Comply with the manufacturer's instructions for operations.
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1. Complete the following cleaning operations before requesting the Architect inspection for certification of substantial completion:
 - a. Clean transparent materials, glass, to a polished condition. Remove putty and other substances which are noticeable as vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Plaster cracks, spalls, etc. resulting from the Work must be repaired and/ or replaced.
 - b. Clean the project site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas to a broom clean condition; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.
 - c. Removal of Protection: Except as otherwise indicated or requested by the Architect, remove temporary protection devices and facilities which were installed during the course of the Work to protect previously completed Work during the remainder of the construction period.
 - d. Compliance: Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at the site. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile or other harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.
 - e. Where extra materials of value remaining after completion of associated Work have become the Owner's property, dispose of these materials to the Owner's best advantage as directed.

END OF SECTION 017700



SECTION 030130 - CONCRETE REPAIR WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-I Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK:

A. Concrete repair work includes, but is not necessarily limited to, the following:

1. Sound testing and removal of all loose material.
 2. Scraping and treating of all exposed steel reinforcing.
 3. Repair of all spalled areas using stainless steel pins and trowel-applied mortar based on depth criteria listed below.
 4. Forming and pouring of repairs based on size and depth criteria listed below.
 5. Re-establishing of drips on the underside of the slabs where necessary, or required by Architect's direction.
 6. Work may include the alteration of the existing profile to achieve sufficient coverage over existing steel reinforcement.
- B. Refer to unit prices in Section 012300.
- C. Refer to the Schedule of Alternates in Section 012300 for the work of alternates (if any) that relate to this section.
- D. Refer to Allowances in Section 012100 for work related to this section.

1.03 QUALITY ASSURANCE:

A. Codes and Standards: Comply with provisions of following codes, specifications and standards, except where more stringent requirements are shown or specified:

1. International Association of Concrete Repair Specialists' "Surface Preparation Guidelines for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Oxidation."
2. ACI 318 "Building Code Requirements for Reinforced Concrete".
3. Concrete Reinforcing Steel Institute, "Manual of Standard Practice".
4. ASTM C-1059-86

B. Materials and installed work may require testing and retesting, as directed by Architect, at anytime during progress of work. Allow free access to material stockpiles and facilities. Tests, including retesting of rejected materials and installed work, shall be done at Contractor's expense.



C. All work shall be performed in close association with the manufacturer's representative. A letter shall be obtained by the Contractor from the Manufacturer stating that the methods of installation meet the Manufacturer's installation requirements.

1.04 SUBMITTALS:

A. Product Data: Submit data for proprietary materials and items, including reinforcement and forming accessories, repair compounds, mechanical fasteners, and others as requested by Architect.

B. Shop Drawings: If reinforcing replacement is required during the progress of the work, provide shop drawings sealed by a New York State Licensed Engineer/Architect for placement of new reinforcement bars. Show lap splicing of bars to indicate full performance of splice.

C. Samples: Submit samples of materials as specified and as otherwise requested by Architect, including names, sources and descriptions.

D. Manufacturer's Warrantee: Submit manufacturer's standard five year warrantee on all proprietary repair materials and coatings. Provision of this warrantee shall be a condition for final payment and is in addition to the Contractor's Warrantee required as part of Division 1 of these Specifications.

1.05 PROJECT CONDITIONS

A. No repair mortar placement either poured or trowel applied will be performed when ambient temperatures are below 45 degrees Fahrenheit or are expected to be below 45 degrees Fahrenheit for a period of three days after completion of the repair material placement.

B. The Contractor shall maintain at the site an exterior thermometer capable of measuring maximum and minimum temperatures for each day. The Contractor shall maintain a log of minimum and maximum temperatures for each day that repair material placement or curing is ongoing.

PART 2 - PRODUCTS

2.01 REINFORCING MATERIALS:

A. Replacement Reinforcing Bars if Required: ASTM A 615, Grade 60, deformed.

B. Supports for Replacement Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting and fastening replacement reinforcing bars if required.

2.02 CONCRETE REPAIR MATERIALS:

A. Water: Potable.

B. Products: Subject to compliance with requirements, provide the following:

1. Trowel-Grade Concrete Repair Mortar: Provide the following to be applied to spalled areas of maximum 2" depth, Maximum length of trowelled repairs is to be 1'-0" see size criteria and unit pricing:

a. Jahn M90 Concrete / Precast Mortar. Jahn Restoration Mortars are distributed by Cathedral Stone ® Products, Inc., 7266 Park Circle Drive, Hanover, MD 21076; tel. (410) 782-9150; fax. (410) 782- 9155; website: www.cathedralstone.com; email: info@cathedralstone.com



2. Poured Repair Concrete: Provide the following to be applied to spalled areas over 2" in depth, 1'-0" in length and at all corner repair locations, see size criteria and unit pricing:
 - a. Eucocrete Polymer Mortar by The Euclid Chemical Co., 19218 Redwood Road, Cleveland, OH Tel: (800) 321-7628, Fax: (216) 531-9596.
3. Steel Reinforcing Coating/ Bonding Agent for Poured Repairs Provide the following:
 - a. Duralprep A.C. Anti-corrosion Coating by The Euclid Chemical Co., 19218 Redwood Road, Cleveland, OH Tel: (800) 321-7628, Fax: (216) 531-9596.
4. Stainless Steel Rods: Provide the following for mechanical bond of repair to substrate and general pinning of the concrete:
 - a. Type 304 3/8" Diameter Stainless Steel Threaded Rods by Hilti, Inc., 5400 S. 122nd East Ave. Tulsa, OK 74146-6007, Tel: (866) 445-8827, Fax: (800) 879-7000.
 - b. Provide stainless steel double nut and washer for those applications where the rod is being used to produce a mechanical bond to the substrate for repair.
 - c. For setting rods provide Flexocrete by the Euclid Chemical Company.

2.03 FORM MATERIALS:

- A. Forms for Exposed Finish Concrete: Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Formwork is to duplicate all existing edge conditions including curves and recessed areas, decorative banding and integral drips, etc.. Furnish in largest practicable sizes to minimize number of joints and to conform to the existing condition. Provide form material with sufficient thickness to withstand pressure of newly-placed concrete without bow or deflection. Sheet metal forms are to be used only with the approval of the Architect.
- B. Use plywood complying with U.S. Product Standard PS-I "B-B (Concrete Form) Plywood", Class 1, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.
- C. Form Coatings: Provide Form Shield Pure Form Release Agent by The Euclid Chemical Co., 19218 Redwood Road, Cleveland, OH Tel: (800) 321-7628, Fax: (216) 531-9596.

2.04 PROPORTIONING AND DESIGN OF MIXES:

- A. General: All mixing, proportioning, placing and finishing of repair materials shall be performed in strict accordance to the manufacturer's instructions.

2.05 PRE-REPAIR CONFERENCE:

- A. At least 7 days prior to commencement of repairs, the contractor shall hold a meeting to review the detailed requirements for those repairs. Surface preparation, proposed equipment and procedures, material mixing, placing and finishing procedures, schedules, climatic conditions and sample repair areas shall be reviewed in the presence of the manufacturer's representative.
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PART 3 - EXECUTION

3.01 PREPARATION OF AREAS FOR REPAIR:

- A. General: All exposed concrete on the edges of the terraces shall be "sound tested" to determine areas of concern. All loose concrete shall be removed and repaired.
- B. All loose concrete and existing repair material shall be removed down to a sound substrate.
- C. At perimeter of all areas requiring repairs cut substrate back so as to avoid "feathered edges." Depth of cut shall be as follows: Spalls less than 1/2" deep; 1/4" minimum, Spalls greater than 1/2" deep; 1/2" minimum. Form and pour areas; 3/4" minimum.
- D. At all locations where oxidized reinforcing is exposed and/or bond has been lost to the substrate cut material out from behind the reinforcing member providing minimum 3/4" clearance behind.
- E. Remove all oxidation and scaling from the exposed reinforcing using mechanical means, and coat with protective coating following the manufacturer's specifications.
- F. Remove all bond-inhibiting materials from substrate, including dirt, concrete slurry, loosely bonded aggregates, etc., using abrasive blasting or high-pressure water blasting with or without abrasive. Provide a chipped concrete substrate with a surface profile of +/- 1/16" with a new aggregate fractured surface. After cleaning check to insure that surfaces are free of loose aggregate, and that additional delaminations have not occurred. Care must be taken to minimize micro-cracking in the base concrete.

3.02 PROJECT DEMOLITION/SURFACE PREPARATION SEQUENCING

- A. Sequence demolition/surface preparation on an elevation by elevation schedule. Do not proceed with repair installation unless the entire elevation has been prepared for repairs. No demolition/surface preparation is to be performed at areas adjacent to newly repaired areas. Confirm sequence of repairs at the pre repair conference (See Paragraph 2.05 above)

3.03 REPLACING REINFORCEMENT:

- A. Comply with ACI 318 and the Concrete Reinforcing Steel Institute's recommended practice for replacing and/or lapping of reinforcing bars, for details and methods of reinforcement replacement, and as herein specified.
 - B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bond with mortar repair.
 - C. Replace or lap all reinforcing steel that has lost more than 25% of its cross section (20% if 2 or more consecutive parallel bars are affected.)
 - D. Accurately position, support and secure reinforcement against displacement by construction, or repair placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.
 - E. Place reinforcement to obtain at least 3/4" minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during repair placement operations. Set wire ties so ends are directed into repair, not toward exposed concrete surfaces.
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3.04 INSTALLATION OF STEEL RODS FOR MECHANICAL BOND:

- A. General: All installation shall be done in strict accordance with the manufacturer's instructions and specifications and as described below.
1. Stainless steel threaded rods shall be installed at all repairs 2" or deeper.
 2. All rods shall be installed inside the existing or replacement reinforcing steel.
 3. Rods shall be installed at an upward angle where possible.
 4. Install rods at a maximum 6" on center.
 5. Rods shall be installed so that the ends are a minimum of 3/4" from the face of repairs to be applied.
 6. The diameter of the holes drilled in the concrete shall be 1/4" greater than the diameter of the threaded rods.
- B. Drill 5/8" diameter hole in substrate 4" deep. Clean out hole using a blow-out bulb, or compressed air, and a nylon brush. Clean dust from substrate in area around hole.
- C. Inject adhesive into hole while withdrawing dispenser. Do not overfill.
- D. Immediately insert rod slowly into uncured adhesive, turning slightly.
- E. Remove all excess adhesive from face of substrate.
- F. When adhesive has fully cured, install double nut and washer, locking assembly into position. Do not load until adhesive is fully cured.

3.05 REPAIR TYPE SIZE CRITERIA AND UNIT PRICE DEFINITIONS:

- A. Prepared repair sites up to 2" in depth and 1'-0" in length, any direction: Trowel Repair.
- B. Prepared repair site over 2" in depth of any length: Formed and Poured Repair.
- C. Prepared repair site over 1'-0" in length: Formed and Poured Repair. Note: all formed and poured repairs are to be a minimum of 2" in depth.
- D. Prepared corner repair site of any length: Formed and Poured Repair.
- E. Unit Price Definitions
1. Unit Price - Trowel repair as described above up to 2" in depth per lineal foot of slab edge.
 2. Unit Price - Deep poured repair 2" to 6" in depth per lineal foot of slab edge without full post encapsulation at balcony fences.
 3. Unit Price - Full depth curb re-pouring without post encapsulation per lineal foot of slab edge.
 4. Unit Price - Full depth curb re-pouring per post location assuming 6" running length on either side of the post (lineal foot)
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3.06 TROWEL REPAIR MORTAR PLACEMENT:

- A. General: Apply/install all repair products in strict accordance with the manufacturer's instructions and specifications and as described below.
- B. Trowelable Repair Mortar:
 - 1. Dampen the surface to be repaired with clean, potable water.
 - 2. Mixing: Mix prepackaged components per the manufacturer's instructions.
 - 3. At time of application the substrate should be damp, with no standing water.
 - 4. Scrub bond coat of repair mortar into substrate, filling all pores and voids. Bond coat is to consist of repair mortar components mixed to a plastic consistency. While bond coat is still plastic, force material against edge of repair and work towards center. After filling, consolidate and screed. Allow mortar to set to desired stiffness and finish with trowel for smooth finish. Finish to match existing adjacent concrete. Institute manufacturer's recommended curing procedure immediately.
 - 5. Replicate all edge detailing and drips located in the adjacent material.
 - 6. At areas where previous repairs are to remain, re-establish drip at underside by saw cutting as necessary. Areas where saw cutting is performed are to be sound tested after saw cutting unsound areas are to be repaired as described above.

3.07 TROWEL APPLIED REPAIR CURING AND PROTECTION:

- A. Cure areas to be coated per manufacturer's instructions use a fine mist of water then cover with wet burlap, or polyethylene for 24 hours. Curing compounds are not to be used without the approval of the repair mortar and concrete coating manufacturers.

3.08 FORMS:

- A. General: Comply with the repair type size criteria in Section 3.04
 - B. Design, erect, support, brace and maintain formwork for large repairs to support vertical and lateral loads that might be applied until such loads can be supported by concrete structure/substrate. Construct formwork so that repairs are of correct size, shape, alignment, and position. Form profiles are to closely replicate adjacent concrete. Minimum rebar cover of 1" shall be maintained within formwork and confirmed prior to pour.
 - C. If an extension of the original profile of the concrete is required for adequate cover of original reinforcing steel, confirm shape and extent of this extension/alteration with Architect and Owner via approval of a successful sample visible from an accessible location. Do not proceed with formwork or trowel applied repairs that deviate from the original profile without the approval of the Architect.
 - D. Design formwork to be readily removable without impact, shock or damage to cast-in-place repairs, surfaces and adjacent materials.
 - E. Chamfer exposed corners and edges to match original condition, using wood, metal, PVC or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
-



- F. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive repair material. Remove chips, wood, sawdust, dirt or other debris just before concrete is placed. Retighten forms and bracing after concrete placement required to eliminate mortar leaks and maintain proper alignment.
- G. Seal form perimeters as required to provide a watertight condition. Spilling or run out of repair concrete will be unacceptable. Use sealant as approved by the repair material manufacturer. Completely remove all sealant residues after form removal.

3.09 PREPARATION OF FORM AND SUBSTRATE SURFACES:

- A. Clean re-used forms of all repair material residue, repair and repair as required to return forms to acceptable surface condition.
- B. Coat contact surfaces of forms with a form-coating compound before reinforcement is placed.
- C. Thin form-coating compounds only with thinning agent of type, and in amount, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.
- D. Dampen the surface of the repair substrate with clean water within 12 Hours of repair concrete placement. Coat all surfaces of the substrate intended to bond to the new repair with the bonding agent. Bonding Agent must be applied within 12 Hours of repair concrete replacement.

3.10 POURED REPAIR MATERIAL PLACEMENT:

- A. Mix all poured repair concrete in an approved mechanical mixer. Drill and paddle mixing of small batches is to be performed only upon specific approval of the Architect. Discharge mechanical mixer contents into a clean vessel suitable for transporting the repair concrete to the placement site immediately.
- B. Fill forms carefully to avoid over flow and spills. Do not overfill forms. Vibrate mix while liquid/plastic using manufacturer's approved methods and vibrating equipment.

3.11 CURING OF POURED REPAIRS

- A. Cure formed repairs in accordance with manufacturer's instructions.
- B. Apply approved curing compound upon removal of formwork. In weather 80 degrees Fahrenheit or above or severely windy weather rewet the repair surfaces after curing compound application and drying and cover with polyethylene sheeting for a minimum of three days.

3.12 POST CURE FINISHING

- A. Carefully examine all completed repairs for ridges, visible seams, excess concrete residue, bumps or voids. Abrade, grind or remove ridges and protrusions using abrasive techniques acceptable to the Manufacturer.
- B. Formed and poured repairs containing excessive voids or air pockets will be rejected by the Architect.

3.13 COATING OF CONCRETE AND REPAIRS:

- A. General: Application of the waterproof coating shall be done in strict accordance with the Manufacturer's instructions and specifications, and as described below:
-



- B. Clean all surfaces to be coated of any bond-inhibiting materials prior to application of the coating. All surfaces shall be dry, sound and frost free.
- C. Mix the product as specified by the manufacturer.
- D. Two coats of material shall be applied by brush, roller or spray equipment, making sure that full coverage is achieved.
- E. The application of the material shall be terminated at a straight taped line to be determined with the Architect. The termination point of the waterproof coating shall be consistent at all terraces.

END OF SECTION 030130



SECTION 040120 - EXTERIOR MASONRY CLEANING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-I Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK:

A. This section of the specifications addresses the masonry cleaning work on stone surfaces. Types of masonry cleaning work required include:

1. Prolonged water wash cleaning of masonry using only clean potable water
- B. Related masonry restoration work is described in Sections 040120 and 044300 of these specifications.
- C. Related joint sealer work is described in Section 079200 of these specifications.
- D. Refer to the Schedule of Alternates in Section 012300 for the work of alternates (if any) that relate to this section.

1.03 SUBMITTALS

- A. Environmental Regulations: Describe testing, handling, treatment, containment, collection, transport, disposal, and discharge of any hazardous wastes and cleaning effluents. Describe any hazardous materials to be cleaned from substrates. Submit applicable local environmental regulations.
- B. Protection: Describe methods for protecting surrounding areas, landscaping, pedestrians, vehicles, and non-masonry surfaces during the work from contact with chemical restoration cleaners residues, rinse water, fumes, wastes, and cleaning effluents.
- C. Surface Preparation: Describe surface preparation to be completed before application of restoration cleaners and paint strippers.

1.04 QUALITY ASSURANCE

- A. Restoration Specialist: Work must be performed by a firm having not less than 5 years successful experience in comparable masonry restoration projects and employing personnel skilled in the restoration processes and operations indicated.
 - B. Pre-Application Meeting: Convene a pre-application meeting a maximum of three weeks before the start of exterior masonry restoration cleaning. Require attendance of parties directly affecting work of this section, including the Contractor, Architect, applicator,. Review environmental regulations, test panel procedures, protection of surrounding areas and non-masonry surfaces, surface preparation, application, and coordination with other work.
-



1.05 ENVIRONMENTAL REGULATIONS

A. Comply with applicable federal, state, and local environmental regulations regarding testing, handling, treatment, containment, collection, transport, disposal, and discharge of hazardous wastes and cleaning effluents.

B. Confirm that water used for prolonged wash will be drawn from a metered source. If the source is not metered by the New York City Department of Environmental Protection (NYCDEP) notify Owner of the requirement for a hydrant permit. Permit fees will be the responsibility of the Owner. No additional administrative charges will be borne by the Owner for the securing of hydrant permits. Securing of hydrant permits if required will be the responsibility of the Contractor. Permits may be obtained from the DEP Meter Permit Office of the pertinent borough.

C. No prolonged water wash will be permitted during NYCDEP declared Drought Watch or Drought Emergency, Stage One or higher. The Contractor shall be responsible for confirming the existence of the above drought conditions and informing the Owner in writing of the drought condition at the intended time of cleaning. Drought information can be obtained at the NYCDEP website (www.ci.nyc.us/html/dep/home.html).

1.06 TEST PANELS

A. Before full scale application, review manufacturer's product data sheets to determine the suitability of each product for the specific surfaces. Apply each restoration cleaner to test panels to determine dilution rates, dwell times, number of applications, compatibility, effectiveness, application procedures, effects of pressure rinsing, and desired results.

B. Perform prolonged washing and bristle scrubbing at the test panel Scrub lightly after 18 hours, 36 hours and finally after 72 hours. Evaluate and document conditions after each time period Do not begin full scale application until test panels are inspected and approved by the Architect.

1. Size: Minimum 6 feet by 6 feet each.
2. Locations: As determined by the Architect.
3. Number; minimum of three to allow for the evaluation of wash time required as above.

C. Test all cleaning effluents generated by the restoration cleaning of the test panels to determine any hazardous characteristics. Comply with applicable federal, state, and local environmental regulations regarding testing, handling, treatment, containment, collection, transport, disposal, and discharge of hazardous wastes.

D. Retain and protect approved test panels in undisturbed condition during the work of this section, as a standard for judging the restoration cleaning work.

1.07 PROJECT CONDITIONS

A. Do not clean masonry surfaces when temperatures are below freezing or will be overnight, to avoid harm to masonry. Clean masonry surfaces only when air and masonry surface temperatures are 40°F and above. Allow adequate time for masonry to thaw if freezing conditions exist prior to application.

PART 2 - PRODUCTS

2.01 WATER

A. Water for Rinsing: Clean and potable containing no deleterious materials leading to masonry discoloration.



PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify by examination that masonry surfaces are acceptable to receive the specified restoration cleaners.
- B. Verify that all non-masonry surfaces requiring protection can be adequately protected using plastic sheeting material. Identify any surfaces where alternate protection is required and confirm protection methods with Architect and Manufacturer's Representative prior to cleaning.

3.02 PROTECTION

- A. Protect surrounding areas, landscaping, pedestrians, vehicles, and non-masonry surfaces during the work from contact with restoration cleaners and, residues, rinse water, fumes, wastes, and cleaning
- B. Confirm all temporary protection measures to prevent perimeter leakage during masonry cleaning operations. Coordinate with building staff for all required access. Refer to Section 01010 for emergency contact requirements. Contractor's personnel must be reachable and on call during all prolonged rinsing operations.
- C. Divert and protect pedestrian and auto traffic.

3.03 SURFACE PREPARATION

- A. Apply all specified caulking and sealants and allow to cure before cleaning begins. Institute all temporary protection measures to prevent interior leakage.

3.04 PROLONGED RINSE AND SCRUB

- A. General: Use application procedures determined from test panel results approved by the Architect.
- B. Using apparatus proven successful in the test panels introduce a continuous low pressure rinse of the stone surfaces for the period of time determined by the successful test panel. Arrange apparatus to provide low pressure wetting of all stone surfaces to be cleaned at a constant rate.
- C. After the approved rinse time period gently scrub the stone surfaces with approved natural soft bristle brushes and conduct final rinsing.

3.05 FIELD QUALITY CONTROL

- A. Inspection: Inspect the restoration cleaning work with the Contractor, Architect, applicator, and, and compare with approved test panels. Determine if the substrates are suitably prepared to start masonry restoration.

3.06 FINAL CLEANING

- A. Clean site of all unused products, residues, rinse water, wastes, and cleaning effluents in accordance with environmental regulations.
- B. Remove and dispose of all materials used to protect surrounding areas and non-masonry surfaces, following completion of the work of this section.

END OF SECTION 040120



SECTION 042000 - UNIT MASONRY

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. This Section includes unit masonry assemblies consisting of the following:

1. Concrete masonry units (CMUs).
2. Mortar and grout.
3. Reinforcing steel.
4. Masonry joint reinforcement.
5. Ties and anchors.
6. Miscellaneous masonry accessories.

B. Related Sections include the following:

1. Division 07 Section "Flashing and sheet metal".
2. Division 07 Section "Joint Sealants" for sealing control and expansion joints in unit masonry.

1.03 DEFINITIONS

A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.04 SUBMITTALS

A. Product Data: For each type of product indicated.

1. Provide Environmental Materials Reporting Form.

B. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
2. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement"

C. Samples for Verification:

1. Weep holes/vents.
-



2. Accessories embedded in masonry.

D. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.

1. Submittal is for information only. Neither receipt of list nor approval of mockup constitutes approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.

E. Qualification Data: For testing agency.

F. Material Certificates: Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards. Provide for each type and size of the following:

1. Masonry units.

a. Include material test reports substantiating compliance with requirements.

b. For CMU, include size-variation data verifying that actual range of sizes falls within specified tolerances.

2. Reinforcing bars.

3. Joint reinforcement.

4. Anchors, ties, and metal accessories.

G. Mix Designs: For each type of mortar. Include description of type and proportions of ingredients.

H. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with cold-weather requirements.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1093 for testing indicated, as documented according to ASTM E 548.

B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.

C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from a single manufacturer for each cementitious component and from one source or producer for each aggregate.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units 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. If units become wet, do not install until they are dry.



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. Deliver preblended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

F. Store aggregates away from contaminants where grading and other required characteristics can be maintained.

1.07 PROJECT CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches (600 mm) down both sides and hold cover securely in place.

2. Where 1 wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches (600 mm) down face next to unconstructed wythe and hold cover in place.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.

2. Protect sills, ledges, and projections from mortar droppings.

3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.

4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

2. No masonry work will be permitted if temperatures are, or are expected to be, below 40°F at the time of construction or if temperatures are, or are expected to be, below 35°F within the three (3) days following construction.



E. Protect new masonry from rain or snow for at least 24 hours by covering with weather-resistive membrane.

F. Use windbreaks or enclosures when wind is in excess of 15 mph.

G. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.

2. Products: Subject to compliance with requirements, provide one of the products specified.

3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.02 MASONRY UNITS, GENERAL

A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

2.03 CONCRETE MASONRY UNITS (CMUs)

A. Shapes: Provide shapes indicated and as follows:

1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.

2. Provide square-edged units for outside corners, unless otherwise indicated.

B. Concrete Masonry Units: ASTM C 90.

1. Weight Classification: Normal weight.

2. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.

C. All CMU shall be 100% regional materials.

2.04 MORTAR AND GROUT MATERIALS

A. General: No additives will be allowed. "Waterproof cement/mortar" and "masonry cement/mortar" are not acceptable.



B. Portland Cement: ASTM C 150, Type I, except Type III may be used for cold weather construction. Provide natural color or white cement as required to produce required mortar color.

C. Hydrated Lime: ASTM C 207, Type S.

D. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortar.

E. Aggregate for Mortar: ASTM C 144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.

2. White-Mortar Aggregates: Natural white sand or crushed white stone.

3. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

4. Colored Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with record of satisfactory performance in masonry mortars.

F. Colored Mortar: Contractor may elect to use pre-colored mortar, or Architect may require its use. Colored mortar provided by the following manufacturers will be considered acceptable:

1. Color Mortar Blend (Color Portland Cement-lime Mortar) by Glen-Gery Corporation, Northeast Regional Sales Office, 75 Hamilton Road, Somerville, NJ 08876, Tel: (908) 359-7305, Fax: (908) 359-5116.

2. Custom Color Cement by Lehigh Portland Cement Company, 7660 Imperial Way, Allentown, PA 18195, Tel: (800) 523-5488, Fax: (610) 366-4684.

2.05 REINFORCEMENT

A. Reinforcing Steel: For reinforcement of parapet walls, provide #5 epoxy-coated rebar shop bent to the required configuration.

B. Adhesive: For installation of parapet reinforcing provide "HY 150" by Hilti, P.O. Box 21148, Tulsa, OK 74121, (800)926-0333.

C. Wall Reinforcement: For installation in all masonry walls provide Extra Heavy stainless steel #140 Truss Twin Mesh by Hohmann & Barnard, Inc. 631-234-0600.

B. Joint Reinforcement: Provide welded-wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10', with prefabricated corner and tee units, and complying with requirements indicated below:

2.06 TIES AND ANCHORS

A. Wall Ties: Tie-HVR-195VB Anchor System in stainless steel by Hohmann & Barnard, Inc. 631-234-0600. Provide stainless steel fasteners as recommended by the Manufacturer for substrate type.

B. Expansion Joint Stabilizers: Provide stainless steel "Slip-Set Stabilizer" by Hohmann & Barnard, Inc. 631-234-0600.



2.07 MISCELLANEOUS MASONRY ACCESSORIES

A. Weep holes: Provide injection-molded "Brick Vents" by Williams Products, 1750 Maplelawn Boulevard, Troy, Michigan 48084. Tel: (248) 643-6400, or (800) 521-9594.

B. Soft Joint Pad: Provide "NS - Closed Cell Neoprene Sponge" by Hohmann & Barnard, Inc. 631-234-0600. Pad shall be 1/4" thick or sized properly for joint size, neoprene with self-adhesive, and shall comply with ASTM D 1056 Grade 2A1.

C. Expandable Joint Filler: For installation in all vertical expansion joints provide Backerseal Expanding Foam Sealant by Emseal Joint Systems Ltd., 25 Bridle Lane, Westborough, MA 01581-2603, Tel: (800) 526-8365, Fax: (508) 836-0281.

2.08 MORTAR MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.

2. Limit cementitious materials in mortar to portland cement and lime.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C 270, Property Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.

1. For masonry below grade or in contact with earth, use Type M.

2. For reinforced masonry, use Type N.

3. For mortar parge coats, use Type N.

4. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.

D. Colored Mortar: Contractor may elect to use pre-colored mortar, or Architect may require its use. Colored mortar provided by the following manufacturers will be considered acceptable:

1. Color Mortar Blend (Color Portland Cement-lime Mortar) by Glen-Gery Corporation, Northeast Regional Sales Office, 75 Hamilton Road, Somerville, NJ 08876, Tel: (908) 359-7305, Fax: (908) 359-5116.

2. Custom Color Cement by Lehigh Portland Cement Company, 7660 Imperial Way, Allentown, PA 18195, Tel: (800) 523-5488, Fax: (610) 366-4684.



PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

1. Verify that foundations are within tolerances specified.

2. Verify that reinforcing dowels are properly placed.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown.

B. Build chases and recesses to accommodate items specified in this and other Sections.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.

D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.

1. Mix units from several pallets or cubes as they are placed.

F. Matching Existing Masonry Work: Match coursing, bonding, color and texture of new masonry work with existing work.

G. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:

1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet maximum.

2. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet maximum.

3. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet (3 mm in 3 m) maximum.

4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm). Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch (3 mm).



5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm). Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch (3 mm).
6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch (1.5 mm) except due to warpage of masonry units within tolerances specified for warpage of units.
7. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch (1.5 mm) from one masonry unit to the next.

3.03 MORTAR BEDDING AND JOINTING

- A. Lay masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- B. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings and in all courses of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or filled with concrete or grout. For starting course on footings where cells are not grouted, spread out full mortar bed including areas under cells.
- C. Maintain joint widths shown, except for minor variations required to maintain bond alignment. If not shown, lay walls with 3/8" joints.
- D. Cut joints flush for masonry walls which are to be concealed or to be covered by other materials, unless otherwise indicated.
- E. Tool exposed joints slightly concave using a jointer larger than joint thickness, unless otherwise indicated.
- F. Remove masonry units disturbed after laying; clean and reset in fresh mortar. Do not pound corners or jambs to shift adjacent stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.
- G. Collar Joints: After each course is laid, fill the vertical longitudinal joint between wythes solidly and with mortar except at joints directly above concealed flashing where weeps are installed. For solid walls only.
- H. Weeps: Install weeps at a maximum of 24" on center in the head joints of the course directly above all concealed flashings. Ascertain that the joint is kept clear of mortar.

3.04 STRUCTURAL BONDING OF MULTI-WYTHE MASONRY:

- A. Use individual metal ties installed in horizontal joints to bond wythes together. Provide ties as shown, but not less than one metal tie for 2 sq. ft. of wall area spaced not to exceed 16" o.c. horizontally and vertically. Stagger ties in alternate courses. Provide additional ties within 1'-0" of all openings and space not more than 3'-0" apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24" o.c. vertically.
- B. Where indicated use continuous horizontal joint reinforcement installed in horizontal mortar joints for bond tie between wythes. Install at not more than 16" o.c. vertically.
- C. Corners: Provide interlocking masonry unit bond in each course at corners, unless otherwise shown.

3.05 ANCHORING MASONRY VENEERS



A. Anchor masonry veneers to backup with seismic masonry-veneer anchors to comply with the following requirements:

1. Fasten seismic anchors to masonry backup with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
2. Embed connector sections and continuous wire in masonry joints.
3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
4. Space anchors as indicated, but not more than 18 inches (458 mm) o.c. vertically and 24 inches (610 mm) o.c. horizontally, with not less than 1 anchor for each 2 sq. ft. (0.2 sq. m) of wall area. Install additional anchors within 12 inches (305 mm) of openings and at intervals, not exceeding 8 inches (203 mm), around perimeter.

3.06 CONTROL AND EXPANSION JOINTS

A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

B. Form control joints in concrete masonry using one of the following methods:

1. Fit bond-breaker strips into hollow contour in ends of concrete masonry units on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.
2. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.

C. Provide horizontal, pressure-relieving joints by either leaving an air space or inserting a compressible filler of width required for installing sealant and backer rod specified in Division 07 Section "Joint Sealants," but not less than [3/8 inch (10 mm)]

1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry at each floor.

3.07 REINFORCED UNIT MASONRY INSTALLATION

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.

1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
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3.08 FIELD QUALITY CONTROL

A. Inspectors: Owner will engage qualified independent inspectors to perform inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform inspections.

1. Place grout only after inspectors have verified compliance of grout spaces and grades, sizes, and locations of reinforcement.

B. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections indicated below and prepare test reports:

1. Payment for these services will be made from Testing and Inspecting Allowance, as authorized by Change Orders.

2. Retesting of materials failing to comply with specified requirements shall be done at Contractor's expense.

C. Testing Frequency: One set of tests for each 5000 sq. ft. (465 sq. m) of wall area or portion thereof.

D. Concrete Masonry Unit Test: For each type of unit provided, per ASTM C 140.

E. Mortar Test (Property Specification): For each mix provided, per ASTM C 780. Test mortar for mortar air content and compressive strength.

F. Grout Test (Compressive Strength): For each mix provided, per ASTM C 1019.

3.09 PARGING

A. Parge exterior faces of below-grade masonry walls, where indicated, in 2 uniform coats to a total thickness of 3/4 inch (19 mm). Dampen wall before applying first coat and scarify first coat to ensure full bond to subsequent coat.

B. Use a steel-trowel finish to produce a smooth, flat, dense surface with a maximum surface variation of 1/8 inch per foot (3 mm per 300 mm). Form a wash at top of parging and a cove at bottom.

C. Damp-cure parging for at least 24 hours and protect parging until cured.

3.10 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.



2. Clean stone by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
3. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.
4. Clean stone trim to comply with stone supplier's written instructions.

3.14 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

END OF SECTION 042000



SECTION 044300 - EXTERIOR STONE

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 the work of this section.

1.02 DESCRIPTION OF WORK:

- A. The work of this section shall cover all work necessary for the production and installation of Stone cladding. The work shall include, but is not necessarily limited to:
1. Careful removal, cataloging, and storage off-site for replacement, Irish field stone cladding and freestanding wall portions from supporting concrete and/or CMU cores at the Field and Cottage wall in the monument areas indicated to allow flashing of the underlying condition. Do not disturb underlying reinforcing bars. Note all stone is to be reinstalled at the repaired and waterproofed substrates. Tooling and fabrication of all required profiles.
 2. Protection of the monument, cottage walls and field stone walls not being removed; in position throughout the entire construction period.
 3. Rebuilding of the Cottage and Fieldstone walls reusing the stone previously removed, catalogued and stored. Shortfall in stone is to be accommodated from Contract Allowance. Rebuilding is to incorporate the installation of wall ties/wall tie system at the rate of minimum 1-tie per 2 square feet of exposed surface area.
 4. Note all stone rebuilding is subject to approval by the Artist and Owners. Contractor must provide a minimum of two full size mock-ups, 6'-0"± in length. Mockups include Cottage walls and Field walls. Mockups may be applied to the monument directly and if successful may be fully incorporated into the completed work.
3. All necessary attachments to the substrate.
4. Fabrication, delivery and installation of new replacement field stone to replace any shortfall per Contract Allowance.

1.03 RELATED SECTIONS

- A. Related stone maintenance and cleaning is described in Section 040120 of these specifications.
- B. Related masonry work is described in Section 042000 of these specifications.
- C. Related flashing work is found in Section 075554 of these specifications.
- D. Related joint sealer work is described in Section 079200 of these specifications.

1.04 QUALITY ASSURANCE:

- A. Coordination: Coordinate the installation of all stone work closely with all related work to produce and maintain a watertight condition.
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- B. Source Limitations for Stone: Obtain each variety of stone from one quarry, whether specified in this Section or in another Section of the Specifications, with resources to provide materials of consistent quality in appearance and physical properties.
- D. Installation: Engage a firm with not less than 5 years experience in successful installation of Stone types similar to those required for this project. Closely follow all manufacturer's installation instructions.
- E. Job Mock-Up: Prior to installation of stonework, provide sample panels of stonework indicated with proposed range of color, texture and workmanship to be expected in completed work. Build mock-up at site, as directed, using stone, anchors and jointing, as shown and specified in accordance with final shop drawings.
- F. Obtain Architect's acceptance of visual qualities of sample panels before start of stonework. Replace unsatisfactory mock-up work, as directed, until acceptable to Architect. Retain sample panels during construction as a standard for judging completed stonework. Do not alter, move or destroy mock-up until work is completed.
- G. Note all stone rebuilding is subject to approval by the Artist and Owners. Contractor must provide a minimum of two full size mock-ups, 6'-0"± in length. Mockups include Cottage walls and Field walls. Mockups may be applied to the monument directly and if successful may be fully incorporated into the completed work.
- H. In the case of more variegated stones, color photos shall be submitted in addition to the number of samples to show the full range of color and markings to be expected.
- I. Mortar Samples: Full range of exposed color and texture.
- H. If sealant primers, sealants, resin-adhesives, water repellents and other compounds are required in the finished stonework, build mock-up and apply compounds in sufficient time to allow for final test for staining or other deleterious effects from such applications.

1.04 SUBMITTALS:

- A. Samples for Verification Purposes: Submit the following samples:
 - 1. Stone samples for each type of exposed unit required; include in each set the full range of exposed color and texture to be expected in completed work.
 - 2. Colored mortar samples for each color required showing the full range of color, which can be expected, in the finished work. Label samples to indicate type and amount of colorant used.
 - 3. Fastener samples of each type required. Include Manufacturer's data showing the pullout strength of each fastener type.
 - 4. Shop drawings indicating size and dimensions of all new masonry units including all associated fasteners/hangers.
 - B. Product Data: Submit the manufacturer's specifications, installation instructions and general recommendations.
 - C. Shop Drawings: The Stone Manufacturer shall prepare and submit complete, properly marked fabrication and setting drawings, showing details and sizes of stones, arrangement of joints, bonding, inserts, joints, connections to adjoining walls or materials, reinforcing and method of installation and anchoring. All anchorage and details to be prepared by a licensed P.E. in the State of New York. Drawings shall be stamped by the licensed P.E. Shop drawings shall provide for but are not limited to the following the following:
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1. Suitable wash on all exterior sills, cornices, banding, projecting courses and pieces with exposed top surfaces.
2. All projecting pieces and soffit stones shall have drips under the outer edge.
3. The shop drawings shall show the setting mark of each stone and its location on the structure. The stone, when delivered, shall bear the same corresponding setting mark on an exposed surface.
4. Shop drawings indicating size and dimensions of all new masonry units including all associated fasteners/hangers.

1.05 JOB CONDITIONS:

- A. Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of work and protection of materials and finishes.
- B. Application temperatures: no stone installation shall proceed at ambient temperatures less than 50 degrees Fahrenheit. Temperatures above this absolute minimum shall be maintained for a period of seven days after stone work.
- C. Hot Weather requirements: Comply with hot weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
- D. Prior to the installation of the setting bed all debris shall be removed from substrate.

1.06 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver masonry materials to project in undamaged condition.
 - B. Store and handle masonry units to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion or other causes.
 - C. Store cementitious materials off the ground, under cover and in a dry location. Store aggregates where grading and other required characteristics can be maintained.
 - D. Store aggregates away from contaminants where grading and other required characteristics can be maintained.
 - E. Store accessories including metal items to prevent deterioration by corrosion and accumulation of dirt.
 - F. Handle stone to prevent chipping, breakage, soiling or other damage. Do not use pinch or wrecking bars without protecting edges of stone with wood or other rigid materials. Lift with wide-belt type slings wherever possible; do not use wire rope or ropes containing tar or other substances, which might cause staining. If required, use wood rollers and provide cushion at end of wood slides.
 - G. Store stone on wood skids or pallets, covered with non-staining, waterproof membrane. Place and stack skids and stones to distribute weight evenly and to prevent breakage or cracking of stones. Protect stored stone from weather with waterproof, non-staining covers or enclosures, but allow air to circulate around stones.
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PART 2 - PRODUCTS

2.01 STONE FABRICATOR / SUPPLIER:

A. Obtain materials for all stone from a single source to insure proper quality and color, pattern and texture to match existing.

2.02 STONE MATERIALS:

A. All stone shall be reused from existing stone carefully removed, catalogued and stored to allow waterproofing and repairs be performed to the substrates and core walls.

B. Replacement stone shall be of a similar size color range texture and shape as the existing un-cut randomly sized and shaped field stones.

C. Final color selection for replacement stones shall be made by Artist, Owner and Architect from samples supplied by the Contractor.

2.03 MORTAR MATERIALS FOR REBUILDING FIELD AND COTTAGE STONE:

A. General: No additives will be allowed. "Waterproof cement/mortar" and "masonry cement/mortar" are not acceptable.

B. Pre-blended Hydraulic Lime Mortar Mix: Ecologic™ Mortar "DGM", type G, custom blend; as manufactured by LimeWorks.US, PO Box 151, Milford Square, PA 18935, telephone (215) 536 6706, Fax. (215) 536 2281. Website: http://www.limeworks.us/ecologic_more.html

C. Pre-blended Hydraulic Lime Mortar Mix: Ecologic™ Mortar "SCG", type G; as manufactured by LimeWorks.US, PO Box 151, Milford Square, PA 18935, telephone (215) 536 6706, Fax. (215) 536 2281. Website: http://www.limeworks.us/ecologic_more.html

D. Final color selection for mortar for use in the replacement of stones shall be made by Artist, Owner and Architect from samples supplied by the Contractor.

E. Aggregate for Mortar: N/A; included in the premixed hydraulic mortar blend. Do not add more aggregate.

F. Water: Clean and potable, free from chlorides or any other salts.



2.04 MORTAR MIXES FOR REBUILDING FIELD AND COTTAGE STONE:

A. General:

1. Measurement and Mixing: Measure pre-blended hydraulic lime mortar mix in a dry condition by volume or equivalent weight. Do not measure by shovel, use a known measure. Mix materials with the required volume of clean water in a clean mechanical batch mixer, masons paddle mixer, or clean 5-gallon pail with a high torque electric power drill with a rigid paddle attachment.

2.05 MISCELLANEOUS MATERIALS:

A. Expansion Joint Filler: As approved by the Architect.

B. Stone clips: Provide stainless steel anchor clips as approved by the Architect.

C. All metal clips shall have a slot at rear leg to allow for vertical adjustment.

D. Wall Ties: Tie-HVR-195VB Anchor System in stainless steel by Hohmann & Barnard, Inc. 631-234-0600. Provide stainless steel fasteners as recommended by the Manufacturer for substrate type.

E. All shims used for horizontal adjustment shall match the full depth of the angles being shimmed. Shims shall be of the greatest practicable thickness based on the size of the void to be filled

F. Anchor Bolts, Nuts and Washers: Fabricate from AISI Type 302/304 stainless steel.

G. Stone Anchors: Type and size as required to securely anchor and fasten stonework in place. Fabricate anchors and dowels from AISI Type 302/304 stainless steel.

H. Setting Buttons: Lead or plastic buttons of the thickness required for the joint size indicated, and of the size required to maintain uniform joint width.

2.06 FABRICATION:

A. General: Fabricate as shown and as detailed on final shop drawings and in compliance with recommendations of applicable stone association. Provide holes and sinkages cut or drilled for anchors, fasteners, supports and lifting devices, as shown and as necessary to secure stonework in place. Cut and back-check as required for proper fit and clearance. Shape beds to fit supports.

B. Contiguous Work: Provide chases, reveals, reglets, openings and features as required for contiguous work. Coordinate with drawings and final shop drawings showing contiguous work.

C. Cut accurately to shape and dimensions shown on final shop drawings, maintaining fabrication tolerances of applicable stone associations.

D. Dress Joints (bed and vertical) straight and at 90 degree angle to face, unless otherwise indicated.

E. Thickness: Provide stone of thickness indicated. Saw-cut back surfaces which will be concealed in finished work.

F. Carve and cut decorative surfaces and inscriptions in accordance with final shop drawings.



PART 3 - EXECUTION

3.01 INSTALLATION:

A. General: Comply with manufacturers' instructions, except where more stringent requirements are indicated. The Architect reserves the right to reject any and all damaged stones. Rejected stones shall be replaced at no cost to the Owner.

B. Confirm layout pattern of stone with the Architect prior to beginning installation.

C. Sort stone before it is placed to remove stone that does not comply with requirements relating to aesthetic effects, physical properties or fabrication or that is otherwise unsuitable for the intended use.

D. Clean dirty or stained stone surfaces by removing soil, stains and foreign materials before setting. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

E. All stone shall be installed by experienced tradesmen, accurately and in accordance with the shop and setting drawings. Unless otherwise noted, every stone shall be held in place by (2) gravity connections and (2) lateral connections. All joints shall be pointed in a color matched approved mortar. Mortar is to be deeply recessed away from the from stone faces to mimic the appearance of "dry-stone walling". All hangers/hardware shall be firmly installed per manufacturer's recommendations, shimmed and adjusted to correctly place units.

F. All anchors, dowels and other anchoring devices shall be furnished by the setting contractor as shown in the approved shop drawings.

G. When setting with mortar, all stones not thoroughly wet shall be drenched with clear water just prior to setting.

H. After each stone has been set, all joints shall be raked to be deeply recessed away from the stone faces to mimic the appearance of "dry-stone walling". The face of each stone shall then be sponged off to remove any splashed mortar or mortar smears.

I. Install pointing mortar in the vertical and underside joints. Before pointing, the face of all Cast Stone shall be scrubbed with a fiber brush, using soap powder and potable water, and shall then be thoroughly rinsed with clean running water. No acids or prepared cleaners shall be used without the express approval of the Limestone supplier.

K. All stone shall be protected from splashing mortar or damage by other trades. Any foreign matter dropped on stones shall be removed immediately.

3.02 STONE SETTING AND RESETTING:

A. Remove stones to be reset using methods that do not damage stone surfaces or arrises. Mark and document stone locations prior to site storage. Do not mark stones on faces to be exposed.



- B. Confirm sound condition of stone upon removal bring any cracks, spalls or other defects to the attention of the Architect immediately. Inspect condition of back up masonry at resetting sites. Localized brick masonry replacement to achieve a sound substrate is included in the work. Key new back up masonry soundly into existing.
- C. Set stones using approved anchors in a full bed of mortar. Set stones plumb and level matching existing bond patterns and jointing. Tool mortar joints to match approved profiles.

3.04 SEALANT INSTALLATION

- A. For sealant application at penetrations, expansion joints, perimeters, etc. refer to Section 07920 of these Specifications.

3.05 CONSTRUCTION TOLERANCES

- A. Variation from Plumb: For vertical lines and surfaces do not exceed ¼ inch in 10 feet. For external corners, expansion joints and control joints, do not exceed ¼ inch in 20 feet.
- B. Variation from Level: For bed joints, lines of exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines, do not exceed ¼ inch in 20 Feet.

3.06 PROTECTION

- A. Protect stone work from debris resulting from subsequent construction activity under this contract.

3.05 ADJUSTING AND CLEANING

- A. Remove and replace broken, chipped, stained or otherwise damaged stone. In a manner that results in stone masonry matching approved samples and mockups, and showing no evidence of replacement.
- B. Remove large mortar particles by hand with wooden paddles and non metallic scrape hoes or chisels.

END OF SECTION 044300



SECTION 075554 - RESIN BASED WATERPOOFING & FLASHING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-I Specification sections, apply to work of this section.
- B. 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 insulation, cover boards, overburden, sealants and metal work as specified

1.02 DESCRIPTION OF WORK:

- A. Extent of waterproofing is hereby defined to include: membrane system intended for weather exposure as primary waterproofing intended for weather exposure under an installed extensive landscaped and paved overburden.
 - B. Adhered fully reinforced, cold fluid-applied, polyurethane liquid resin waterproofing membrane system including membrane, penetration flashings, base flashings, and expansion joints.
 - C. Substrate preparation, cleaning, leveling and patching.
 - D. Insulation/cover board/cap sheet installation
 - E. Temporary waterproofing and priming.
 - F. Waterproofing membrane installation.
 - G. Flashing installation and expansion joint installation.
 - H. Protective surfacing.
 - I. Alkalinity protection.
 - J. Preparation for overburden installation.
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- K. Work in this section includes all labor, materials, equipment and services to complete the installation of a proprietary resin based roofing system installed on the existing roof deck.
1. At all areas to receive new roof system consisting of a concrete structural deck work shall include, but is not limited to, the following brief description:
- a. The sound testing of the existing concrete slab to insure that no structural damage has occurred.
 - b. Preparation of the slab for the new membrane installation. The work is to include the removal of all loose material and/or contaminants, the cutting out of all ridges, and other surface projections that could cause puncturing or other damage to the new membrane system, and any resurfacing necessary to create and maintain proper pitch of the slab to the terrace drain(s) and/or scupper(s).
 - c. Airblasting or vacuuming to remove dirt, dust and other loose material. See Special Dust Control Methods and Sequencing Below.
 - d. Installation of proprietary resin sand mix as required to build up low spots/pitch to drain/scuppers.
 - e. Application of polyurethane resin primer.
 - f. Application of new resin and 165 weight polyester fleece membrane.
 - g. Installation of new flashings.
 - h. Termination of roofing to new and existing drains per manufacturer's details.
 - i. Installation of new finish surfacing and sealer.
 - j. Replacement of all roof drains. Tie into existing trench drains.
 - k. Prepare existing cold-joints and through cracks in the underlying concrete deck per manufacturers directing and install continuous minimum 6" wide resin based flashing strip prior to installation of resin based waterproofing at the main field areas.
 - l. Prepare concrete perimeter per manufacturers requirements and install continuous seamless resin-based waterproofing edge treatment strip from the underside drip edge up and over the top of the main field of the concrete deck above. Waterproofing at the main field is to overlap the edge flashing.
 - m. Install resin based waterproofing system to the prepared concrete deck, curbs, penetrations and concrete and CMU core walls per direction of the manufacturer and per applicable details. Typical throughout all raised monument areas. Resin based waterproofing is to turn down the inside face of the raised concrete areas minimum 2'-0" or to the extent possible without disturbing the structural fill and waterproof sheeting membrane above.
 - L. Related sealant work is specified in Section 079200.
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1.03 QUALITY ASSURANCE:

A. Installer:

1. The Contractor shall be certified by the system manufacturer to bid. The Contractor's personnel shall be certified to apply the specified materials/systems. Application personnel shall wear certification badges at all times when mixing or applying proprietary materials.

2. The Contractor shall have a minimum of three (3) years experience in the installation of fluid-applied roofing and waterproofing systems similar complexity to the specified system, and be 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.

B. Certifications:

1. Certification that system specified meets all applicable codes and insurance requirements.

2. Applicator firm certification, indicating full compliance with all manufacturer's requirements and technical specifications.

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.



F. Regulatory Agencies:

1. Underwriters Laboratory: Products and assemblies in the work of this section shall meet/exceed the construction requirements of UL Class A.
2. Workplace Safety: OSHA Safety and Health Standards (29 CFR 1926/1910) - current edition. National Institute for Occupational Safety and Health (NIOSH). Building Official Council of America (BOCA).

G. Mock-Up: Prepare and clean a three by three foot area of each substrate material type. Mock-up areas shall be used to determine required methods and tools to obtain degree of substrate preparation required by the 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. Submit findings in writing to Owner, Architect and the manufacturer. Mock-up areas shall be maintained for quality control for the entire project.

1. An additional sample or samples shall be emplaced at the monument perimeter edge extending from the underside drip up over the top surface for the approval of the edge flashing and aggregate surfacing and sealing. Sample is to be approved by the Artist and Owner. Successful sample may remain in situ and be incorporated into the completed work. Unsuccessful/unapproved samples must be removed.

1.04 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.

1.05 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.

1.06 SPECIAL PROJECT SEQUENCING AND DUST CONTROL REQUIREMENTS:

A. Utilize approved dust collection equipment during all cutting grinding or similar operations. See below.



1.05 SUBMITTALS:

- A. Product Data: Submit latest edition of Manufacturer's literature including performance data and installation procedures and requirements.
- B. Samples: Submit a 4" square sample of the proposed membrane. Color, texture, thickness and surfacing shall be representative of the proposed system.
- C. Installer Certification: Submit manufacturer's certification advising that the installer is an approved, acceptable applicator for the issuance of the manufacturer's warranty.
- D. Manufacturer's Review: Submit a statement signed by the manufacturer stating that the contract documents have been reviewed by qualified representative of the manufacturer of the roofing system and that they are in agreement that the selected materials are appropriate and compatible for the applications shown
- E. Warranties: Specimen copy of manufacturer's warranty and Contractor's warranty
- F. Shop Drawings: Detailed shop drawings include outline of roof or waterproofing application and size, profile details of flashing conditions and methods for penetration and terminations and technical acceptance from the manufacturer. Submit shop drawings detailing intended pitch modifications. Show door sill, cap flashing and paver heights.
- G. Copies of current Material Safety Data Sheets (MSDS) for all components of the work.
- H. Evaluation of moisture content of substrate materials. Determine substrate moisture content throughout the work and record with Daily Inspection Reports or other form of reporting acceptable to the Owner or Architect and the manufacturer.
- I. Evaluation of tensile bond strength of membrane to substrate. Testing shall be performed with Elcometer Adhesion Tester Model 106 or approved similar device. Record test results with Daily Inspection Reports or other form of reporting acceptable to the Owner or Architect and the manufacturer.

1.05 JOB CONDITIONS:

- A. All components of the system shall be delivered to the site in the manufacturer's original sealed containers/packaging, clearly identified with product type, batch number, size, performance characteristics, storage limitations/restrictions and agency approvals.
 - B. The contractor together with the Owner or Architect 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.
 - C. 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 work with. Each crew member shall be fully aware of first-aid measures to be undertaken in case of accidents. Comply with requirements of OSHA, NIOSH and/or local governing authority for work place safety.
 - D. Roll goods shall be stored horizontally on platforms sufficiently elevated to prevent contact with water and other contaminants. Do not use rolls which are wet, dirty or have damaged ends.
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- E. 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.
- F. Observe EPA, OSHA and all local disposal requirements.
- G. Materials shall not be stored in quantities that will exceed design loads, damage substrate materials, hinder installation or drainage.
- H. 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.
- I. 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.
 - 1. Do not commence with the application of any material during or with the threat of inclement weather.
 - 2. 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.
- J. Provide barricades, retaining ropes, safety elements (active/passive) and any appropriate signage required by OSHA, NIOSH, and NSC and/or the Owner or Architect.
- K. Where required by the Owner or Architect, Contractor shall implement odor control and elimination measures prior to and during the application of the roofing materials. Control measures shall be field tested at off-hours and may consist 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 where required due to size of intake opening.
 - 2. 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.
 - 3. Placement of odor elimination stations inside and outside of the enclosure(s) as required by field condition, in coordination with the Owner or his designated Representative.
 - 4. Protection of Contractor personnel and occupants of the structure and surrounding buildings as required to comply with requirements of OSHA, NIOSH and/or governing local authority.

1.06 MANUFACTURER'S REPRESENTATIVE:

- A. The manufacturer's representative shall provide field instruction and supervision of the installation of the membrane system, as required.
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1.07 SPECIAL PROJECT WARRANTY:

- A. Furnish manufacturer's 20 year No Dollar Limit warranty.
- B. The Contractor shall supply the Owner with a minimum five-year workmanship warranty. In the event any work related to roofing, waterproofing, or flashings is found to be within five (5) years of acceptance by the manufacturer and Owner, the roofing/waterproofing contractor shall remove and replace such defects at no cost to the Owner. The Contractor shall notify the manufacturer promptly, regarding the type of defect, location of the defect and implemented repair. The Contractor's warranty obligation shall be directly to the Owner and a copy shall be sent to the system manufacturer.

PART 2 - PRODUCTS

2.01 GENERAL:

- A. Contact Kemper Systems, Inc., New Jersey Office, 1182 Teaneck Road, Suite 206, Teaneck, NJ 07666. Telephone 201-833-8898, Fax 201-833-8422.

2.02 ROOFING MEMBRANE ASSEMBLY/PRODUCTS:

- A. Single ply composite of two-component polyurethane resin and 165 gram weight polyester fleece.
 - 1. Polyurethane resin shall consist of the following components: cream colored formulation resin and dark brown formulation resin by Kemper Systems, Inc.. Kemper 2K PUR.
 - 2. Non-woven, needle-punched polyester fleece, 165 weight by Kemper Systems, Inc. Additional joint fleece as required for butted seam application.
 - 3. Primer: two component, solvent free, high solids epoxy resin for use in improving adhesion of membrane to cementitious, concrete and masonry substrate surfaces. Monitor application rate and adjust depending on substrate absorbency. EP/EP5 primer as appropriate by Kemper Systems, Inc.
 - 4. Primer: two component, solvent free, high solids epoxy resin for use in improving adhesion of membrane to metal substrate surfaces. Monitor application rate and adjust depending on substrate absorbency. D primer by Kemper Systems, Inc.
 - 5. 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, Kemper System America Inc.'s Kemperol A 2K-PUR Accelerator.
 - 6. Aggregate Finish Coating: Polyurethane-based coating suitable for use to both bond and seal aggregate, Kemper System America Inc.'s Kemperdur Deko Transparent.
 - 4. 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)
 - 4. Aggregate for building up low spots/voids: 00 Kiln dried silica sand as approved by manufacturer.
-



5. Alkaline Protection Layer Primer: Where masonry is to be laid over resin based flashing provide two component, solvent free, high solids epoxy resin for use in improving adhesion of membrane to substrate surfaces. Monitor application rate and adjust depending on substrate absorbency. EP with approved oven dried sand by Kemper Systems, Inc.

2.03 MISCELLANEOUS MATERIALS:

A. Tools, accessories and cleaners to be supplied and/or approved by manufacturer prior to product installation.

B. Dust Collection Apparatus: All tools used in the cutting of masonry and the grinding or other abrasive preparation of concrete shall be Compatible with and equipped with Airsweep Dust Extraction System Equipment by Bosch Tool Corporation or approved equal. Dust collection equipment and measures shall be confirmed via Owner Approved mock-up.

C. At planted areas provide full size planting area drains for large areas #2685C cast iron replacement roof drains by Smith Inc. at all drain locations. Drains are to be provided with inside caulk connections, bronze standpipe and polished bronze dome covered with stainless steel mesh, and, under-deck clamps.

D. Repair Mortar for Concrete Substrate: Provide "Euco-Speed" rapid setting patching mortar as manufactured by The Euclid Chemical Company; Cleveland, OH (800) 321-7628.

E. Application Tools, Accessories, and Cleaners: Supplied and/or approved by membrane manufacturer for product installation.

F. Solvent-Based Cleaner for Tools and Membrane Tie-Ins: Methyl Ethyl Ketone (MEK) or acetone.

G. Water-Based Cleaner for Membrane: Simple Green HD.

H. 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

I. Backer Rod: Expanded, closed-cell polyethylene foam designed for use with cold-applied joint sealant.

J. 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.

K. 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

3.01 GENERAL

- A. The Contractor shall coordinate the installation so that each completed area is made watertight at the end of each day.
- B. Existing waterproofing and flashings shall be removed down to the structural substrate/penetration at all waterproofing and flashing areas. Existing bituminous roofing materials are to be fully removed, no exceptions. Existing resin based flashings are to be field inspected. Deteriorated and/or loose areas are to be removed. Sound existing resin based flashings may remain subject to Manufacturer and Architect observation and approval.
- C. Existing resin based flashing which are sound and may remain in place are to be prepared per manufacturers direction prior to the application of new resin based waterproofing/flashing over top of same.
- D. The Contractor shall be responsible for the protection of equipment and adjacent areas from defacing or contamination.
- E. Any substrate to receive membrane materials shall be clean, dry, free of loose, spalled or weak material, oil, grease, contaminants, abrupt changes in level, waterproofing agents, curing compounds, and free of projections which could damage membrane materials.
- F. Do not start any work until surfaces to be covered are suitable to receive membrane application. Determine moisture content of the structural deck. Eliminate or reduce moisture levels to acceptable levels. Do not apply primer over structural deck/surfaces not acceptable to manufacturer. Adjust work schedule as required to accommodate moisture reduction operations.
- G. Where preparation of substrate materials requires the use of power driven or actuated tools, observe applicable use instructions and safety requirements.
- H. Before installation of any membrane materials, notify manufacturer to inspect substrate condition and issue written acceptance. Any corrections shall be implemented prior to the commencement of the work.
- I. Application of any component of the work by the Contractor shall indicate suitable and acceptable surfaces in accordance with this specification.

3.02 SUBSTRATE PREPARATION

- A. General - Comply with manufacturer's instructions for preparation of substrate to receive membrane system, except where more stringent requirements are indicated.
 - 1. Concrete shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, bituminous products and previous waterproofing materials.
 - 2. 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 the manufacturer for acceptance. Where the substrate moisture content exceeds acceptable levels, or where moisture migration to the area below the membrane application cannot be positively eliminated, Contractor may utilize an approved epoxy primer in lieu of the Kemperol Primer D. The use of epoxy shall be contingent on the written approval by manufacturer's Technical Department.



3. Concrete shall be abrasively cleaned in accordance with ASTM D4259 to provide a sound substrate free from laitance with an open concrete surface. When using mechanical methods to remove existing waterproofing products or surface deterioration, the surface profile is not to exceed 1/4" (peak to valley).
 4. The substrate shall be sound and all spalls repaired prior to placement of the primer coat. Spalls and other deterioration shall be repaired in accordance with the requirements of Section 04500.
 5. Areas of minor surface deterioration and low spots shall be repaired/built up to prevent possible ponding of the system, leading to excessive usage of primer and resin. Extent and location of thin surface patching shall require approval of the Architect and manufacturer prior to the application of any system component.
 6. 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. Fill cavities with a patching mixture of primer and approved kiln-dried sand in a 1:4 primer to sand ratio by volume. Silica sand must be kept absolutely dry during storage and handling. Any surface to be leveled or filled must first be primed with an appropriate primer.
 7. Prevent compounds from entering and clogging drains and conductors, and from spilling or migrating onto surfaces of other work.
- B. Metal Preparation:
1. Clean and prepare metal surfaces to near white metal in accordance with SSPC-SP3 (power tool clean) or as required by the manufacturer. Extend preparation a minimum of three (3) inches beyond the termination of the materials.
- C. Prior to priming of the surfaces, the Architect and the manufacturer's representative will inspect and approve the prepared substrate.
- D. Testing 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. Contractor shall perform tests at the beginning of the work a minimum of three tests per 5000SF. Test results shall be submitted to the Architect and the manufacturer. Contractor shall immediately notify the Architect and the manufacturer in the event tensile bond test results are below specified values.
- E. Adequate surface preparation will be indicated by tensile bond strength of membrane to substrate greater than or equal to 220psi for pedestrian traffic and 300psi for vehicular traffic. In the event that the tensile bond strengths are lower than the minimum specified, additional substrate preparation is required. Repeat testing to verify suitability of substrate preparation.

3.06 MEMBRANE INSTALLATION:

- A. Contractor must refer to the manufacturer's application manual for comprehensive application guidelines.
1. The system shall be applied as listed below:
 - a. Preparation and cleaning of the substrate.
 - b. Application of primer suitable for substrate.
 - c. Repair of low spots with sand resin mix.
-



- d. Application of the membrane.
 - e. Application of surfacing and sealer.
2. Immediately prior to the application of any component of the system, the substrate 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.
3. Closely follow the recommendation for hot and cold weather application. Monitor surface and ambient temperatures, including the effects of wind chill.
4. Protect all areas where membrane has been installed. Do not work off installed membrane during application of remaining work before forty-eight 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. Provide and maintain positive ventilation and protection to workers for concealed and/or interior application or applications lacking sufficient natural air movements.
6. Clean tools in accordance with the requirements of the manufacturer.
- B. Substrate Leveling: Substrate conditions are to be evaluated by the Architect and manufacturer.
1. Perform leveling operations in accordance with these instructions.
- a. The leveling mixture typically consists of unsaturated polyester resin and approved kiln-dried silica sand in a 1:2 resin to sand ratio by volume. Spread and plane this compound with a squeegee and trowel to achieve a flat surface. Fill cavities with a leveling mixture of polyester resin and approved kiln-dried sand in 1:3/1:3.5 resin to sand ratio by volume.
 - b. Any surface to be leveled must first be primed.
 - c. Silica sand must be kept absolutely dry during storage and handling.
 - d. Do not proceed with membrane installation until leveled surface has passed a ponding test. Block scuppers and drain. Flood and confirm run off.
2. Preparation of Joints and Cracks: Joints, cracks, and fractures in the structural deck shall be prepared as defined below prior to installation of waterproofing/roofing membrane. Joints, cracks, facades may telegraph through the waterproofing membrane.
- a. Non-moving cracks: Determine that crack is non-moving. Clean out crack by brushing and oil-free compressed air. Fill crack with polyurethane sealant. Allow for a minimum of twelve hours cure or as required by sealant manufacturer.
 - b. Moving cracks and cold joints: 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 hours cure or as required by sealant manufacturer. Apply resin and six inch (6") strip of membrane (resin and fleece) in strict accordance with roofing system manufacturer's written instructions.
- C. Primer Application:
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1. Primer consists of Components A and B. Pour entire contents of Component B into container of Component A.
2. Utilize a spiral mixer or a clean mixing paddle for a minimum of two minutes or until swirl-free and bubble-free. Do not aerate. Once mixed, primer has pot life of approximately twenty minutes.
3. Do not thin primer. Determine required primer coverage for each substrate material/condition and apply in strict accordance with written instructions of manufacturer.
4. Apply primer direct in one step utilizing a brush or paint roller. Do not allow ponding.
5. Allow primer to cure for a minimum of twelve (12) hours. Exposure of the primer in excess of five days or premature exposure to moisture may require removal and application of new primer.
6. Do not apply new primer over exposed primer older than five (5) days, primer prematurely exposed to moisture, or primer used as temporary waterproofing, unless approved by the Technical Department of manufacturer in writing.
7. Primer application past the membrane termination requires surfacing with an approved surfacing material.
8. 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.
9. 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.

D. Mixing Resin Components:

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.

Three spiral mixers and a separate mixing pail are required for the mixing of resins.

1. Prepare Cream Colored Resin (Component A) first:
 2. Combine the Cream and Brown resins in full units in Bucket A. Thoroughly mix the two resins together without aerating until a uniform color results. If temperatures are above 80(F or below 50(F, utilize Activators and Inhibitors to maintain catalyzing process as required. Always mix only what can be used in a twenty minute period.
-



E. Application of Resin/Fleece Reinforcement:

1. Once mix is ready, apply liberally to the prepared surface with roller using a broad, even stroke.
2. Install fleece using manufacturer's approved butted seam with joint fleece procedures.
3. Roll out dry polyester fleece onto the liquid resin mix, making sure the smooth side is facing up (natural unrolling procedure).
4. Allow fleece to saturate with resin from bottom up prior to pouring additional resin on top of surface.
5. Roll the fleece with a medium nap roller to eliminate air bubbles, wrinkles, etc.
6. Apply additional liquid resin mix on top of fleece until fully saturated and continue to work resin. The correct amount of resin will leave no whiteness in fleece and there will be a slightly fibrous surface texture. However, allow no ponding or excessive build-up of the resin. The coating should be smooth and uniform. Consult manufacturer for rate of application on flat, horizontal, and sloped surfaces.
7. 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.
8. At membrane tie-offs, clean in-place membrane with M.E.K. (methyl ethyl ketone) solvent or acetone when resin has cured. Allow solvents to fully evaporate before application of new resin.
9. Prevent contact between mixed/unmixed resin, new membrane or old (remaining) membrane. If any unmixed resin contacts membrane surface, remove immediately and thoroughly with a clean cloth rag.
10. 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 roofing or flashing.

F. Flashings

1. Install membrane flashing system in accordance with the requirements/recommendations of KSI. Provide system with base flashing, penetration flashing, counter flashing, and all other flashings required for a complete watertight system. Install membrane flashing terminated to back up masonry per manufacturer's requirements.
 2. Provide reinforcement fleece with resin at perimeter.
 3. Flashings shall extend a minimum of eight inches above finished membrane level and a minimum of six inches onto horizontal deck surface.
 4. Metal counter flashing shall lap base flashing a minimum of four inches.
 5. Fleece sections shall overlap each other a minimum of two inches.
 6. Prime walls, curbs, etc. with 2-component polyurethane primer. Follow manufacturer's written instructions for primer cure.
 7. Work wet membrane to avoid any blisters, openings, or lifting at corners, junctions, and transitions. Assure full resin saturation of fleece.
-



8. Prevent contact between mixed/unmixed resin, new membrane, or old (remaining) membrane. If any unmixed resin contacts membrane surface remove immediately and thoroughly clean with a cloth rag.
- H. Finish
 1. Kiln-Dried Sand Surfacing with Resin
 - a. Where specified, provide and install approved mineral aggregate to achieve traffic surface.
 - b. Broadcast approved mineral aggregate into supplemental application of uncured unsaturated polyester resin applied over clean, uncured membrane. Obtain full and uniform coverage.
 - c. Immediately after broadcasting, back roll with dry roller using pressure on the roller.
 - d. Following minimum 48-hour cure time, remove loose/un-embedded mineral aggregate. Re-broadcast clean mineral aggregate as required to provide full and uniform embedment and coverage of membrane.
 - e. After completion of mineral aggregate broadcasting, avoid any traffic for a minimum of three days. After cure, remove any loose mineral aggregate by blowing with oil-free compressed air. Seal sand surface with proprietary sealer.
 - I. Alkaline Protection Layer.
 - a. At all areas of flashing to be subsequently concealed by new masonry, install primer and aggregate alkaline protection layer per manufacturer's instructions.
 - b. Allow alkaline protection layer to cure prior to new masonry installation.

3.07 PROTECTION:

- A. The Contractor shall protect system from all other contractors and activities during the work and after completion. Any damage to the system shall be repaired by contractor prior to acceptance.

3.08 CLEAN UP

- A. The Contractor shall remove all masking, protection, equipment, materials and debris from the work and storage areas and leave those areas in an undamaged and acceptable condition.

3.09 INSPECTIONS

- A. Inspection by Contractor: Prior to and during application, inspections may be made by a member of management of the Contractor. Contractor Quality Control Inspections shall be in addition to any inspections which may be made by an employee or representative of the Owner or manufacturer. It is solely the responsibility of the contractor to provide a warrantable project.
 - B. Inspection by Manufacturer's Representative
 1. Prior to and during application, inspections shall be made by manufacturer's Representative.
 2. All inspections must be requested by the Contractor in writing with a minimum 48-hour advanced notice. No work is to be proceed until the appropriate inspections have been completed and written acceptance by manufacturer has been received.
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3. The following inspections by the manufacturer's representative designate are required for issuance of warranty:
 - a. Substrate inspection and acceptance.
 - b. Primer inspection
 - c. Membrane inspection
 - d. Final inspection.
4. Contractor shall submit to manufacturer daily membrane samples, daily log reports and certification that installation has been completed in conformance with the standards of manufacturer.
5. Contractor shall correct any application deficiencies in conformance with the standards of manufacturer.

3.10 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.

3.11 SURFACING AND FINISHES

- A. Where specified, provide and install approved kiln-dried silica sand, or other approved mineral surfacing to achieve an aesthetic and/or non-skid surface.
 - B. Pre-mix single-component and two-component coatings prior to application to achieve an even consistency.
 - C. Broadcast specified and approved sand or aggregate in excess into a bonding coat application of Membrane Manufacturer's approved urethane-based or acrylic-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.
 - D. Following minimum 24 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.
 - E. 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) days to allow for surfacing to cure.
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3.12 ALKALINITY PROTECTION

- A. 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.
- B. Protection shall extend a minimum of one (1) foot (0.3m) past the concrete form on all sides.
- C. Provide continuous cleaning with water and brush to eliminate settlement of concrete residues on in-place waterproofing membrane adjacent to area of concrete placement.

3.13 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, terrace, fountain, or flooring 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.

3.12 VEGETATIVE OVERBURDEN APPLICATION

- A. General: Irrigation systems, soil or other growing media, and plantings shall be installed in accordance with the irrigation system manufacturer's current published specifications 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.

3.13 COMPLETION

- A. Work which 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 Final inspection shall be corrected and/or replaced at Contractor's expense. Upon completion of corrected work the contractor must request in writing a Final Inspection by manufacturer's representative.
- B. Site clean up including both interior and exterior building areas that have been affected by construction, shall be restore to pre-construction condition. All landscaped areas affected by construction activities shall be raked clean, seeded, or restored to pre-construction condition.
- C. All warranties as required in this Section shall be submitted for approval prior to final payment.

END OF SECTION 075554



SECTION 079200 - JOINT SEALERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-I Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK:

A. The extent of sealant work consists of, but is not necessarily limited to the following:

1. Miscellaneous sealant work to provide a watertight condition.

B. Work described in Section 012300 - Alternates - of this specification, shall also comply with the provisions of this section where appropriate:

C. Refer to Bid Form for related Unit Prices.

D. Refer to Section 040120 for related masonry work.

1.03 SYSTEM PERFORMANCES:

A. Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.

1.04 QUALITY ASSURANCE:

A. Installer Qualifications: Engage an Installer who has successfully completed within the last 3 years at least 5 joint sealer applications similar in type and size to that of this project and who will assign mechanics from these earlier applications to this project, of which one will serve as lead mechanic.

B. Single Source Responsibility for Joint Sealer Materials: Obtain joint sealer materials from a single manufacturer for each different product required.

1.05 SUBMITTALS:

A. Product Data: Submit manufacturer's technical data for each joint sealer product required, including instructions for joint preparation and joint sealer application.

B. Samples for Initial Selection Purposes: Submit manufacturer's standard bead samples consisting of strips of actual products showing full range of colors available, for each product exposed to view.

C. Test Reports: Submit pre-construction joint sealer-substrate test results including recommendations of joint sealer manufacturer for joint preparation and application of joint sealers applicable to project conditions.



1.06 DELIVERY, STORAGE, AND HANDLING:

- A. 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. Store and handle materials to prevent their deterioration or damage due to moisture, temperature changes, 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 or below 40°F (4.4°C).
 - 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 when joint widths are less than allowed by joint sealer manufacturer for application indicated.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL:

- A. Compatibility: Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by testing and field experience.
- B. Colors: Provide color of exposed joint sealers indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

2.02 ELASTOMERIC JOINT SEALANTS:

- A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those for Type, Grade, Class, and Uses.
 - B. One-Part Nonsag Urethane Sealant: Type S; Grade NS; Class 25; Uses NT, M, A and, as applicable to joint substrates indicated, O;
 - 1. Products: Subject to compliance with the requirements, provide one of the following:
 - a. "Sonolastic NP I"; as manufactured by BASF Construction Chemicals LLC (800) 433-9517 . Color to be chosen by Owner.
 - b. "Vulkem 116"; as manufactured by Tremco Commercial Sealants and Waterproofing (800) 321-7906. Color to be chosen by Owner.
 - C. For sidewalk expansion joint sealant provide: Sonolastic SL 2 as manufactured by BASF Construction Chemicals LLC (800) 433-9517. Color to be chosen by Owner.
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2.03 JOINT SEALANT BACKING:

- A. General: Provide sealant backings of material and type which are non-staining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Plastic Foam Joint-Fillers: Preformed, compressible, resilient, non-waxing, non-extruding strips of plastic foam of material indicated below, and of size, shape and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
 - 1. Products: Subject to approval by sealant manufacturer, provide closed-cell polyethylene foam, non-gassing, such as "Soft Backer Rod" as manufactured by Sonneborn Building Products Div., BASF Building Systems, 889 Valley Park Drive, Shakopee MN 55379. (800) 433-9517.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing bond between sealant and joint filler or other materials at back (3rd) surface of joint. Provide self-adhesive tape where applicable.

2.04 MISCELLANEOUS MATERIALS:

- A. 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 and field tests.
- B. Cleaners for Nonporous Surfaces: Provide non-staining, chemical cleaner of type acceptable to manufacturer of sealant and sealant backing materials that are not harmful to substrates and adjacent nonporous materials.
- C. Masking Tape: Provide non-staining, non-absorbent type compatible with joint sealants and to surfaces adjacent to joints.
- D. Expanding Foam Sealant: For installation as a secondary waterproof barrier, use Backerseal Expanding Foam Sealant by Emseal Joint Systems Ltd., 25 Bridle Lane, Westborough, MA 01581-2603, Tel: (800) 526-8365, Fax: (508) 836-0281.
- E. Expanding Foam Sealant (for below grade wall joints): provide 20H Asphalt Impregnated foam Sealant by Emseal Joint Systems Ltd., 25 Bridle Lane, Westborough, MA 01581-2603, Tel: (800) 526-8365, Fax: (508) 836-0281.

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Require Installer to inspect joints indicated to receive joint sealers for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealer performance. Obtain Installer's written report listing any conditions detrimental to performance of joint sealer work. Do not allow joint sealer work to proceed until unsatisfactory conditions have been corrected.
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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), oil, grease, waterproofing, water repellents, water, surface dirt and frost.

2. Clean concrete, masonry, unglazed surfaces of ceramic tile and similar porous joint substrate surfaces, by brushing, grinding, blast cleaning, mechanical abrading, acid washing 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, glass, porcelain enamel, glazed surfaces of ceramic tile and other non-porous surfaces by chemical cleaners or other means that are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealers.

4. Joint Priming: Prime all joint substrates. 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.

5. 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. Remove tape immediately after tooling without disturbing joint seal.

3.03 INSTALLATION OF JOINT SEALERS:

A. General: Comply with joint sealer manufacturers' printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply. All joints shall be primed prior to the installation of sealant.

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 that 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 that have become wet prior to sealant application and replace with dry material.

5. Install bond breaker tape between sealants and joint-fillers or back of joints where required to prevent third-side adhesion of sealant to back of joint.



6. At the expansion joints install expanding foam sealant in strict accordance with the manufacturer's instructions. Set foam back from the face of the masonry to allow for the installation of a bond breaker and a properly sized sealant joint.

E. 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.

F. Tooling of Non-sag 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 that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

1. Concave joint configuration per Figure 8/A in ASTM C 1193, unless otherwise indicated.

3.04 PROTECTION AND CLEANING:

A. 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 re-seal joints with new materials to produce joint sealer installations with repaired areas indistinguishable from original work.

B. 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.

END OF SECTION 079200



SECTION 083100 – HORIZONTAL ACCESS DOORS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-I Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK:

A. Work included: Furnishing and installing factory fabricated vault access doors with integral safety fencing.

B. Refer to Section 075554 for related Resin Based Roofing & Flashing work.

C. Refer to Section 079200 for related Joint Sealers work.

D. Refer to Section 321313 for related Concrete Paving work.

1.03 REFERENCES:

A. American Society for Testing and Materials (ASTM), 100 Bar Harbor Drive, West Conshocken, PA 19428-2959; (610) 832-9585, fax (610) 832-9555. ASTM A 36-93a: Standard Specification for Structural Steel.

B. International Organization for Standardization (ISO), ISO Central Secretariat, 1, ch. de la Voie-Creuse, CP 56, CH-1211 Geneva 20, Switzerland, phone +41 22 749 01 11, fax +41 22 733 34 30 : - ISO 9001:2008 Certified

1.04 SUBMITTALS:

A. Product Data: Provide manufacturer's product data for all materials in this specification.

B. Shop Drawings: Show profiles, accessories, location, and dimensions.

C. Samples: Manufacturer to provide upon request; sized to represent material adequately.

D. Contract Closeout: Vault access door manufacturer shall provide the manufacturer's Warranty prior to the contract closeout

1.04 DELIVERY, STORAGE, AND HANDLING:

A. Deliver materials to project site in original unopened manufacturer's original packaging.

B. Store materials in a dry, protected, well-vented area. The contractor shall thoroughly inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.

C. Remove protective wrapping immediately after installation.



1.05 SUBSTITUTIONS:

A. Proposals for substitution products shall be accepted only from bidding contractors and not less than (10) working days before bid due date. Contractor guarantees that proposed substitution shall meet the performance and quality standards of this specification.

1.07 PROJECT CONDITIONS:

A. Verify that other trades with related work are complete before installing vault access door(s).

B. Mounting surfaces shall be straight and secure; substrates shall be of proper width.

C. Refer to the construction documents, approved shop drawings, and manufacturer's installation instructions.

D. Observe all appropriate OSHA safety guidelines for this work

1.08 WARRANTY/GUARANTEE:

A. Manufacturer's standard warranty: Materials shall be free of defects in material and workmanship for a period of (5) five years from the date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge. Electrical motors, special finishes, and other special equipment (if applicable) shall be warranted separately by the manufacturers of those products.

B. Manufacturer's Quality System: Registered to ISO 9001:2008 Quality Standards including in-house engineering for product design activities

PART 2 - PRODUCTS

2.01 MANUFACTURER:

A. The BILCO Company, P.O. Box 1203, New Haven, CT 06505; 1-203-934-6363, Fax: 1-203-933-8478, Web: www.bilco.com.

2.02 ACCESS DOOR:

A. Furnish and install where indicated on plans two (2) vault access doors Type J H20, hot-dip galvanized, sized to match existing to be replaced. Note: Hinge side is to be placed on the outside/West side. The vault access door shall be single leaf. The vault access door shall be pre-assembled from the manufacturer.

B. Performance characteristics.

1. Cover: Shall be reinforced to support AASHTO H-20 wheel load with a maximum deflection of 1/150th of the span. Manufacturer to provide structural calculations stamped by a registered professional engineer upon request. (Note: For installation in an off-street location where not subject to high density, fast moving traffic.).

2. Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.

3. Operation of the cover shall not be affected by temperature.

C. Cover: Shall be 1/4" (6.3 mm) steel diamond pattern..

- D. Frame: Channel frame shall be 1/4" (6.3 mm) steel with full anchor flange around the perimeter.
- E. Hinges: Shall be specifically designed for horizontal installation and shall be through bolted to the cover with tamperproof Type 316 stainless steel lock bolts and shall be through bolted to the frame with Type 316 stainless steel bolts and locknuts.
- F. Drain Coupling: Provide a 1-1/2" (38mm) drain coupling located to align with existing scupper/hopper drain below.
- G. Lifting mechanisms: Manufacturer shall provide the required number and size of compression spring operators enclosed in telescopic tubes to provide, smooth, easy, and controlled cover operation throughout the entire arc of opening and to act as a check in retarding downward motion of the cover when closing. The upper tube shall be the outer tube to prevent accumulation of moisture, grit, and debris inside the lower tube assembly. The lower tube shall interlock with a flanged support shoe fastened to a formed 1/4" gusset support plate.
- H. A removable exterior turn/lift handle with a spring loaded ball detent shall be provided to open the cover and the latch release shall be protected by a flush, gasketed, removable screw plug.
- I. Hardware.
1. Hinges: Heavy forged brass hinges, each having a minimum 3/8" (9.5mm) diameter Type 316 stainless steel pin, shall be provided and shall pivot so the cover does not protrude into the channel frame.
 2. Cover shall be equipped with a hold open arm that automatically locks the cover in the open position.
 3. Cover shall be fitted with the required number and size of compression spring operators. Springs shall have an electro coated acrylic finish.
 4. A Type 316 stainless steel snap lock with fixed handle shall be mounted on the underside of the cover.
 5. Hardware: Compression spring tubes shall be an anti-corrosive composite, all fasteners shall be Type 316 stainless steel material, and all other hardware shall be Type 316 stainless steel.
 5. Post and Chains: Provide integral protective post and chains which may be deployed when the door is opened to protect the opening.
- J. Finishes: Factory finish shall be hot-dipped galvanized steel.

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Verify that the vault access door installation will not disrupt other trades. Verify that the substrate is dry, clean, and free of foreign matter. Report and correct defects prior to any installation.

3.02 INSTALLATION:

- A. Submit product design drawings for review and approval to the architect or specifier before fabrication.
- B. The installer shall check as-built conditions and verify the manufacturer's vault access door details for accuracy to fit the application prior to fabrication. The installer shall comply with the vault access door manufacturer's installation instructions.
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C. The installer shall furnish mechanical fasteners consistent with the vault access door manufacturer's instructions. Fasteners shall be type 304 stainless.

D. Refer to section 075554 for related resin based flashing work.

3.04 PROTECTION AND CLEANING:

A. Provide protection to the installed access door during completion of the contract work at the surrounding areas. Remove protection upon completion of all surrounding work. Ensure successful operation of doors after removal of protection.

END OF SECTION 083100



SECTION 099110 - PAINTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-I Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK:

A. Extent of painting work is as herein specified. The work includes, but is not necessarily limited to:

1. Preparation, priming and painting of all structural steel, lintels, and other ferrous metals exposed during masonry work.

2. Preparation, priming and painting of the monument sliding entrance gate.

B. Work described in Section 01030 - Alternates - of this specification, shall also comply with the provisions of this section where appropriate.

1.03 QUALITY ASSURANCE:

A. Single Source Responsibility: Provide primers and other undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.

B. Coordination of Work: Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other trades, furnish information or characteristics of finish materials provided for use, to ensure compatible prime coats are used.

1.04 SUBMITTALS:

A. Product Data: Submit manufacturer's technical information including paint label analysis and application instructions for each material proposed for use.

B. Samples: Submit samples for Artist, Owner and Architect's review of color and texture. All paint colors will be as selected by Architect, custom colors are included in scope.

C. Sample color installation for review and approval by Artist at the entrance gate.

1.05 DELIVERY AND STORAGE:

A. Deliver materials to job site in original, new and unopened packages and containers bearing manufacturer's name and label.

B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage of paint in a clean condition, free of foreign materials and residue.



C. Protect from freezing where necessary. Keep storage area neat and orderly. Remove oily or solvent laden rags and waste daily. Take all precautions to ensure that workmen and work areas are adequately protected from fire hazards and health hazards resulting from handling, mixing and application of paints.

1.06 JOB CONDITIONS:

A. Apply solvent-thinned paints only when temperature of surfaces to be painted and surrounding air temperatures are between 45°F (7°C) and 95°F (35°C), unless otherwise permitted by paint manufacturer's printed instructions.

B. Apply water based paints only when the substrate surface and ambient air temperature is between 50 degrees and 90 degrees Fahrenheit.

C. Do not apply paint in snow, rain, fog or mist, or when relative humidity exceeds 85%, or to damp or wet surfaces, unless otherwise permitted by paint manufacturer's printed instructions.

1.07 TESTING AND INTERIM CONTROL

A. The Contractor shall bear the responsibility for independent testing to determine the presence of lead in any painted surface to be prepared, stripped or otherwise prepared. Testing is to be performed by laboratory tests of paint samples,(AAS for lead) in accordance with all pertinent regulations.

B. The Contractor will be required to conform to all pertinent ordinances and regulations in the treatment of the area to be painted and the disposal of the debris resulting from the surface preparation. These regulations include but are not limited to the Lead Safe Work Practices (Safe Work Practices) contained in New York City Local Law 1 of 2004. Guides to conformance with these standards can be obtained from the NYC Department of Health (212) 226-5323. Questions about exterior paint scraping/removal protection requirements can be referred to The NYC Department of Health Lead Abatement Safety Unit (LASU) (212) 676-8186. Disposal of materials collected shall be in accordance all pertinent regulations. Disposal and transportation requirements are contained in New York State Department of Environmental Conservation *Environmental Compliance and Pollution Prevention Guide for Small Quantity Generators*, most recent edition. This manual can be obtained from the NYSDEC at (718) 482-4900.

C. The Contractor will be required to conform to all pertinent ordinances and regulations in the treatment of the area to be painted and the disposal of the debris resulting from the surface preparation including but not limited to Title 40: Protection of Environment – Part 745 of the United States Environments Protection Agency (EPA). Disposal of materials collected shall be in accordance all pertinent regulations. Disposal and transportation requirements are contained in New York State Department of Environmental Conservation *Environmental Compliance and Pollution Prevention Guide for Small Quantity Generators*, most recent edition. This manual can be obtained from the NYSDEC at (718) 482-4900.



PART 2 - PRODUCTS

2.01 MANUFACTURERS:

A. For coating of all new and existing structural steel use:

1. Typoxy Series 27WB, (Inorganic Hybrid Water-Based Epoxy) by Tnemec Company Inc. as a primer/base coat.
2. Endura Shield II 1075 (Aliphatic Acrylic Polyurethane) by Tnemec Company Inc. as a top coat.
3. Where steel will be hidden from view a double coat of Typoxy Series 27WB will be acceptable.
4. For coating of all new galvanized steel after thorough abrading of surface per manufacturer's requirements use:

a. Typoxy Series 27WB, (Inorganic Hybrid Water-Based Epoxy) by Tnemec Company Inc. as a primer/base coat.

b. Endura Shield II 1075 (Aliphatic Acrylic Polyurethane) by Tnemec Company Inc. as a top coat.

B. Tnemec Company Inc. can be reached at 11 Upton Drive, Wilmington, MA 01227 - Philip J. Gonnella independent representative, phone: (800) 533-3003, ext 8401, Fax: (800) 988-9824, email: pgonnella@rightergroup.com

H. All colors shall be as selected by Artist and Owner from the Manufacturer's custom or standard colors.

2.02 MATERIALS:

A. Material Quality: Provide best quality grade of various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as a standard, best-grade product will not be acceptable.

B. Proprietary names used to designate colors or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other manufacturers.

C. Color Pigments: Pure, non-fading, applicable types to suit substrates and service indicated.



PART 3 - EXECUTION

3.01 INSPECTION:

- A. Applicator must examine areas and conditions under which painting work is to be applied and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Applicator.
- B. Starting of painting work will be construed as Applicator's acceptance of surfaces and conditions within any particular area.
- C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.
- D. Maximum Moisture Content of Substrate: When measure with an electronic moisture meter as follows:

Wood: 15 percent

3.02 SURFACE PREPARATION:

- A. General: Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.
 - 1. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program cleaning and painting so that contaminants from cleaning process will not fall onto wet, newly-painted surfaces.
 - 2. Determine alkalinity and moisture content of surfaces to be painted by performing appropriate pH indicator tests. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, correct this condition before application of paint. Confirm the use of neutralizing agents with the Architect prior to neutralizing alkali conditions.
 - 3. Porous Materials: Test all porous substrates with an accurate electronic moisture meter. Do not paint over surfaces where moisture content exceeds 8% or that permitted in manufacturer's printed directions.
 - B. Metals:
 - 1. Existing Ferrous Metals: Clean ferrous surfaces, which are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent cleaning. After solvent cleaning proceed with mechanical cleaning in accordance with The Steel Structures Painting Council Surface Preparation Specification SSPC-SP3.
 - 2. Re-examine cleaned condition of all welded work to assure the complete removal of all fluxes, slag and fume deposits. Do not proceed with coating until all such detrimental deposits have been completely removed.
 - 3. Sequence primer application immediately after cleaning, subject to the Architect's inspection requirements to prevent rust back conditions. Reclean any area where rust back occurs after initial mechanical cleaning.
 - 4. Clean all shop primed surfaces to be thoroughly free of dirt, grease and any other bond inhibiting contaminant. Clean any abraded, scratched or otherwise exposed portions of metal per SSPC-SP3 and reprime all such areas. Sand rough surfaces smooth prior to coating application.
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5. Clean all galvanized metal surfaces to be painted with an approved galvanizing cleaner. and thoroughly wash with water. Smooth galvanized surfaces shall be abraded with approved # 80-100 grit abrasive paper prior to cleaning and priming. Do not proceed with primer application until galvanized surfaces are thoroughly dry. Prepare all cut ends of galvanized members or other areas of exposed metal per SSPC-SP3 and prime with a compatible primer prior to priming the remainder of the galvanized surface.

3.03 MATERIALS PREPARATION:

A. Mix and prepare painting materials in accordance with manufacturer's directions. Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

3.04 APPLICATION:

A. General: Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied. Apply coatings with brush or roller as approved by the coatings manufacturer. Spray application is to be performed only on approval of the Architect based on approved sample panels.

B. Apply additional coats when undercoats, stains or other conditions show through final coat of paint, until paint film is of uniform finish, color and appearance. Give special attention to insure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

C. Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

D. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as recommended by coating manufacturer.

E. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, roller spatter or other surface imperfections will not be acceptable.

F. Coats: Apply minimum two (2) coats at all locations. The Contractor may apply two coats of the base/primer paint in lieu of primer and top coat at all concealed steel locations.

3.06 CLEAN-UP AND PROTECTION:

A. Clean-Up: During progress of work, remove from site discarded paint materials, rubbish, cans and trays at end of each work day.

B. Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

C. Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.



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- D. Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.
- E. At completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

END OF SECTION 099110



SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Protecting existing vegetation to remain.
 - 2. Removing existing vegetation.
 - 3. Surveying existing grades in plant beds
 - 4. Stripping and stockpiling Planting Soil
 - 5. Removing above- and below-grade site improvements.
 - 6. Disconnecting, capping or sealing, and temporarily removing irrigation.
 - 7. Temporary erosion- and sedimentation-control measures.
- B. Related Sections:
 - 1. Section 312000 "Earth Moving"

1.3 DEFINITIONS

- A. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- C. Planting Soil: The soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow.
- D. Plant-Protection Zone: Area at the perimeter of the planting beds where vegetation is to remain during construction. This vegetation to be protected during construction, and indicated on Drawings.
- E. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.



- F. Wet Soils: Soil that is considered wet will easily be deformed by hand pressure, maintain their shape and free water will be visible within the pore spaces. The water content at this soil condition is considered field capacity or wetter.

1.4 MATERIAL OWNERSHIP

- A. Except for stripped topsoil and other materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 ACTION SUBMITTALS

- A. Contractor to submit in writing method to protect all soils to remain include product data, installation method and schedule.

1.6 INFORMATIONAL SUBMITTALS

- A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
 - 1. Use sufficiently detailed photographs or videotape.
 - 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.
- B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.7 QUALITY ASSURANCE

- A. Preinstallation Conference: Conduct conference at Project site as arranged by Construction Manager and BPCA Representative.

1.8 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
-



- B. Planting Soils to be Salvaged: Carefully remove items indicated to be salvaged and store in approved area.
- C. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.
- D. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of sheds or structures.
 - 5. Impoundment of water.
 - 6. Excavation or other digging unless otherwise indicated.
 - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- E. Do not direct vehicle or equipment exhaust towards protection zones.
- F. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.
- G. Soil Stripping, Handling, and Stockpiling: Perform only when the planting soil is dry or slightly moist. Do not handle existing soil or subgrade is frozen, muddy, or excessively wet.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Not Applicable

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
 - B. Locate and clearly identify trees, shrubs, and other vegetation to remain. Place orange construction fence around perimeter to prevent access to protected plants to remain.
 - C. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to Owner, at no additional cost to the Owner.
-



3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control requirements of authorities having jurisdiction.
- B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- D. Remove erosion and sedimentation controls and restore and stabilize areas at the approval of the Owner Representative disturbed during removal.

3.3 PLANT PROTECTION

- A. General: Protect plants remaining on-site according to the drawings.
- B. Repair or replace shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Landscape Architect or Battery Park City Parks Conservancy.

3.4 EXISTING UTILITIES

- A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.
 - 1. Arrange with utility companies to shut off indicated utilities.
- B. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Owner and Owners Representative written permission.

3.5 CLEARING AND GRUBBING

- A. Remove obstructions, shrubs, and other vegetation to permit installation of new construction.
 - 1. Do not remove shrubs, and other vegetation indicated to remain or to be relocated.
 - 2. Completely remove stumps and roots, obstructions, and below exposed subgrade.
 - 3. Use only hand methods for ALL work on or near the site.
-



3.6 TOPSOIL STRIPPING

- A. Remove all plants prior to providing an existing survey indicating the exact top of soil grades. Once this survey is complete the salvaging process of the Planting Soil may begin.
- B. Strip Planting Soil by soil type; Soil Type A – Edge Planting Soil, Soil Type B – Furrow Planting Soil to the existing drainage layer in a manner to prevent intermingling with other waste materials. Stripped Planting Soil shall not be handled when wet or frozen, shall be stored and protected during construction.
- C. Salvaged Planting Soil shall be properly identified based on the bed location it was removed from and clearly marked during storage. Salvaged Planting Soil shall be staged off site in an approved method and location to the Landscape Architect and BPCPC. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.
 - 1. Limit height of Planting Soil stockpiles to 72 inches
 - 2. Do not stockpile Planting Soil within protection zones.
 - 3. All Planting Soil to be salvaged to be reused after all restoration work is completed.
- D. When stockpiling Planting Soil onsite do so away from edge of excavations without intermixing with other materials.

3.7 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate restoration work.
- B. Remove slabs, paving, and aggregate base as indicated.
 - 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
 - 2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 311000



SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Preparing subgrades for pavements, grasses and plants.
 - 2. Subbase course for concrete pavements.

- B. Related Sections:

- 1. Section 321316 "Exposed Aggregate Concrete" for granular course if placed over vapor retarder and beneath the slab-on-grade.
 - 2. Section 311000 "Site Clearing" for site stripping, grubbing, stripping and stockpiling Planting Soil, and removal of above- and below-grade improvements and utilities.
 - 3. Section 329300 "Plants" for finish grading in planting areas and tree and shrub pit excavation and planting.

1.3 UNIT PRICES

- A. Work of this Section is affected by unit prices for earth moving specified in Section 012300 "Alternates & Unit Prices."

1.4 DEFINITIONS

- A. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.
- B. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- C. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.
- D. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.



1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

- E. Fill: Soil materials used to raise existing grades.
- F. Planting Soil: Existing soil profile from root zone to base of structure to be removed and stored for reuse.
- G. Structures: Footings, foundations, retaining walls, slabs or other man-made stationary features constructed above or below the ground surface.
- H. Subbase Course: Aggregate layer placed between the subgrade and base course aggregate layer placed between the subgrade and a cement concrete pavement.
- I. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
- J. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of the following manufactured products required:
 1. Controlled low-strength material, including design mixture.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Preexcavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earth moving operations. Submit before earth moving begins.

1.7 QUALITY ASSURANCE

- A. Preexcavation Conference: Conduct conference at Project site. Owner, BPCPC and design team to be present.
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1.8 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing earth moving indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
 - 1. Do not proceed with work on adjoining property until directed by Architect.
- C. Do not commence earth moving operations until plant-protection measures specified in on the drawings are in place.
- D. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of sheds or structures.
 - 5. Impoundment of water.
 - 6. Excavation or other digging unless otherwise indicated.
 - 7. Attachment of signs to or wrapping materials around walls and plants unless otherwise indicated.
- E. Do not direct vehicle or equipment exhaust towards protection zones.
- F. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. Planting Soils: As per Specification Section 329113 Soil Preparation.
 - B. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and 0 to 5 percent passing a No. 8 (2.36-mm) sieve.
 - C. Sand: As per Specification Section 329113 Soil Preparation.
-



PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 EXPLOSIVES

- A. Explosives: Do not use explosives.

3.3 EXCAVATION, GENERAL

- A. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Architect..
 - 1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.
- B. Excavations at Edges of Plant-Protection Zones:
 - 1. Excavate by hand to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.

3.4 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.5 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi may be used when approved by Architect.
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1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

3.6 STORAGE OF SOIL MATERIALS

- A. Stockpiling Planting Soils in bulk is permitted. From root zone to limit of removals for planting soils, do not remove when soil is wet or frozen. Do not stock pile higher than 6 feet. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 1. Stockpile Planting Soil materials off structure and at a preapproved location. All Planting Soils shall be maintained to avoid any detrimental conditions rendering the soil unusable at time of reinstallation. See Section 311000 Site Clearing

3.7 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
 2. Removing concrete formwork.
 3. Removing trash and debris.
 4. Removing temporary shoring and bracing, and sheeting.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.8 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 1. Provide a smooth transition between adjacent existing grades and new grades.
 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Rough Grading: Slope grades to direct water away from walls and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 1. Turf or Unpaved Areas: Plus or minus 1 inch
 2. Walks and Pavement: Plus or minus 1 inch

3.9 SUBSURFACE DRAINAGE

1. Contractor to document existing subsurface drainage during removals. Map all drainage material removed which include but may not be limited to drain line location, type, size,
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impermeable PVC layer and document for the re-installation “like in kind” upon completion of the waterproofing per architectural plans.

3.10 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

- A. See Specification Section 321316 Exposed Aggregate Concrete

3.11 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
 - 1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
 - 2. Determine that fill material and maximum lift thickness comply with requirements.
 - 3. Determine, at the required frequency, that in-place density of compacted fill complies with requirements.
 - B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
 - C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
 - D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.
 - E. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
 - 1. Paved Areas: At each compacted fill and backfill layer, at least one test for every 1000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.
 - 2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for every 100 feet or less of wall length, but no fewer than two tests.
 - F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.
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3.12 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.13 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.
- B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.
 - 1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000



SECTION 321313 – CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 General Requirements, apply to the work of this Section and are hereby made a part of this Section.
- B. Examine all Drawings and other Sections of the Specifications for requirements therein affecting the work of this trade.

1.2 SCOPE OF WORK

- A. The work of this Section includes, but is not limited to, the following:
 - 1. Portland Cement Concrete Walks.

1.3 RELATED SECTIONS

- A. The following items of related work are specified and included in other Sections of the Specifications:
 - 1. Section 321316 – Exposed Aggregate Concrete.
 - 2. Section 329113 – Soil Preparation

1.4 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, expansive hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

1.5 REFERENCES

- A. Standards: The following referenced standards and standard specifications, referred to thereafter by designation only, form a part of this Section:
 - 1. ACI: American Concrete Institute.
 - 2. American Society for Testing and Materials (ASTM) C33: Concrete Aggregates.
 - 3. ASTM C94: Ready Mix Concrete.
 - 4. ASTM C150: Portland Cement.
 - 5. ASTM C260: Air-entraining admixtures for Concrete.
 - 6. ANSI: American National Standards Institute.



7. AASHTO: American Associations of Highway Transportation Officials.
8. FS: Federal Specifications.
9. Standard Specifications: New York State Department of Transportation, Standard Specifications Construction and Materials, 1995 Edition, and addenda.
 - a. In the case of conflict between the Standard Specifications and the requirements of this Section, the more stringent requirements shall apply.

1.6 EXAMINATION OF CONDITIONS

- A. The Contractor shall fully inform himself of existing conditions of the site before submitting his bid, and shall be fully responsible for carrying out all site work required to fully and properly execute the work of the Contract, regardless of the conditions encountered in the actual work. No claim for extra compensation or extension of time will be allowed on account of actual conditions inconsistent with those assumed.
- B. Plans, surveys, measurements and dimensions under which the work is to be performed are believed to be correct to the best of the Architect's and Owner's knowledge, but the Contractor shall have examined them for himself during the bidding period, as no allowance will be made for any errors or inaccuracies that may be found therein.

1.7 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
 - B. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance with requirements indicated, based on comprehensive testing of current materials.
 - C. Material Certificates: Signed by manufacturers certifying that each of the materials complies with requirements:
 1. Cementitious materials and aggregates.
 2. Steel reinforcement and reinforcement accessories.
 3. Admixtures.
 4. Curing compounds.
 5. Applied finish materials.
 6. Bonding agent or adhesive.
 7. Expansion Joints.
 8. Certifications cited in this Section in paragraph 1.08, Quality Assurance.
 - D. Design Mixes: For each concrete pavement mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
 - E. Sample Panels: Upon approval of all materials, the Contractor shall construct sample panels on site in the minimum size indicated below. Each sample panel shall be large enough to display typical
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characteristics of each item and type of work. Construct Sample panels concurrently to aid in review of all materials. The Artist must approve the visual characteristics, quality of workmanship, and installation methods before final work is started. If the original sample is not approved, the Contractor shall provide additional samples, as required, at no cost to the Owner until an approved sample is obtained. The approved sample shall become the standard for the entire job. Sample panel shall not be constructed on a location becoming part of the final work, unless otherwise noted, and shall remain undisturbed until all work is completed. Sample panels shall be constructed at the same time and erected in a location approved by the Owner. Contractor shall completely remove any panels not set in place as part of the final work from site upon final acceptance of work.

1. Cement concrete walk, 4' x 8' minimum.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed pavement work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
 - B. Workmanship: The Contractor is responsible for correction of concrete work that does not conform to the specified requirements, including strength, tolerances, grading and finishes.
 - C. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
 1. Manufacturer must be certified according to the National Ready Mix Concrete Association's Plant Certification Program.
 - D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant and each aggregate from one source.
 - E. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by the requirements of the Contract Documents.
 - F. Concrete Testing Service: Owner shall engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixes.
 - G. Tests for Concrete Materials: Materials and installed work may require testing and retesting, as directed by the Owner, at any time during the process of the work. Allow free access to material stockpiles and facilities at all times. Tests, not specifically indicated to be done at the Owner's expense, including the retesting of rejected materials and installed work, shall be done at the Contractor's expense.
 - H. Concrete Quality Control Testing During Construction:
 1. An independent testing laboratory will be retained by the Owner to perform all quality control tests and to submit test reports to the Architect and Construction Manager.
 - a. The independent firm will perform inspections, tests, and other services specified and as required by the Architect.
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- b. Reports will be submitted by the independent firm to the Architect, and Owner indicating observations and results of tests and indicating compliance or noncompliance with contract documents.
 - c. The Contractor shall cooperate with the independent testing firm; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.
 - 1) Notify Owner and independent firm 48 hours prior to expected time for operations requiring services.
 - 2) Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
 - d. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instruction by the Owner. Payment for retesting will be charged to the Contractor by deducting inspection or testing charges from the Contract Sum/Price.
- I. Layout and Grading: After staking out the work, and before beginning final construction, obtain the Architect's and Artist's approval for layout and grades.
- 1. The Architect and Artist reserves the right to make adjustments to layout and grade without the Contractor submitting claims for extra compensation.
 - 2. The Contractor shall not proceed with the work of this Section without obtaining the Artist's written acceptance of layout and grading.

1.9 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Product Delivery, Storage, and Handling: In accordance with the provisions of Division 1.
- B. Cement: Store in weather tight enclosures and protect against dampness, contamination, and warehouse set.
- C. Aggregates
 - 1. Stockpile to prevent excessive segregation or contamination with other materials or other sizes of aggregates.
 - 2. Use only one supply source for each aggregate stockpile.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Allowable Concrete Temperatures.
 - 1. Cold weather: Maximum and Minimum, ACI 301.
 - 2. Hot weather: Maximum 90 degrees F, ACI 301.

1.11 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

- A. All concrete paving shall meet requirements of Division 32 "Concrete".
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1.12 PROJECT CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

PART 2 - PRODUCTS

2.1 BASE COURSE

- A. Compacted gravel used for pavement base shall be in accordance with Section 312000 Earth Moving

2.2 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces. Forms to be of suitable size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removed.
 - 1. Use flexible spring steel forms or laminated boards or curved forms for all curves.
 - 2. Where possible, use recycled forms for initial placement and recycle forms used as work proceeds.

2.3 REINFORCING

- A. Welded Wire Mesh: ASTM A185, welded plain cold-drawn steel wire fabric. Furnish in flat sheets, not rolls, unless otherwise acceptable to the Architect.
- B. Reinforcement Bars: ASTM A615, Grade 60, deformed steel bars.
- C. Reinforcing materials shall have a minimum recovered content as defined in Division 1 Section 01475.

2.4 CONCRETE MATERIALS

- A. General: Use the same brand and type of cementitious material from the same manufacturer throughout the Project.
 - B. Portland Cement Concrete: Materials and mixing for all concrete work, unless otherwise specified, shall conform to ACI 301.
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2.5 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
- C. Color Additives for Integrally Colored Concrete: Provide color additive to achieve the specified color
 - 1. Color additives shall contain pure, concentrated mineral pigments specially processed for mixing into concrete and complying with ASTM C979.
 - 2. Do not use calcium chloride admixtures.

2.6 CURING MATERIALS

- A. Water: Potable.
- B. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- C. Clear Solvent-Borne Liquid-Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

2.7 BONDING AGENT

- A. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.8 RELATED MATERIALS

- A. Expansion Joint material shall be Homex 300 Expansion Joint Filler, 1/2" thickness as manufactured by the Homasote Company, West Trenton, New Jersey, 800.257.9491.
- B. Joint Dowel Bars: ASTM A615, Grade 60, epoxy coated steel bars. Cut bars true to length with ends square and free of burrs.

2.9 CONCRETE MIXES

- A. Prepare design mixes, proportioned according to ACI 211.1 and ACI 301, for each type and strength of normal-weight concrete determined by laboratory trial mixes.
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- B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the trial batch method.
 - 1. Do not use Owner's field quality-control testing agency as the independent testing agency.
- C. Proportion mixes to provide normal-weight concrete consisting of Portland cement, aggregate, water-reducing admixture, air-entraining admixture, and water to produce the following properties:
 - 1. Seven day compressive strength of moist-cured laboratory samples: 2400 psi
 - 2. Twenty-eight day compressive strength of moist-cured laboratory samples: 4000 psi.
 - 3. Air content: 6.5%, plus or minus 1.0%.
 - 4. Maximum Water – Cementitious Ratio: 0.44
 - 5. Slump range: 40-65 mm.
- D. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement according to ACI 301 requirements for concrete exposed to deicing chemicals.

2.10 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with requirements and with ASTM C 94.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Preparation of subgrade shall be in accordance with Section 312000 Earth Moving
- B. Proof-roll prepared subbase surface to check for unstable areas and verify need for additional compaction. Proceed with pavement only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.
- C. Remove loose material from compacted subbase surface immediately before placing concrete.
- D. Confirm in writing that the Architect has accepted the layout and grades for walkways.
- E. Review layout and location of construction, expansion and contraction joints with the Architect. Confirm in writing that the Architect has accepted the layout of all joints.

3.2 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
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- B. Clean forms after each use and coat with form release agent to ensure separation from concrete without damage.
- C. All concrete edges for all pavement, foundations, curbs and other below grade work shall be formed or contained to prevent over pouring of concrete. Excess concrete shall be removed as directed by the Architect.

3.3 JOINTS

- A. General: Construct construction, expansion, and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.
 - 1. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.
 - B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour, unless pavement terminates at isolation joints.
 - 1. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
 - 2. Provide tie bars at sides of pavement strips where indicated.
 - 3. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 - 4. Review location of construction joints with the Architect.
 - C. Expansion Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
 - 1. Locate expansion joints as shown on the Drawings. Strictly adhere to patterning and layout and review patterning with Architect when formwork is in place but before concrete is placed. If pattern shown cannot be achieved, or is unclear, consult with Architect before placing concrete. Do not proceed with concrete placement without approval from Architect on patterning. Do not proceed in uncertainty.
 - 2. Extend expansion joint the full width and depth of joint. Set top of expansion joint flush with finish grade.
 - 3. Chemically fasten one side of expansion joint materials to one side of materials requiring separation. Fasten with "Liquid Nail", or equivalent, using formula appropriate to materials being fastened.
 - 4. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
 - D. Edging: Tool edges of pavement and joints in concrete after initial floating with an edging tool to the following radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.
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1. Radius: 1/4 inch.

3.4 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcement steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.
 - B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.
 - C. Moisten subbase to provide a uniform dampened condition at the time concrete is placed. Do not place concrete around manholes or other structures until they are at the required finish elevation and alignment.
 - D. Comply with requirements and with recommendations in ACI 304R for measuring, mixing, transporting, and placing concrete.
 - E. Do not add water to concrete during delivery, at Project site, or during placement without approval from the Architect and Owner's testing agency.
 - F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
 - G. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures to consolidate concrete according to recommendations in ACI 309R.
 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.
 - H. Screed pavement surfaces with a straightedge and strike off. Commence initial floating using bull floats or darbies to form an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading dry-shake surface treatments.
 - I. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
 2. Do not use frozen materials or materials containing ice or snow.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.
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- J. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows when hot-weather conditions exist:
1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 deg F. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Cover reinforcement steel with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 3. Fog-spray forms, reinforcement steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.5 CONCRETE FINISHING

- A. General: Wetting of concrete surfaces during screeding, initial floating, or finishing operations is prohibited.
- B. See Section 321316 for all Exposed Aggregate Concrete walks.

3.6 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and follow recommendations in ACI 305R for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete, but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:
1. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.7 PAVEMENT TOLERANCES

- A. Comply with tolerances of ACI 117 and as follows:
1. Elevation: 1/8 inch.



2. Thickness: Plus 3/8 inch, minus 1/4 inch.
3. Surface: Gap below 10-foot-long, unleveled straightedge not to exceed 1/8 inch.
4. Joint Spacing: 3 inches.
5. Contraction Joint Depth: Plus 1/4 inch, no minus.
6. Joint Width: Plus 1/16 inch, no minus.

3.8 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.
 - B. Testing Services: Testing shall be performed according to the following requirements:
 1. Sampling Fresh Concrete: Representative samples of fresh concrete shall be obtained according to ASTM C 172, except modified for slump to comply with ASTM C 94.
 2. Slump: ASTM C 143; one test at point of placement for each compressive-strength test, but not less than one test for each day's pour of each type of concrete. Additional tests will be required when concrete consistency changes.
 3. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each set of compressive-strength specimens.
 4. Compression Test Specimens: ASTM C 31/C 31M; one set of four standard cylinders for each compressive-strength test, unless otherwise indicated. Cylinders shall be molded and stored for laboratory-cured test specimens unless field-cured test specimens are required.
 5. Compressive-Strength Tests: ASTM C 39; one set for each day's pour of each concrete class exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. One specimen shall be tested at 7 days and two specimens at 28 days; one specimen shall be retained in reserve for later testing if required.
 6. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, current operations shall be evaluated and corrective procedures shall be provided for protecting and curing in-place concrete.
 7. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive compressive-strength test results equal or exceed specified compressive strength and no individual compressive-strength test result falls below specified compressive strength by more than 500 psi.
 - C. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 24 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing agency, concrete type and class, location of concrete batch in pavement, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
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- D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as the sole basis for approval or rejection.
- E. Additional Tests: Testing agency shall make additional tests of the concrete when test results indicate slump, air entrainment, concrete strengths, or other requirements have not been met, as directed by Architect. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

3.9 REPAIRS AND PROTECTION

- A. Remove and replace concrete pavement that is broken, damaged, or defective, or does not meet requirements in this Section.
 - 1. Damaged concrete shall be removed to a full joint and replaced. Partial patching within the sidewalk shall not be accepted. Architect shall determine extent of removal and replacement.
- B. Drill test cores where directed by Architect when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with Portland cement concrete bonded to pavement with epoxy adhesive.
- C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.
- E. Collect and transport all salvageable and recyclable scrap material in accordance with requirements of Division 1 "Construction Waste Management and Recycling" Section.

END OF SECTION 321313



SECTION 321316- EXPOSED AGGREGATE CONCRETE PAVEMENT

PART 1 - GENERAL

1.01 REFERENCES

- A. General provisions of Contract, including General and Supplementary Conditions and Division 1 General Requirements, apply to work specified in this Section.

1.02 SUMMARY OF WORK

- A. The work of this Section consists of all paving and related items as indicated on the Drawings and/or as specified herein and includes, but is not limited to the following:
 - 1. Preparation of subbase for all pavements.
 - 2. Preparation of compacted gravel base course for all pavements.
 - 3. Preparation of a concrete base course.
 - 4. Exposed Aggregate Paving topping course.

1.03 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. The following items of related work are specified and included in other Sections of the Specifications:
 - 1. Section 311000 - Site Clearing.
 - 2. Section 321313 –Concrete Paving
 - 3. Section 329300 – Plants.
 - 4. Section 329113 – Soil Preparation

1.04 SUBMITTALS

- A. Comply with Division 1 requirements.
- B. Issue submittals in accordance with Section 013300 Shop Drawings, Product Data and Samples
- C. Product Information: Provide manufacturer's data showing installation and limitations in use. Supply Certificates of Compliance for all materials required for fabrication and installation, certifying that each material item complies with, or exceeds, specific requirements. Work includes but is not limited to:
 - 1. Expansion Joint Material.
 - 2. Liquid Nail Adhesive.
 - 3. Concrete Products.
 - 4. Color System for Cement.
- D. Samples: Prior to ordering the below listed materials, submit representative samples to Architect for selection and approval as follows. Do not order materials until Architect's approval has been obtained. Delivered materials shall closely match the approved samples. Submit duplicate



samples of each material listed below showing full range of color variation, finish and texture that can be expected in the permanent work:

1. Exposed Aggregate Concrete Paving, Stone Mix.
 2. Expansion Joint Material.
 3. Cement Color.
- E. Paving sample panels - construct sample panels as specified herein. The quality of workmanship, joint treatment and cleanliness of paving sample panel shall be approved by the Architect and Artist before permanent paving is started. If the original sample is not approved, the Contractor shall provide additional samples, as required, at no cost to the Owner until an approved sample is obtained. The approved sample shall become the standard for the entire job. Panel shall not be constructed on a location becoming part of the final paving and shall remain undisturbed until all paving is completed. Remove panel upon completion of paving.
1. Exposed Aggregate Paving, 3 separate panels at 4'x 8' each. Provide a sample for each cement color listed in Part 2, paragraph 2.01, D. of this Section. Include Expansion and Control Joints in each sample panel.
- F. Material Certificates: provide copies of materials certificates signed by material producers and Contractor, certifying that each material item complies with, or exceeds, specific requirements.
- G. Concrete Mix Design- Submit certified mix designs at least three weeks prior to the beginning of work in accordance with ACI 301 for each class of concrete. Include the following information:
1. Results of testing or test data used to establish mix proportions.
 2. Test to verify total chloride in content.
 3. Certificates of compliance for:
 - a. Contractors design laboratory and ready mix concrete suppliers certificate of plant inspection.
 - b. Cement.
 - c. Aggregates, each type.
 - d. Admixtures.
 - e. Air entrainment.
 - f. Curing compounds.
 - g. Form Coating.
 4. Reinforcement: submit certified mill test reports for metal reinforcement and welded wire fabric.
 5. Submit methods for cold and warm weather concreting.

1.05 QUALITY ASSURANCE

- A. Refer to Section 012500, Products and Substitution, for general provisions covering material delivery, storage, and installation, and product substitutions.
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- B. Standards: The following referenced standards and standard specifications, referred to thereafter by designation only, form a part of this Section. Materials and methods of construction shall comply with the following standards:
1. Standard Specifications: New York State Department of Transportation, Standard Specifications Construction and Materials, 1995 Edition, and addenda.
 - a. In the case of conflict between the Standard Specifications and the requirements of this Section, the more stringent requirements shall apply.
 2. ASTM: American Society for Testing and Materials.
 3. AASHTO: American Association of State Highway and Transportation Officials.
 4. ANSI: American National Standards Institute.
 5. PCA: Portland Cement Association.
 6. ACI: American Concrete Institute.
- C. Layout and Grading: After staking out the work, and before beginning final construction, obtain the Architect's and Artist's approval for layout and grades. Contractor shall make adjustments as determined by the Architect. Architect may make adjustments to grades and layout as is required to meet existing and proposed conditions without additional cost to the contract price.

1.06 EXAMINATION OF CONDITIONS

- A. The Contractor shall fully inform himself of existing conditions of the site before submitting his bid, and shall be fully responsible for carrying out all site work required to fully and properly execute the work of the Contract, regardless of the conditions encountered in the actual work. No claim for extra compensation or extension of time will be allowed on account of actual conditions inconsistent with those assumed.
- B. Plans, surveys, measurements and dimensions under which the work is to be performed are believed to be correct to the best of the Architect's knowledge, but the Contractor shall have examined them for himself during the bidding period, as no allowance will be made for any errors or inaccuracies that may be found therein.

1.07 SCHEDULING

- A. The Contractor shall submit to the Architect, for approval by the Owner, a progress schedule as specified in Section 012900 Schedules, Reports Payments

1.08 JOB CONDITIONS

- A. Site Information: Data on indicated grades, utilities and other existing conditions are not intended as representations or warranties of accuracy.
- B. Existing utilities: Locate existing utilities in areas of work. If utilities are to remain in place, provide adequate means of protection during installation of site improvements.
- C. Protection: The Contractor shall use all means necessary to protect the materials of this Section before, during, and after installation. In the event of damage, make all repairs and replacements
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necessary to the approval of the Architect and at no additional cost to the Owner. All work shall be executed in a manner so as to prevent any damage to existing wall, rails, paving, and plant materials.

- D. Protection of existing planting soils: Planting soils next to paved areas will be in place. The Contractor shall take extreme measures to protect the planting soil at all times and shall adhere to the following procedures and precautions:
1. The storage and driving of machinery and equipment over planting soils is expressly prohibited. Prevent workers from walking on the surface of the planting soils.
 2. No materials shall be stored or placed on the planting soils at any time.
 3. Protect planting soils to prevent the intermingling of concrete materials before, during and after concrete placement. Review methods of protection with the Construction Manager before beginning work.
 4. Where planting soils are damaged, contaminated, over compacted, or otherwise harmed, remove those soils and replace with the approved planting soils. The Architect and Client shall be the sole authorities on determining the need for plant soil replacement.

PART 2 - PRODUCTS

2.01 EXPOSED AGGREGATE PAVING

- A. Compacted Subgrade and Gravel Base Course: In accordance with Section 312000.
- B. Concrete Base Course: In accordance with Section 321313.
- C. Portland Cement for (Top) Surface Matrix Mix: Conforming to 321313.
- D. Color pigment shall be "Mix-Ready" as approved by Architect and Artist as manufactured by Davis Colors, 7101 Muirkirk Road, Baltimore, MD 20705, Tel: 800.638.4444. Web: www.daviscolors.com.
- E. For the sample panel provide one sample of each of the following color pigment ratios:
1. 2.5 pounds/cubic yard.
 2. 5.0 pounds/cubic yard.
 3. 7.5 pounds/cubic yard.
- F. Aggregate for (Top) Surface Matrix Mix: "" as approved by Architect and Artist, including acrylic bonding agents, as supplied by Triad Associates, 100 Downing Avenue, Haverhill, MA, (978) 373-4223. Aggregate to match Architect's sample. Size of aggregate shall range between 1/4" and 3/4". Aggregate shall be blended on a 1:1 ratio.
- G. Sand: Clean, hard, durable grains, free from foreign substances, uniformly graded with coarse particles predominating. Color shall be compatible with the Aggregate Surface Matrix Mix. Sand shall be supplied by Highland Sand and Gravel, Highland Mills, NY, Tel: 845.694-7024.
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- H. Water: Potable.
- I. Air entraining agent: Conforming to ASTM C-260. Concrete shall contain 4 to 6 percent air entrained air.
- J. Welded Wire mesh conforming to: ASTM – A185. Size: 5.6 x 5.6, 12 x 12, as supplied by Triad Associates, 100 Downing Avenue, Haverhill, MA, (978) 373-4223.
- K. Bonding Agent: VOC compliant, high solids acrylic latex emulsion admixture, non-oxidizing, white pigment, dries clear.
- L. Expansion Joint Material shall be Homex 300 Expansion Joint Filler, ½" thickness as manufactured by the Homasote Company, West Trenton, New Jersey, 800.257.9491
- M. Joints: Saw cut to the depth shown on the Drawings. Strictly adherer to the pattern shown on the Drawings. Review layout of control joints with the Architect and Artist before proceeding with work.
- N. Forms: Conforming to Division 3.

PART 3 - EXECUTION

3.01 SUBGRADE AND AGGREGATE BASE PREPARATION

- A. Compacted subgrade and base preparation shall be in accordance with Section 312000.
- B. Install compacted subgrade and aggregate bases to the lines and grades shown on the Drawings.
- C. Install the concrete base course in accordance with Section 321313 except as water dissipates from surface, aluminum rake leveled concrete surface for proper mechanical bonding between the base concrete and surface matrix mix.
- D. The installer shall examine previous work, related work, and conditions under which this work is to be performed and notify the General Contractor and Owner, in writing, of all deficiencies and conditions detrimental to the proper completion of the Work. Beginning work means the installer accepts substrates, subgrades, previous work, and conditions.

3.02 INSTALLATION AND SURFACE PREPARATION

- A. The installer shall examine previous work, related work, and conditions under which this work is to be performed and notify the Contractor in writing of all deficiencies and conditions detrimental to the proper completion of this work. Beginning work means installer accepts substrates, subgrades, previous work, and conditions.
 - B. Remove loose material from compacted subbase surface immediately before placing concrete.
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- C. Proof roll prepared subbase surface to check for unstable areas and areas requiring additional compaction.
- D. Notify Contractor of unsatisfactory conditions. Do not begin paving work until deficient subbase areas have been corrected and are ready to receive paving.

3.03 EXPOSED AGGREGATE CONCRETE PAVING

- A. Install concrete base course to the lines and grades shown on the Drawings and in conformance with Section 321313.
- B. Construct exposed aggregate paving true to line, elevation, pitch and section. All paving shall pitch to drain. Concrete pavement shall be brought to true plane surfaces with a finished tolerance of 1/4" total in ten feet when measured with a ten-foot straight edge.
- C. Set forms to provide the proper depth of compacted concrete as detailed on the Drawings, firmly stake in place, tops set at the exact finish grade. Form release agents shall conform to Section 321313.
- D. Install expansion joints flush with the finish grade of the exposed aggregate concrete. Install expansion joints around buildings, and other vertical structures adjacent to the concrete. Obtain Architect's approval for placement of expansion joints prior to placing concrete.
- E. Place top course concrete between expansion joints. Spread concrete thoroughly along forms and expansion joints. Tamp and screed to a dense mix. Strike off and bull float concrete surface 1/2" minimum below top grade of form to permit application of approved (top) Surface Matrix Mix.
- F. Concrete paving shall have an exposed aggregate finish by means of broadcasting and brooming of cement to expose stone. Broadcast stone size separately. Exposed aggregate surface shall match the approved sample panels.
- G. Cure surfaces by covering with polyethylene, or other suitable material approved by the Architect. Keep moist for 12 hours minimum after which covering shall be removed. As covering is removed, water is added to top surface as each procedure starts.
- H. No concrete shall be placed when the ambient air temperature is below 40 degrees Fahrenheit, or when expected to drop to below 40 degrees Fahrenheit within 24 hours after placing concrete. Maintain mix at a minimum of 50 degrees Fahrenheit.
- I. Protect Paving by not allowing use for a minimum of five days after installation is complete.

3.04 JOINTS

- A. General: Construct construction, expansion, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.
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1. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour, unless pavement terminates at isolation joints.
 1. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
 2. Provide tie bars at sides of pavement strips where indicated.
 3. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 4. Review location of construction joints with the Architect.
- C. Expansion Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
 1. Locate expansion joints as shown on the Drawings. Strictly adhere to patterning and layout and review patterning with Architect when formwork is in place but before concrete is placed. If pattern shown cannot be achieved, or is unclear, consult with Architect before placing concrete. Do not proceed with concrete placement without approval from Architect on patterning. Do not proceed in uncertainty.
 2. Extend expansion joint the full width and depth of joint. Set top of expansion joint flush with finish grade.
 3. Chemically fasten one side of expansion joint materials to one side of materials requiring separation. Fasten with "Liquid Nail", or equivalent, using formula appropriate to materials being fastened.
 4. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
- D. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to the following radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.
 1. Radius: 1/4 inch.

3.05 PROTECTION

- A. All rules and regulations governing respective utilities shall be observed in executing all work under this Section. All work shall be executed in such a manner as to prevent any damage to soils, curbs, paving, walls, stone work, utility lines, structures, plant materials and adjoining property.
- B. For protection of soils, refer to Part 1 in this Section.

3.06 FINAL CORRECTION

- A. The Architect reserves the right to inspect the work to determine if adjustments are necessary in grade, alignment or layout. The Contractor shall make such adjustments without further compensation.
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3.07 CLEAN-UP

- A. The Contractor shall remove all debris, construction equipment and scrap material from all areas within the limit of work prior to the final inspection and acceptance.
- B. The Contractor shall clean all stains from the surface of paving. Paving which cannot be cleaned shall be replaced. Architect shall be sole judge of whether staining is apparent and necessitates remediation.

END OF SECTION 321316



SECTION 329113 - SOIL PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes planting soils including layered soil assemblies specified by composition of the mixes AND the reinstallation of the existing soils to be salvaged and amended prior to reinstallation.
- B. Related Requirements:
 - 1. Section 311000 "Site Clearing"
 - 2. Section 329300 "Plants"

1.3 UNIT PRICES

- A. Work of this Section is affected by unit prices specified in Section 012300 "Alternates & Unit Prices".

1.4 DEFINITIONS

- A. Backfill: The earth used to replace or the act of replacing earth in an excavation.
- B. Compaction: Compaction of the soil fabric is any force applied to the soil that reduces porosity and where 90 percent of all compaction can be accomplished with only three application of force under optimum soil moisture conditions.
- C. Dry Soil: The condition of the soil at or below the wilting point of plant available water in which the soil is subject to blowing.
- D. Finish Grade: Elevation of finished surface of planting soil.
- E. Frozen Soil: The point at which the soil water has frozen and the soil has become very hard and cloddy. Ice crystals can be seen in the pore spaces of the soil.
- F. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- G. Moist Soil: the condition of the soil in where it can be formed into a ball and maintain its shape. Deformation of the soil is difficult with hand pressure. Free water is not visible and is usually considered the point between the wilting point and field capacity of the soil.



- H. Pests: Living organisms that occur where they are not desired, or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- I. Planting Area: Areas to be planted.
- J. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- K. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.
- L. Saturated: All the pore space within a soil is filled with water and the remaining water is under gravitational forces to drain through the profile.
- M. Scarification: The loosening of the surface of a soil lifts by mechanical or manual means to alleviate compaction of the soil surface. Depth of scarification is dependent on material and extent of compaction.
- N. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- O. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- P. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- Q. Wet Soils: Soil that is considered wet will easily be deformed by hand pressure, maintain their shape and free water will be visible within the pore spaces. The water content at this soil condition is considered field capacity or wetter.

1.5 CRITICAL PATH BLENDING

- A. The Contractor shall submit required soil submittal and their associated specified test results six months prior to the scheduled soil and plant installation.
 - B. The Soil Blending contractor shall be engaged at least six months prior to schedule soil installation to allow for sufficient time for material searches and initial planting blend approvals.
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1.6 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: The contractor shall examine previous work, related work and conditions under which this work is to be performed and shall notify the Landscape Architects in writing of all deficiencies and conditions detrimental to the proper completion of this work. Beginning work means the contractor accepts substrates, previous work and conditions. The Contractor shall not place any planting soil until all work in adjacent areas is complete and approved by the Landscape Architect.

1.7 ACTION SUBMITTALS

- A. Product Data: Submit technical descriptive data for each manufactured or packaged product of this Section. Include manufacturer's product testing and analysis and installation instructions for manufactured or processed items and materials.
 - B. Locations: Submit locations of material sources. Submit location of mixing sites.
 - 1. Soil Mix supplier shall have a minimum of five years experience in supplying custom planting soil mixes.
 - 2. Submit supplier name, address, telephone and fax numbers and contract name.
 - 3. Submit certification that accepted supplier is able to provide sufficient quantities of materials and mixes for the entire project.
 - 4. Landscape Architect shall have the right to reject any soil supplier.
 - C. Test Reports – Soil Analysis: The Contractor shall submit representative samples of all soil materials and organic material components which are intended to be used for planting soil mixes and final mixes, to a Soil and Plant Testing Laboratory acceptable to the Battery Park City Parks Conservancy. All reports shall be sent to the Landscape Architect for approval. Samples of all soil materials to be brought to the site must be approved before delivery. Deficiencies in the soils shall be corrected organically (peatmoss is not acceptable) by the Contractor, as directed by the Landscape Architect after review of the testing agency report. Testing reports shall include the following:
 - 1. Date issued.
 - 2. Project Title and names of Contractor and material supplier.
 - 3. Testing laboratory name, address and telephone number, and name(s), as applicable, of each field and laboratory inspector.
 - 4. Date, place, and time of sampling or test, with record of temperature and weather conditions.
 - 5. Location of material source.
 - 6. Type(s) of test.
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7. Results of tests including identification of deviations from acceptable ranges.
 8. Particle size analysis to include sand sieve analysis shall be performed and compared to the USDA Soil Classification System per ASTM D422 (hydrometer test) or ASTM F1632 (pipette test). The silt and clay content shall be determined on soil passing the #270 sieve and shall be reported separately.
 9. Percent of organic shall be determined by an Ash Burn Test or Walkley/Black Test, ASTM F1647.
 10. Saturated hydraulic conductivity per any of the test methods stated in ASTM F1815.
 11. Chemical analysis shall be undertaken for Nitrate, Ammonium, Nitrite, Phosphorous, Potassium, Calcium, Magnesium, Iron, Manganese, Zinc, Copper, Soluble Salts, Cation Exchange Capacity, and acidity (pH).
 12. Soil analysis tests shall show recommendations for soil additives, including organic and inorganic soil amendments, necessary to accomplish particular planting objectives noted.
 13. All tests shall be performed in accordance with the current standards of the Association of Official Agriculture Chemists.
 14. Certified reports on analysis from producers of composted organic materials are required, particularly when sources are changed. The analysis performed shall include pH, density, salinity, total organic nitrogen, C:N Ratio, Solvita Maturity Index, moisture, sodium, potassium, calcium, magnesium, and phosphorous.
 15. Soil Components and Soil Mix Sampling requirements: At middle height of wind row/pile, remove sample two feet into the pile. Place sample in clean container. Repeat gathering methods for five to ten times at equidistant spacing on both sides of the pile. Mix gathered samples with clean utensils. Remove approximately 500g of composite samples and place that final sample by overnight courier to the testing laboratory. Submit sample with completed testing laboratory submission form.
 16. Biological Tests for organisms in compost and mixes:
 - a. Contact the testing laboratory to review testing and sampling requirements before sending samples.
 - b. Sampling requirements: At middle height of wind row, remove sample two feet into the pile. Place sample in clean container. Repeat gathering methods for five to ten times at equidistant spacing on both sides of the compost pile. Mix gathered samples with clean utensils. Remove approximately 500g of composite samples and place that final sample by overnight courier to the testing laboratory. Submit sample with completed testing laboratory submission form.
 - c. Maintain clear and concise records for testing and sampling procedures.
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17. Testing Agencies: The following firms are acceptable testing agencies for the various components.

a. Compost testing:

a. Woods End Research Laboratory, PO Box 297, Mt. Vernon, ME 04352, phone 800-451-0337, fax 207-293-2488.

b. Physical soil analysis including particle size analysis and hydraulic conductivity

a. Hummel & Company Inc., 35 King Street Trumansburg, NY 14886 Phone 607-387-5694

c. Soil chemical analysis:

a. University of Massachusetts West Experiment Station, Amherst, MA 01003, phone 413-545-2311, fax 413-545-1931.

d. Compost/Biological Testing:

a. Soil Foodweb New York, 17 Clinton Street, Center Moriches, NY 11934, tel. 631-750-1553, fax 631-750-1554.

D. All approved samples to be submitted to Landscape Architect:

1. Leaf mold, each source, 5 lb. packaged.
2. Sand, each source, 5 lb. packaged.
3. Loam, each source, 5 lb. packaged.
4. Base component material, each source, 5 lb. packaged.
5. Yard Waste Compost, each source, 5 lb. packaged.
6. Each mix type specified 5 lb. packaged.

E. Statement(s) of Qualifications: Submit within 45 days of notice to proceed to confirm qualifications as specified herein.

F. Equipment Data: Submit descriptive information with wheel load data for each proposed item of equipment to be used for execution of earthwork of this Contract. Equipment Data will be evaluated for conformance to site restriction of use.

G. Schedule and Protection Plan: Submit a detailed plan for scheduling and sequencing of all contract work and for protection of soil mixes and other completed work including coordination with contractors requiring access through the site. Indicate with schedules and plans the utilization of finished work protection measures (wooden protection boards or other approved methods) over the work area of construction operations concurrent with all construction operations until substantial completion.

H. Schedule for performing percolation tests.



1.8 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent, state-operated, or university-operated laboratory; experienced in soil science, soil testing, and plant nutrition; with the experience and capability to conduct the testing indicated; and that specializes in types of tests to be performed.

1.9 TESTING REQUIREMENTS

- A. General: Perform all tests on components and soil blends according to requirements in this article.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with state and Federal laws if applicable.
- B. Bulk Materials:
 - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 - 3. Do not blend soil mixes, move or handle materials when they are wet or frozen.
 - 4. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Jute Netting: Erosion Control fabric blanket, made from 100% natural jute fibers. Blanket weave has spaces of approximately 1/4" x 1/4".

- 1. "U" shaped steel staples for anchors. 6"

- B. General- Salvaged Planting Soils

- 1. Existing Planting Soils shall be removed, labeled and maintained off site during construction. Prior to reinstallation, and as early as weather permits, soils shall be tested for organic content and quantitative biological testing for 5-7% organic content. If these soils do not meet that
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criterion they shall be amended with the specified organic matter resulting in a 5-7% organic content. In addition, they shall be tested for quantitative biological as specified herein.

C. General – Newly Blended Soils

1. Newly blended soil quantities to be determined by quantities calculated during removal with appropriate “fluff” factor.
2. All soil mix material shall fulfill the requirements for new soil mixes as specified.
3. 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 Landscape Architect.
 - b. As necessary, make any and all soil mix amendments and resubmit tests reports indicating amendments until approved.
4. The Landscape Architect, Construction Manager or BPCA/BPCPC may request additional testing by Contractor for confirmation of mix quality and/or soil mix amendments at any time until completion.
5. Base Component Material shall be 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.
6. Test sand and loam components individually as components and together to form the Base Component 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.
7. Organic matter (leaf mold or yard waste compost) shall be tested prior to mixing Base Component Material with organic matter. Have one (1) composite organic matter sample tested from each 50 c.y. of material intended for use in soil mixes of planting work.
8. Testing requirements for components and mixes:
 - a. Organic matter as a component
 - b. Sand as a component
 - c. Loam as a component
 - d. Sand + Loam for Base Component
 - e. Base Component + Organic for various Soil Mixes

D. **Organic** Matter: Organic matter for amending planting media shall be a stable, material produced from the aerobic decomposition and curing of leaf/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).
 - 15 to 25 or more μg active bacteria /g dry weight (dw) compost
 - 100 μg (fungal compost) to 300 or more μg (bacterial compost) total bacteria /g dw compost
 - 15 to 25 μg or more active fungi /g dw compost
 - 100 to 300 μg 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)
9. Nutrient cycling capacity will be a minimum of 200 lbs/available nitrogen per acre due to microbial presence and activity.

E. **Sand** for Base Component Material shall meet the following requirements:

1. 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%

2. Chemical Analysis:

- 1) Soil reaction (pH) - $5.0 - 6.5 \pm 0.5$
- 2) Soluble salt content (Conductivity) - $< 1.5 \text{ dSm}^{-1}$

3. Material shall have a saturated hydraulic conductivity rate of no less than 30 inches per hour, per ASTM 1815.
-



F. **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 ½", the total gravel (> 2 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) - $< 1.5 \text{ dSm}^{-1}$
1. 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.



2. 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:

<u>Main Fractions</u>	<u>Size (mm)</u>	<u>Percent</u>
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. 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
-



Chemical Analysis:

1. Organic matter content (%) oven dry weight of soil: 1- 4%
 2. Soil reaction (pH): 6 - 7
 3. Soluble salt content (Conductivity) - $< 1.5 \text{ dSm}^{-1}$
- c. Saturated hydraulic conductivity of no less than 15 inches per hour per ASTM 1815.

2.2 PLANTING SOILS 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 the Landscape Architect 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, ammonium nitrogen, nitrate nitrogen, nitrite nitrogen, phosphorus, potassium, magnesium, calcium, magnesium, zinc, iron, copper, and manganese) tested, and request testing laboratory recommendations for additional fertilizer requirements at all plant areas if nutrient levels are below average. Soluble salts shall also be tested.
 - 2) Contractor shall not use amendments to correct nutrient deficiencies.



- d. Biological Organisms: The mixes shall have a minimum of the following levels of organisms (direct microscopy). Refer to Article 1.08 C for testing and sampling requirements. Natural nutrient cycling will be a minimum of 150 lbs per acre, available Nitrogen from microbial activity. Mix shall have microbiological populations as listed below. Acceptance or rejection of mixes based on these test values will be determined by the Landscape Architect.

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 Ciliates	Amoebae		
Deciduous Trees and Shrubs	40-60	400-800	30-45	400-900	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. Raised Beds-Upper Root Zone:

- a. Organic Component shall be mixed with the Base Component (sand-loam) mix at a rate necessary to provide an organic matter content of 4.8-6% by weight, as determined by ASTM F1647. pH shall be 6.5 to 7.0. Cation Exchange Capacity shall be between 10 and 15. Natural nutrient cycling will be a minimum of 150 lbs per acre, available Nitrogen from microbial activity.

2. Raised Beds-Lower Root Zone:

- a. Organic Component shall be mixed with the Base Component (sand-loam) mix at a rate necessary to provide an organic matter content of 5.0-6% by weight, as determined by ASTM F1647. pH shall be 6.5 to 7.0. Cation Exchange Capacity shall be between 10 and 15. Natural nutrient cycling will be a minimum of 150 lbs per acre, available Nitrogen from microbial activity.

3. Furrow- Root Zone:

- a. Organic Component shall be mixed with the Base Component (sand-loam) mix at a rate necessary to provide an organic matter content of 6.0-6.5% by weight, as determined by ASTM F1647. pH shall be 6.5 to 7.0. Cation Exchange Capacity shall be between 10 and 15. Natural nutrient cycling will be a minimum of 150 lbs per acre, available Nitrogen from microbial activity.



4. Raised Beds & Furrow-Drainage Zones:

a. Texture:

<u>Sand Fraction</u>	<u>Size (mm)</u>	<u>Sieve Size</u>	<u>% Passing</u>
Gravel	> 2.0	#10	93 – 100%
Very coarse sand	1.0 – 2.0	#18	85 – 90%
Coarse sand	0.5 – 1.0	#35	45 – 60%
Medium sand	0.25 – 0.5	#60	12 – 15%
Fine sand	0.1 – 0.25	#140	0 – 6%
Very fine sand	0.05 – 0.1	#270	0 – 5%

b. Chemical Analysis:

1. Soil reaction (pH) – 6.0- 6.5 ± 0.5
2. Soluble salt content (Conductivity) - < 1.5 dSm⁻¹

- c. Material shall have a saturated hydraulic conductivity rate of no less than 30 inches per hour, per ASTM 1815.

2.3 SOIL AMENDMENTS

- A. Ground Limestone: Ground Limestone as a soil amendment material will only be used pending results of analysis.
1. Provide a Ground Agricultural Limestone with a minimum of 88% of calcium and magnesium carbonates
 2. Ground Limestone material shall have a total 100% passing the 10 mesh sieve, minimum of 90% passing the 20 mesh sieve and a minimum of 60% passing the 100 mesh sieve.

PART 3 EXECUTION

3.1 GENERAL

- A. Place planting soil and fertilizers according to requirements in other Specification Sections.
- B. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in planting soil. If contamination by foreign or deleterious material or liquid is present in soil, remove the soil and contamination as directed by Landscape Architect and replace with new planting soil to the extend directed by the Landscape Architect or BPCPC.
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- C. Proceed with placement only after unsatisfactory conditions have been corrected.

3.2 PLACING MANUFACTURED PLANTING SOIL OVER EXPOSED SUBGRADE

- A. General: When placing either the Salvaged Planting Soils or the Newly Blended Soils DO NOT apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet
- B. Salvaged Planting Soils: Prior to placing Salvaged Planting Soils test for organic matter and quantitative biological as stated here in. The top 8" of Salvaged Planting Soils shall be amended as per these test results and placed after scarifying the installed Salvaged Planting Soils
- C. Newly Blended Soils: Apply manufactured soil on-site in its final, blended condition.
- D. New Blended Soils Application: Place planting soil layers in the depths and as shown on the drawings to total depth not less than required to meet finish grades after natural settlement. Do not handle, spread soil or subgrade if frozen, muddy, or excessively wet.
 - 1. Lifts: Apply planting soil in lifts not exceeding 6 inches.
- E. Compaction for Planters: Compact each lift of planting soil to 85 percent of maximum Standard Proctor density according to ASTM D 698.
- F. Finish Grading for Planters: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades. Landscape Architect to approve final grades prior to planting.

3.3 FIELD QUALITY CONTROL

- G. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
 - H. Perform the following tests and inspections:
 - 1. Compaction: Test planting-soil compaction after placing each soil profile using a densitometer or soil-compaction meter calibrated to a reference test value based on laboratory testing according to ASTM D 698. Space tests at no less than one for each furrow of in-place soil or part thereof.
 - 2. Insitu Verification Testing: Contractor shall provide biological, pH, organic and soil texture test reports from labs used for approval of mixes for every 500 square feet of furrow.
 - I. Soil will be considered defective if it does not pass tests.
 - J. Label each sample and test report with the date, location keyed to a site plan or other location system, visible conditions when and where sample was taken, and sampling depth.
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3.4 PROTECTION

- K. Protection Zone: Protection Zones for the installation of salvaged soils and the specified blended soils of this specification are indicated on the drawings.
- L. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:
 - Storage of construction materials, debris, or excavated material.
 - Parking vehicles or equipment.
 - Vehicle traffic.
 - Foot traffic.
 - Erection of sheds or structures.
 - Impoundment of water.
 - Excavation or other digging unless otherwise indicated.
- M. If planting soil or subgrade is over compacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the subgrade as directed by Landscape Architect and replace contaminated planting soil with new planting soil.

3.5 CLEANING

- N. Protect areas adjacent to planting-soil preparation and placement areas from contamination. Keep adjacent paving and construction clean and work area in an orderly condition.
- O. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.
- c. Dispose of excess subsoil and unsuitable materials on-site where directed by Owner.

END OF SECTION 329113



SECTION 329300 - PLANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Shrubs
 - 2. Goundcover, Perennial, Herbaceous Plants and Bulbs
 - 3. Mulch, fertilizer and other soil amendment applications to suit plant type during and after planting.
 - 4. Protecting completed work.
 - 5. Warranty
 - 6. Coordination with other trades
 - 7. Clean up
- B. Related Requirements:
 - 1. Section 311000 Site Clearing – for salvaged planting soil to be reused
 - 2. Section 329113 Soils Preparation

1.3 UNIT PRICES

- A. Work of this Section is affected by unit prices specified in Section 012300 "Alternates & Unit Prices."
- B. Unit prices apply to authorized work covered by quantity allowances.
- C. Unit prices apply to additions to and deletions from the Work as authorized by Change Orders.

1.4 REFERENCES

- A. ANLA: American Nursery and Landscape Association (Formerly: AAN-American Association of Nurserymen)
- B. ANSI: American National Standards Institute
- C. AOAC: Association of Official Agricultural Chemists
- D. ASTM: American Society for Testing Materials.



1.5 APPLICABLE STANDARDS

- A. The references listed herein shall be in the standards used for performance of the Work: All standards shall include the latest additions and amendments as of the date of advertisement for bids.
1. American National Standards for Tree Care Operations, ANSI A300. American National Standards Institute, 11 West 42nd Street New York, NY 10036.
 2. American Standard for Nursery Stock, ANSI Z60.1 American Nursery and Landscape Association, 1250 Eye Street NW Suite 500 Washington DC 20005
 3. Horticultural Standards, American Nursery & Landscape Association.
 4. Hortus Third, The Staff of the L.H.Bailey Hortorium. 1976. MacMillan Publishing Co, New York
 5. Standardized Plant Names, American Joint Committee on Horticultural Nomenclature, 1942 edition
 6. American Society for Testing Material (ASTM)
 7. International Society of Arboriculture.

1.6 DEFINITIONS

- A. Backfill: The earth used to replace or the act of replacing earth in an excavation.
- B. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with a ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.
- C. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.
- D. Finish Grade: Elevation of finished surface of planting soil.
- E. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.
- F. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- G. Planting Area: Areas to be planted.
- H. Planting Soil for Soil Profiles: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
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- I. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.
- J. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.7 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site to comply with requirements of Division 1.

1.8 ACTION SUBMITTALS

- A. Submittals shall conform to Section 013300-Shop Drawings, Product Data and Samples
- B. Product Data: For each type of product.
 - 1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
 - 2. Plant Photographs: Include color photographs in **digital** format of each required species and size of plant material as it will be furnished to Project. These photos shall be submitted a minimum of 10 working days prior to the tagging trip they are to be tagged. Take photographs from an angle depicting true size and condition of the typical plant to be furnished. Include a scale rod or other measuring device in each photograph. For species where more than 15 plants are required, include a minimum of three photographs showing the average plant, the best quality plant, and the worst quality plant to be furnished. Identify each photograph with the full scientific name of the plant, plant size, and name of the growing nursery.
- C. Samples for Verification: For each of the following:
 - 1. Shrubs: Landscape Architect and BPCPC will accompany landscape contractor for tagging all plant material.
 - 2. Milled Leaf Mulch: 1-quart (1-L) volume in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.

1.9 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.
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- B. Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following. Submit inspection certificates required by authorities having jurisdiction. Supply Certificates of Compliance for all materials required for fabrication and installation, certifying that each material item complies with, or exceed, specified requirements
 - 1. Manufacturer's certified analysis of standard products including but not limited to:
 - a. Soil amendments
 - b. Mulch, maturity certification
 - 2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.
- C. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.
- D. Sample Warranty: For special warranty.

1.10 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Submit before expiration of required maintenance periods.

1.11 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of plants. Submit resumes for Landscape Project Manager, Foreman/Site Supervisor showing the following:
 - 1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
 - 2. Experience: Five years' experience in landscape installation.
 - 3. Installer's Field Supervision: Require Installer to maintain an experienced English speaking, full-time supervisor on Project site when work is in progress.
 - 4. Pesticide Applicator: State licensed, commercial.
- B. Provide quality, size, genus, species, and variety of plants indicated. Provide only healthy, vigorous stock, grown in a recognized nursery acceptable to the Landscape Architect and BPCPC and free from disease, insects, eggs, larvae and other defects. Provide plants in strict compliance with the recommendations of the following:
 - 1. ANSI Z 60.1 American Standard for Nursery Stock, latest edition
 - 2. American Association of Nurserymen, Horticultural standards
 - 3. American Joint Committee on Horticultural Nomenclature, Standardized Plant Names, 1942 edition
 - 4. International Society of Arboriculture



5. Selection of plants purchased under allowances is made by Landscape Architect, who tags plants at their place of growth before they are prepared for transplanting.
6. Landscape Architect, Battery Park City Parks Conservancy staff member or Resident Engineer retains right to reject any plant at any time due to transportation damage, disease, loose rootball or lack of correct maintenance practices while plants are being maintained on site.

C. Measurements: Measure according to ANSI Z60.1. Do not prune to obtain required sizes.

1. Shrubs: Measure with branches or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container-grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip..

D. Pruning: Unless otherwise noted, pruning of plants before, during or after installation shall be prohibited except to remove dead or broken branches and limbs. Confer with Landscape Architect before any pruning. Plants pruned without permission from the Landscape Architect are subject to rejection and replacement.

E. Inspection: the Landscape Architect will inspect plant materials at place of growth before planting for compliance with requirement for genus, species, variety, size and quality. Landscape Architect retains right to inspect plant materials further for size and condition of balls and root systems, insects, injuries, and latent defect and to reject unsatisfactory or defective material at any time during progress of work even if previously inspected and approved. Remove and replace rejected plants immediately from Project site at no change to the Owner.

1. Selection: All plants shall be tagged in the nursery by the Landscape Architect prior to digging of plants. The Landscape Architect shall place seals on selected plant at the nursery. Seals shall remain on plants until acceptance of work.

1.12 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws if applicable.

B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 3. Accompany each delivery of bulk materials with appropriate certificates.
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- C. Do not prune shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.
- D. Handle planting stock by supporting the rootball or container
- E. Store bulbs, corms, and tubers in a dry place at 60 to 65 deg F until planting.
- F. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.
 - 1. If deciduous shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.
- G. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist. Plants shall not be stored on asphalt or any other pavement without a minimum of 3" mulch layer over pavement.
 - 1. Set balled stock on ground and cover ball with soil, mulch, sawdust, or other acceptable material.
 - 2. Do not remove container-grown stock from containers before time of planting.
 - 3. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly wet condition.

1.13 FIELD CONDITIONS

- A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.
 - B. Digging Season: Plants shall be delivered freshly dug. Plants dug the previous season shall not be accepted. When it is anticipated that planting will occur outside of the digging seasons, storage shall conform to the requirements of this Specification.
 - 1. Spring Dig: Plants shall be dug as early as determined by nursery owner and no later than bud break.
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- C. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
Trees and Shrubs

	Spring Season	Fall Season
Perennials and Grasses	April 30 to June 15	Sept. 15 to Nov 1
Deciduous (container)	March 15 to June 15	Sept. 15 to Nov1
Deciduous (Balled and burlapped)		March 15 to June 15 Sept. 15 to Nov1
Bulbs	Plant in fall as recommended by supplier	

- D. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

1.14 WARRANTY

- A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period. Provide written warranty agreeing to remove and replace work that exhibits defect in materials or workmanship for the specified periods. "Defects" is defined to include, but is not limited to death, unsatisfactory growth, disease, insect infestation, abnormal foliage density, abnormal size abnormal color failure to thrive and other unsatisfactory characteristics.

1. Failures include, but are not limited to, the following:
 - a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner.
 - b. Structural failures including plantings falling or blowing over.
 - c. Faulty performance of tree stabilization and tree grates
2. Warranty Periods: From date of Substantial Completion.
 - a. Shrubs: 12 months.
 - b. Ground Covers, Perennials, Ornamental Grasses and Other Plants: 12 months.
3. Include the following remedial actions as a minimum:
 - a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
 - b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
 - c. A limit of one replacement of each plant is required except for losses or replacements due to failure to comply with requirements.



PART 2 - PRODUCTS

2.1 PLANT MATERIAL-GENERAL

- A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Planting Schedule indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
 - 1. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.
- B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Landscape Architect, with a proportionate increase in size of roots or balls.
- C. Hardiness: Provide plant stock certified to have been grown within hardiness Zones 2 through 6 as established by the Arnold Arboretum, Jamaica Plain Massachusetts. Plants without this certification will be rejected.
- D. Root-Ball Depth: Furnish shrubs with root balls measured from top of root ball, which begins at root flare according to ANSI Z60.1. Root flare shall be visible before planting.
- E. Root-Ball Handling: All plants balled and burlapped shall be moved with the root systems as solid units with balls of earth firmly wrapped with untreated biodegradable eight ounce burlap. Firmly held in place by stout cord and drum lacing. The diameter and depth of the rootballs of earth must be sufficient to encompass the fibrous and root feeding system necessary for the healthy development of the plant. NO plant shall be accepted with the ball of earth surrounding its roots has been badly cracked or broken preparatory to or during the process of planting or after the burlap, stave, ropes or platform required connection with its transplanting have been removed. The plants and balls shall remain intact during all operations. Burlap for containing rootballs shall be untreated, made from biodegradable natural fibers. Inspect root crown for girdling roots. Plants with girdling roots will be rejected.
 - 1. Root flare of all plants shall be clearly visible prior to planting. Carefully avoid damage to roots while removing soil overburden from the rootball. Adventitious roots shall be removed with sharp pruners.
 - a. Root flares more than 2" below grade at source shall be cause for rejection. The Landscape Architect may request a larger diameter rootball to compensate for a buried root flare, as the soil overburden shall be removed prior to planting which effectively reduces the size of the root ball. This will be at no additional cost to the Owner.



- F. Container Stock: Container stock shall have a full container of well-developed root system. Plants loose in the container are not acceptable. The surface of the root zone shall be free of circling or kinked roots. When removed from the container, the rootball shall be free from numerous circling roots. Large matted roots at the side or bottom of the container will not be accepted. Container grown plants may be accepted for balled and burlapped material if approved by Landscape Architect.
- G. Labeling: Label each plant of each variety, and size, with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for the plant.
- H. Select stock for uniform height and spread, and number the labels to assure symmetry in planting.
- I. Handling of Plants: Plants delivered by truck and plants requiring overnight storage on site shall be properly wrapped and covered to prevent wind-drying and desiccation of branches, leaves and buds; plant balls shall be firmly bound, unbroken, reasonably moist to indicate watering prior to delivery and during storage, and tree trunks shall be free from fresh scars and damage in handling.

2.2 MULCH

- A. Milled Leaf Mulch: Provide partially decomposed, minimum six-month-aged, finely shredded leaf mulch that is free of weeds, excessive fine particles and stringy material. Provide leaf mulch approved by Landscape Architect.

2.3 MISCELLANEOUS PRODUCTS

- A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.
- B. Burlap: Untreated biodegradable eight ounce burlap.
- C. Mycorrhizal Fungi: Dry, granular inoculant containing at least 5300 spores per lb of vesicular-arbuscular mycorrhizal fungi and 95 million spores per lb of ectomycorrhizal fungi, 33 percent hydrogel, and a maximum of 5.5 percent inert material.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive plants, with Installer present, for compliance with requirements and conditions affecting installation and performance of the Work.
-



1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 2. Verify that plants and vehicles loaded with plants can travel to planting locations with adequate overhead clearance and covered completely to be protected from the wind.
 3. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 4. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Landscape Architect and replace with new planting soil to the extend directed by the Landscape Architect or BPCPC.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Preinstallation Examination Required: The contractor shall examine previous work, related work and conditions under which this work is to be performed and notify Landscape Architect in writing of all deficiencies and conditions detrimental to the proper completion of this work. Beginning work means contractor accepts substrates, previous work and conditions. The contractor shall not place any plants or planting soil mixtures until all work in adjacent areas is complete and accepted by the Landscape Architect.
- D. Planting Soil Mixture Preparation: Refer to Section 311000 Site Clearing for salvaged and maintaining Planting Soil Section 329113 and Soil Preparation-for Planting Soil to makeup volumes lost during storage
- E. General: Prepare planting area for soil placement and mix planting soil according to Section 329113 Soil Preparation.
- F. Placing Planting Soil: according to Section 329113 Soil Preparation.
- G. Lay out individual shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Landscape Architect's acceptance of layout before excavating or planting. Make minor adjustments as required.
-



- H. Mark herbaceous groupings as shown on Planting Plans for approval of Landscape Architect and BPCPC. Final layout of all herbaceous plants will be as per the design Landscape Architect and BPCPC. Contractor shall understand groupings on the Planting Plans may change as per field conditions. No additional cost to the Owner will be allowed for these adjustments.
- I. Application of Mycorrhizal Fungi: At time directed by Landscape Architect, broadcast dry product uniformly over prepared soil at application rate as indicated by biological test results performed as per Section 329113 Soil Preparation.

3.3 PLANTING

- A. Roots: Do not plant if roots are girdling. Landscape Architect, BPCPC or Resident Engineer retains the right to reject all plants with this condition.
 - B. Balled and Burlapped Stock: Set each plant plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.
 - 1. Remove all burlap prior to backfilling pits.
 - 2. Backfill: Planting soil as per drawings.
 - 3. After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap and rope from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
 - 4. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
 - 5. Continue backfilling process. Water again after placing and tamping final layer of soil.
 - C. Container-Grown Stock: Set each plant plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.
 - 1. Backfill: Planting soil
 - 2. Carefully remove root ball from container without damaging root ball or plant.
 - 3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
 - D. Planting Bulbs: Plant bulbs concurrently with ground cover if season of planting permits. The design Landscape Architect and BPCPC shall approve layout of bulbs. Plant bulbs to proper depth for species, place shoots upright. Provide 1 teaspoon of Bonemeal per bulb mixed in the planting hole.
-



3.4 PLANTING TREES AND SHRUBS

- A. Planting Bed Preparation for Shrubs: Create continuous plant bed in planters; do not place plants in pits. Plant soil mixture will be used to back fill the planters
 - 1. Plant Installation: All Planting Soil salvaged and marked for relocation to original location shall be placed in depths needed to meet proposed grades. Prior to planting, salvaged soils shall be tested for organic content and quantitative biology as per Section 329113 Soil Preparation.
 - 2. Any newly blended soils required in addition to the salvaged soils shall be placed as per Section 329113 Soil Preparation.
 - 3. Inspection: At time of planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.
 - 4. Staking and Layout: Stake trees and obtain Landscape Architect's acceptance of location and finish grade elevation before planting.
 - 5. Ball Pedestals: Provide a rootball pedestal immediately beneath the ball or root mass so that tree or plant will not settle and will have the relationship to finish grade described below.
 - 6. Obstructions: If obstruction or other conditions detrimental to healthy plant growth are encountered, notify Landscape Architect immediately and request additional instruction. At the Landscape Architect's direction and at no additional cost to Owner, plants shall be relocated to avoid the obstruction.
 - 7. Keep excavations covered or otherwise protected when unattended by Installer's personnel.
- B. Backfill Soil: Subsoil and topsoil removed from excavations may not be used as backfill soil unless otherwise indicated.
- C. Obstructions: Notify Landscape Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
 - 1. Hardpan Layer: Drill 6-inch diameter holes, 24 inches apart, into free-draining strata or to a depth of 10 feet, whichever is less, and backfill with free-draining material.
- D. Drainage: Notify Landscape Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.
- E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.5 SHRUB AND VINE PRUNING

- A. Remove only dead, dying, or broken branches according to standard professional horticultural and arboricultural practices Do not prune for shape.
 - B. Do not apply pruning paint to wounds.
-

3.6 GROUND COVER AND PLANT PLANTING

- A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated on Drawings in even rows with triangular spacing.
- B. Use planting soil as indicated on drawings for backfill.
- C. Dig holes large enough to allow spreading of roots.
- D. For rooted cutting plants supplied in flats, plant each in a manner that minimally disturbs the root system but to a depth not less than two nodes.
- E. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
- F. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
- G. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.7 PLANTING AREA MULCHING

- A. Mulch backfilled surfaces of planting areas and other areas indicated.
 - 1. Organic Mulch in Planting Areas: Apply 2-inch average thickness of organic mulch over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 6 inches of trunks or stems.

3.8 PLANT MAINTENANCE

- A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Of particular importance is weeding and mulching. Contractor to review project for weeding needs weekly through the maintenance period.
 - B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.
 - C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.
-



3.9 PESTICIDE APPLICATION

- A. Apply biological control agents according to authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with BPCPC'S operations and others in proximity to the Work. Notify BPCPC before each application is performed.
- B. Pre-Emergent Herbicides (Selective and Nonselective): Apply to tree, shrub, and ground-cover areas according to manufacturer's written recommendations. Do not apply to seeded areas. Apply only with the knowledge and direction of BPCPC.
- C. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations. Apply only with the knowledge and direction of BPCPC.

3.10 REPAIR AND REPLACEMENT

- A. General: Repair or replace plants that are damaged by construction operations, in a manner approved by Landscape Architect and BPCPC.
 - 1. Protect all soils to remain during all waterproofing and pavement installations.
 - 2. Submit details and products to be used during all construction operations and those of proposed repairs or remediation.
 - 3. Perform repairs within 24 hours, if approved.
 - 4. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Landscape Architect.
- B. Remove and replace plants that are more than **25** percent dead or in an unhealthy condition immediately or are damaged during construction operations that Landscape Architect determines are incapable of restoring to normal growth pattern.
 - 1. Provide any replacements at same size and form.
 - 2. Species of Replacement Trees: Same species being replaced

3.11 CLEANING AND PROTECTION

- A. During planting, keep adjacent paving and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
 - B. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.
 - C. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.
-



- D. After installation and at the direction of the Landscape Architect remove nursery tags, nursery stakes, tie tape, and other debris from plant material, planting areas, and Project site.
- E. At time of Substantial Completion, verify that watering devices are in good working order and leave them in place. Replace improperly functioning devices.

3.12 MAINTENANCE SERVICE

- A. Maintenance: Provide maintenance by skilled employees of landscape installer. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established, but for not less than maintenance period below:
 - 1. Maintenance Period: 12 months after Substantial Completion

END OF SECTION 329300

EXHIBIT H

e2chem Report

May 14, 2015

Irish Hunger Memorial,
Battery Park City
Manhattan, NY
Limited Corrosion Study and Field Report

Submitted to: Anthony Buquicchio, Senior Project Manager, Battery Park City Authority

Submitted by: Gina Crevello, Principal, Echem Consultants LLC

Introduction

Echem Consultants is pleased to submit this limited report with the assessment of the data and observations acquired during the one day-field work conducted at the Irish Hunger Memorial on April 30, 2015.

The Irish Hunger Memorial is located on a 0.5-acre site at the intersection of Vesey St. and North End Ave. in the Battery Park City neighborhood of New York City. The memorial was completed in 2002 and is designed by Brian Tolle and the architectural firm I100 Architect. The memorial was designed to resemble a hill in the Irish countryside, and thus the structure has been built at an incline. The edges of the inclined structure resemble cantilevered soffits when viewed from below. An area on the South cantilevered soffit exhibits cracking, one spall, efflorescence, water infiltration, and corrosion of the construction support chairs. At the south area, there was concern that the conditions which affect corrosion could be impacting the performance and long term durability of the embedded rebar in this location. The scope of this work was to determine the corrosion condition of the embedded steel in the area where moisture staining and efflorescence are visible.

Scope of Work

As part of this scope, Echem Consultants performed the following:

- visual observations,
- a review of conditions found prior to our arrival on site
- reinforcing steel location,
- continuity testing of the reinforcing steel in the affected area,
- limited hammer survey of delamination,
- half-cell potential mapping of the corrosion potential of the steel in affected area,
- LPR testing of the affected area,
- three deterioration models of LPR results,
- detailed report providing an explanation of the test methods, a description of the locations evaluated, an interpretation of the data, and contour maps of the results,
- recommendations for further testing and/or repair.

Gina Crevello (GC), Principal, Paul Noyce (PN), Chief Technical Engineer, and Alex Billing (AB), Engineer of Echem Consultants LLC performed site visits for data collection, testing and visual observations.

1. Inspection of the cantilever soffit

GC initially met with Anthony Buquichio on Tuesday, April 22, 2015 to discuss the project approach and observe conditions. PN and AB attended site on April 30, 2015 for site testing and GC attended site for a review of progress and to further observe site conditions on the same day.

Upon arrival, Echem's team began to inspect the visible condition of the South cantilever soffit, which exhibited signs of continuous water infiltration, possibly from a waterproofing membrane failure above the concrete soffit. A considerable amount of efflorescence was present as well as small stalactites with dripping water hanging from the same area (Figure 1). In addition, horizontal cracking was observed on the lateral surface of the cantilever soffit, as shown below in Figure 2.

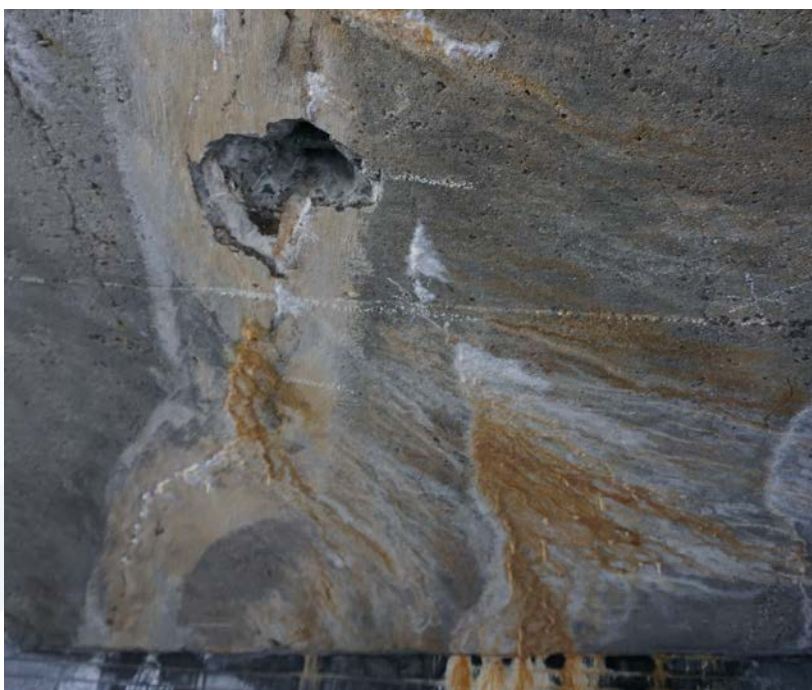


Figure 1: Efflorescence, cracking and stalactite formation as a result of a possible waterproofing membrane failure. The hole in the concrete is not a result of spalling, but was created intentionally to conduct continuity testing of the reinforcing steel.



Figure 2: Horizontal cracking was present on the lateral surface of the cantilevered soffit.

2. Field Testing and Field Conditions

Echem Consultants Chief Technical Engineer, Paul Noyce (PN), and Engineer Alex Billing (AB) carried out one day of field testing to establish the condition of the embedded steel in the South cantilever Soffit of the Irish Hunger Memorial. PN and AB conducted continuity testing, a cover survey, half-cell potential testing, linear polarization resistance testing, and resistivity testing in one (1) location. The location was divided into a 5x14 grid, with each datum point (70 No) being separated by 2ft in both directions.

The conditions the day of testing are illustrated in Chart 1. The temperature average for the day was 58°F and humidity was 53%.

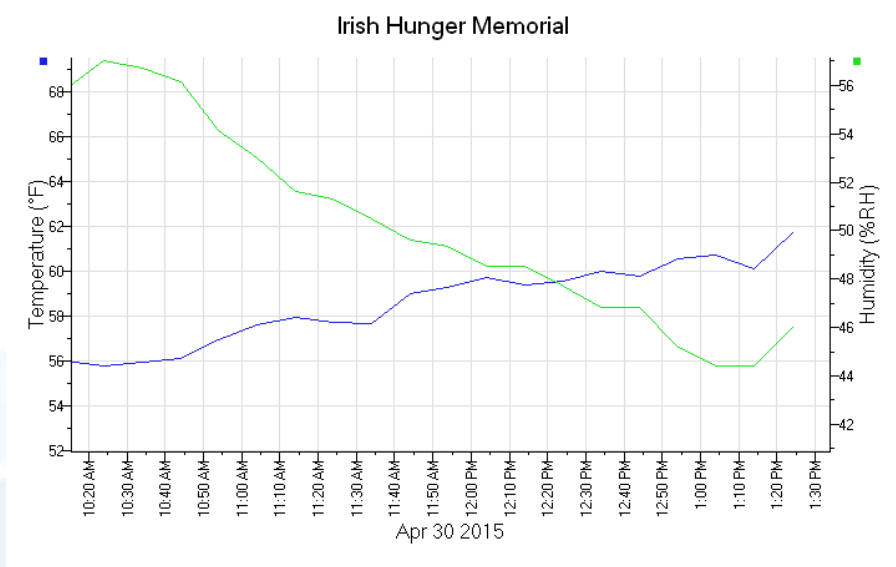


Chart 1 - Temperature and Humidity Conditions

2.1 Reinforcement Location and Continuity Testing

PN and AB first located lateral rebar in the affected area of the cantilever soffit to test for continuity. This was conducted using a Proceq cover meter. Three different rebar were located to ensure continuity of the steel within the structure and were exposed using a hammer drill. After a rebar was exposed, PN observed that the rebar was coated with green epoxy. The surfaces of the rebar were then grinded to expose clean (near white) metal which is a requirement needed for continuity testing. The exposed rebar were then tested for continuity using a Fluke insulation resistance meter. This was done by measuring the electrical resistance between each area of exposed rebar. Each reading showed a resistance below $<1\Omega$, suggesting that the reinforcing steel is continuous. The purpose of this continuity test was to ensure accurate half-cell potential and LPR corrosion rate testing results.

2.2 Concrete Cover Survey

PN and AB then marked the 5x14 grid with each datum spaced at 2ft apart, with the reference datum (0, 0) starting at the NW corner of the grid. AB then used the Proceq cover meter to conduct a cover survey. This was carried out by rolling the cover meter along the surface of the soffit: as the meter rolls over embedded rebar, it logs its location along the line it moves along as well as the depth of the rebar under the concrete. The results of the cover survey are shown in the next section by the color map in Figure 3 (the top of the map corresponds to the North direction).

2.3 Half-Cell Potential Test

PN and AB then conducted the half-cell potential test and the linear polarization resistance (LPR) test simultaneously with a BAC Corrosion Control Potentiostatic LPR meter. The instrumentation consists of a reference electrode and an auxiliary electrode within a single probe head that is connected to the main LPR measuring unit. A cable also runs from the main unit to the steel frame and is referred to as the ground. This instrumentation is capable of logging both half-cell measurements and LPR measurements simultaneously.

Since the early 1980s, the use of half-cell potential measurements for the identification of reinforcing steel corrosion in concrete has been employed. This allows for an assessment of the condition of existing concrete structures. This method only provides an indication of the relative probability of corrosion activity through measurements of the potential differences between a standard portable half-cell and the reinforcing steel. The method is unable to determine corrosion rates or the degree of corrosion that has occurred.

Steel embedded in good quality concrete is protected by the high alkalinity pore water which, in the presence of oxygen, passivates the steel. The loss of alkalinity due to carbonation of the concrete or the penetration of chloride ions (arising from either marine or de-icing salts, or in some cases present in situ from the use of a calcium chloride additive) can destroy the passive film.

Corrosion of the steel starts when oxygen and humidity are present within the concrete matrix. A characteristic feature for the corrosion of steel in concrete or concrete is the development of macro cells that is the co-existence of passive and corroding areas on the same reinforcement bar forming a short-circuited galvanic cell, with the corroding area as the anode and the passive surface as the cathode.

The use of the technique is described in an American Standard, ASTM C876-91, Standard Test Method for Half Cell Potentials of Reinforcing Steel in Concrete.

Factors such as chloride and oxygen concentrations, temperature and moisture content can affect half-cell potentials over a certain range. The ASTM standard C876 provides interpretative guidelines for the evaluation of corrosion probability for reinforcing steel in concrete.

According to this standard there is a 10% probability of reinforcement corrosion if the half-cell potentials are more positive than -200 mV; and a 90% probability of reinforcement corrosion if the half-cell potentials are less than -350 mV with regard to a copper/copper sulphate half-cell (Cu/CuSO_4). Silver/ Silver Chloride (Ag/AgCl) cells are slightly more positive. See Table 1.

Corrosion Potential (Volts vs. Cu/CuSO_4)	Corrosion Potential (Volts vs. Ag/AgCl)	Probability of Corrosion
>-0.200	>-0.150	<10 %
-0.200 to -0.350	-0.150 to -0.300	Uncertain
<-0.350	<-0.300	>90 %

Table 1 - Likelihood of corrosion damage as a function of the corrosion potential.

The predicted corrosion conditions based on these guidelines can be quite different from the actual corrosion conditions found on site. Severe discrepancies between the assessment of the corrosion state using the ASTM

guidelines and the actual deterioration that has been observed at the time of repairs have resulted in a different set of interpretive guidelines. This is especially true when dealing with steel frame structures or other reinforced concrete structures not referenced in the standards, though the standard proves to be a useful guide to understanding corrosion condition.

Half-cell potentials are very sensitive to the ambient environment, especially the oxygen concentration at the interface between the reinforcing steel and the concrete. Usually, a decrease in O_2 can drive the half-cell potential significantly towards more negative values. Completely water-saturated concrete can lead to O_2 starvation, resulting in potential values more negative by up to 200 mV.

If the concrete cover is saturated by water, O_2 is not freely available at the metal surface because O_2 is not very soluble in aqueous solutions. The rate of reinforcement corrosion is controlled by the rate of arrival of oxygen at the metal surface. Because of the diminution in O_2 concentration the corrosion potential will shift to more negative values. These values can be much more negative than -350 mV vs. Cu/CuSO₄ in many conditions and can lead to an improper prediction of the state of corrosion even though the reinforcement is still in good condition.

In the case of carbonated concrete the carbonation front can drive to potentials in the positive region, upwards of +150mV. Positive readings do not necessarily indicate that corrosion is not occurring. When carbonation is present, it is important to identify potential differences greater than 25mV between readings. Thus, indications of corroding steel are more reliably obtained through comparisons of potential changes between readings in the form of potential maps. 2'x2' is recommended by ASTM, though a smaller grid is often used for carbonated concrete. This is common in historic or atmospherically exposed concretes which have not been exposed to chlorides, marine conditions, or de-icing salts.

A reading was taken at each datum point in the 5x4 grid, starting with the NW corner of the grid. The results of the half-cell potential test are shown in Figure 4 of the "Results" section.

2.4 Linear Polarization Resistance Test (LPR)

The LPR test was conducted simultaneously with the half-cell potential test by PN and AB, thus incorporating the same measurement grid and order as the half-cell potential test. Therefore the same equipment was used to conduct the LPR as was used to conduct the half-cell potential test.

Linear polarization is carried out by polarizing the steel by a small electrical current and measuring the effect of the half-cell potential. This is carried out by the corrosion rate probe which consists of a counter termed auxiliary electrode and a conventional Ag/AgCl reference electrode. To complete the system a small DC power supply is required to enable the polarizing of the steel.

The test is carried out by connecting the corrosion rate probes counter electrode to the +ve side of the power supply and the reinforcing steel to the -ve side of the power supply and passing a very small electrical current. Prior to the current being applied, the half-cell potential is recorded and then measured during the applied current. This change in potential can simply be related to the corrosion current by the following equation:

$$I_{corr} = \frac{B}{R_p}$$

B = 52mV without guard ring
R_p = Polarization Resistance

The polarization resistance (R_p) is determined by dividing the change in potential by the applied current.

$$R_p = \text{Change in Potential} \div \text{Applied current}$$

The current is applied to the counter electrode ensuring the half-cell potential is kept to a polarization change of less than 20mV more negative. This is to ensure the equation is valid and remains linear. This is where the term linear polarization is derived from.

The iR drop, which is the voltage that exists when the current is flowing, is removed from the half-cell reading by interrupting the current flow instantaneous. A plot of the change in current versus the change in potential produces the polarization resistance (R_p).

Also, the deterioration rate is very important as it enables the engineer to decide when minor or more major works need to be carried out to the structure.

It should be noted the best, most accurate means of corrosion rate determination is to base metal loss on the amount of expansive oxide growth which will lead to cracking of the concrete. Identifying when these damages or failures will occur in reinforced concrete can significantly reduce damages by being proactive in the repair process. For this model to work properly, compressive strength tests should be carried out.

The following tables show the conversions and damages from Corrosion Current Density (loss of electron) to microns or mils per year (penetration or loss of steel section) to rust growth (accumulation of scale).

Rate of Corrosion	Corrosion Current Density, (i_{corr}) $\mu A/cm^2$	Corrosion penetration, m/yr
High	10-100	100-1000
Medium	1-10	10-100
Low	0.1-1	1-10
Passive	<0.1	<1

Table 2 – Corrosion Rates of Steel in Concrete

i_{corr} ($\mu A/cm^2$)	i_{corr} ($\mu A/in^2$)	Severity of Damage
<0.2	<0.031	No corrosion damage expected
0.2-1.0	0.031 to 0.155	Corrosion damage possible in 10 to 15 years
1.0-10	0.155 to 1.55	Corrosion damage expected in 2 to 10 years
>10	>1.55	Corrosion damage expected in 2 years or less

Table 3 –Corrosion Rate and Remaining Service Life

The following table is based on an average of 3 times the volume of oxide.

icorr ($\mu\text{A}/\text{in}^2$)	Metal Loss (mpy)	Section Loss
<0.0155	0.04334	Section loss 0.13mpy Rust Growth
0.0775	0.22458	Section loss 0.67mpy Rust Growth
0.155	0.45704	Section loss 1.37mpy Rust Growth
1.55	4.5704	Section loss 13.7mpy Rust Growth

Table 4 – Typical Section Loss

NOTE: The expansive oxide growth between 0.394mil (10 μm) and 3.94mil (100 μm) (0.01 to 0.1mm) will cause cracking.

The raw data from the LPR test conducted only accounts for general corrosion. This is important to consider since the rebar was coated with epoxy. Epoxy coated rebar containing holidays produce similar results as that of pitting corrosion, which can be very aggressive. Since holidays and pitting intensify the behavior of corrosion cells, four sets of LPR readings have been created based on the holidays in the coating.

The results of the LPR test are shown in Figures 5 through 8 of the “Results” section.

2.4 Electrical Resistivity

Lastly, PN and AB conducted an electrical resistivity test of the concrete using a Proceq Resipod, incorporating the same grid system as the previous tests.

Concrete resistivity tests measure the resistance of the concrete to flow current. Higher levels of concrete resistivity correlate to a greater resistance of the concrete to the flow of ions, and thus a lower probability that reinforcing steel corrosion is occurring. Resistivity values are measured in Kilo Ohms/ cm^2 or $\text{K}\Omega\text{cm}^2$.

Resistivity measurements can be used to estimate the likelihood of corrosion. When the electrical resistivity (ρ) of the concrete is low, the likelihood of corrosion increases. Empirical tests have arrived at the following typical values for the measured resistivity which can be used to determine the likelihood of corrosion. These figures are for Ordinary Portland Cement at 20°C¹.

When $\geq 100 \text{ k}\Omega\text{cm}$	Negligible risk of corrosion
When = 50 to 100 $\text{k}\Omega\text{cm}$	Low risk of corrosion
When = 10 to 50 $\text{k}\Omega\text{cm}$	Moderate risk of corrosion
When $\leq 10 \text{ k}\Omega\text{cm}$	High risk of corrosion

According to Broomfield et.al 1993, resistivity levels in correlation with possible corrosion current output are as follows:

$>20 \text{ k}\Omega \text{ cm}^2$	Low Corrosion Rate
$10\text{-}20 \text{ k}\Omega \text{ cm}^2$	Low to Moderate Corrosion Rate
$5\text{-}10 \text{ k}\Omega \text{ cm}^2$	High Corrosion Rate
$<5 \text{ k}\Omega \text{ cm}^2$	Very High Corrosion Rate

¹ Resipod Operating Instructions Manual

Carbonated concrete has a higher resistivity than concrete without carbonation, however provided the depth of the carbonated layer is significantly smaller than the probe spacing, the effect of this layer is small. Consequently if the carbonated layer is thick, it may be necessary to increase the probe spacing to obtain good results.

A modified four-point Wenner resistivity meter is used. These probes are based on soil resistivity meters, and have been modified for concrete. The modified probe uses four equally spaced probes on a straight line. The probe spacing is approximately equal to the depth of the resistivity measurement in concrete. Wet sponges or apparatuses are mounted in the probes to enhance the electrical contact between the probes and the concrete surfaces. The resistivity of the concrete is a function of the voltage drop between the center pair of probes with the current provided by the outside probes.

The results of the electrical resistivity test are shown in Figure 9 of the “Results” section.

3.0 Test Results

The following contour maps are provided to visually map the data collected from site. The areas of high risk are indicated by the lower values of the respective scale. For potential, in accordance ASTM, more negative values indicate higher risk.

3.1 Cover

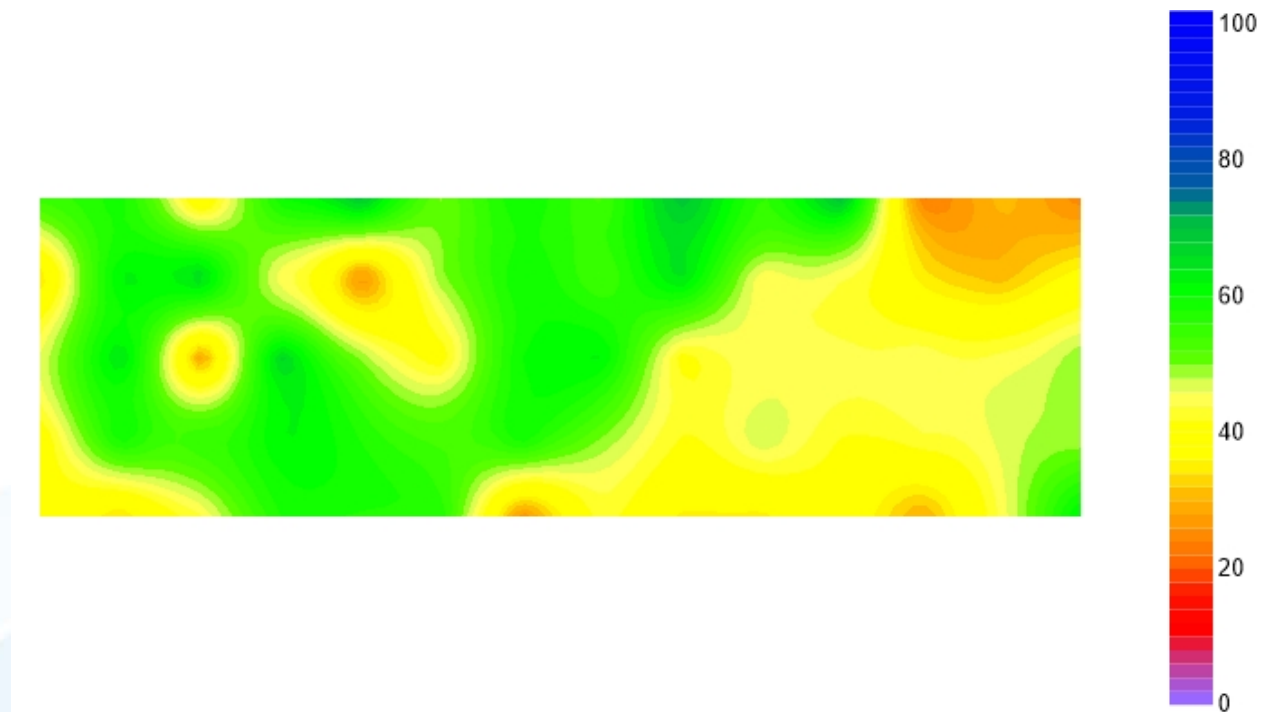


Figure 3: Concrete Cover over Reinforcing Steel (mm)

	Concrete Cover (mm)
Minimum	23.4
Maximum	70.7
Average	48.17

Table 5 – Results for Concrete Cover

3.2 Half-Cell Potential

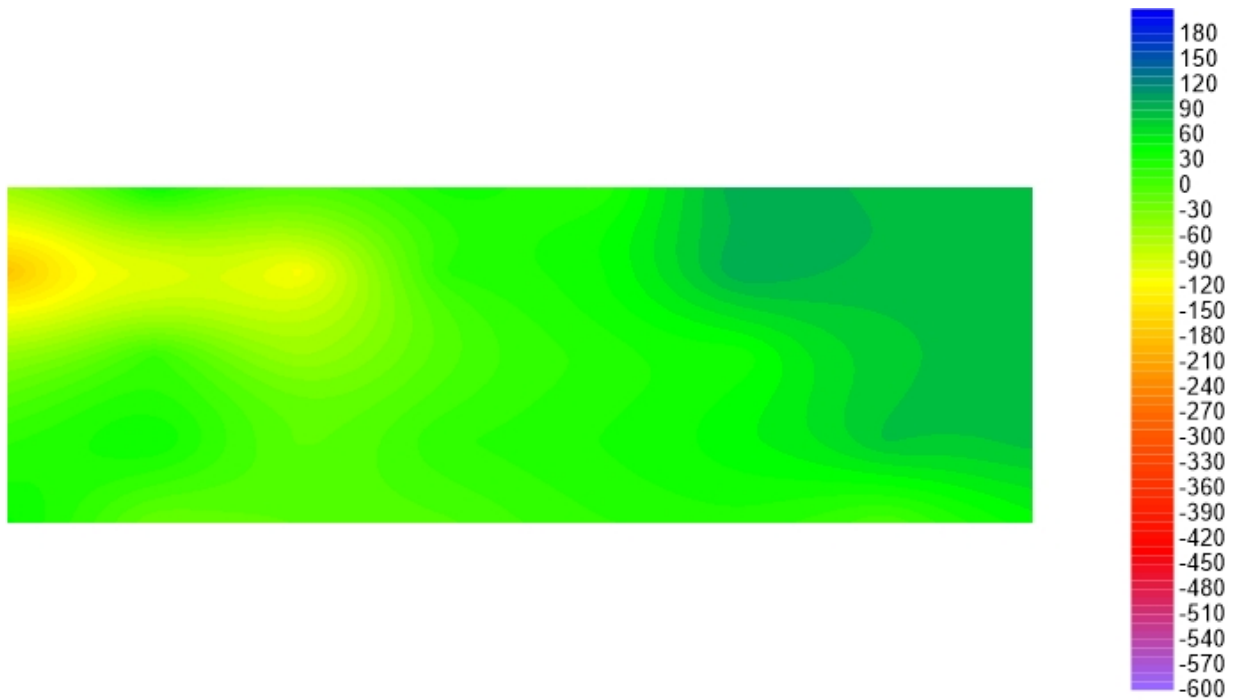


Figure 4: Half - Cell Potential (mV)

	Potential (mV)
Minimum	-1.9
Maximum	-176.9
Average	24.69

Table 6 - Results for Half-Cell Potential

3.3 Corrosion Rates

Due to the use of epoxy coated reinforcing, macro-cell corrosion will exist where there are holidays in the coatings. Echem analyzed the data with 4 variations of surface area. The instrumentation assesses the data as if the steel is uncoated and is 100cm² of exposed steel. This would be an underestimation of the actual corrosion activity and therefore the data was increased to 50%, 25% and 5% of the collected values. With decreasing surface area, the corrosion activity increases in intensity. This macro-cell effect has been found to be a common issue with epoxy coating, which performs in a similar manner to chloride induced corrosion pitting corrosion.

3.3.1 Corrosion Rates Assumption on 100% Exposed Steel (low values)

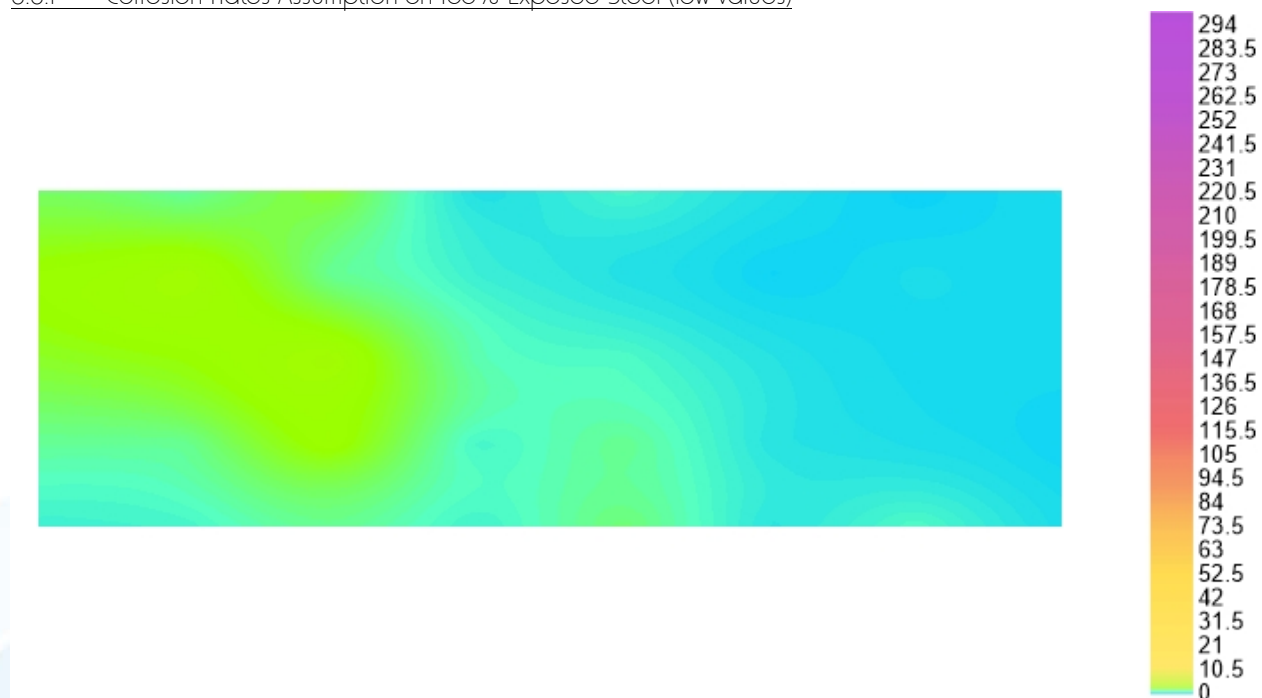


Figure 5: 100% Corrosion Rate (µm/yr)

	Corrosion Rate (µm/yr-1) (100%)
Minimum	0.23
Maximum	3.17
Average	1.22

Table 7 – Results for LPR Area Using 100% Corrosion Rate

3.3.2 Corrosion Rates Assumption on 50% Exposed Steel (moderate values)

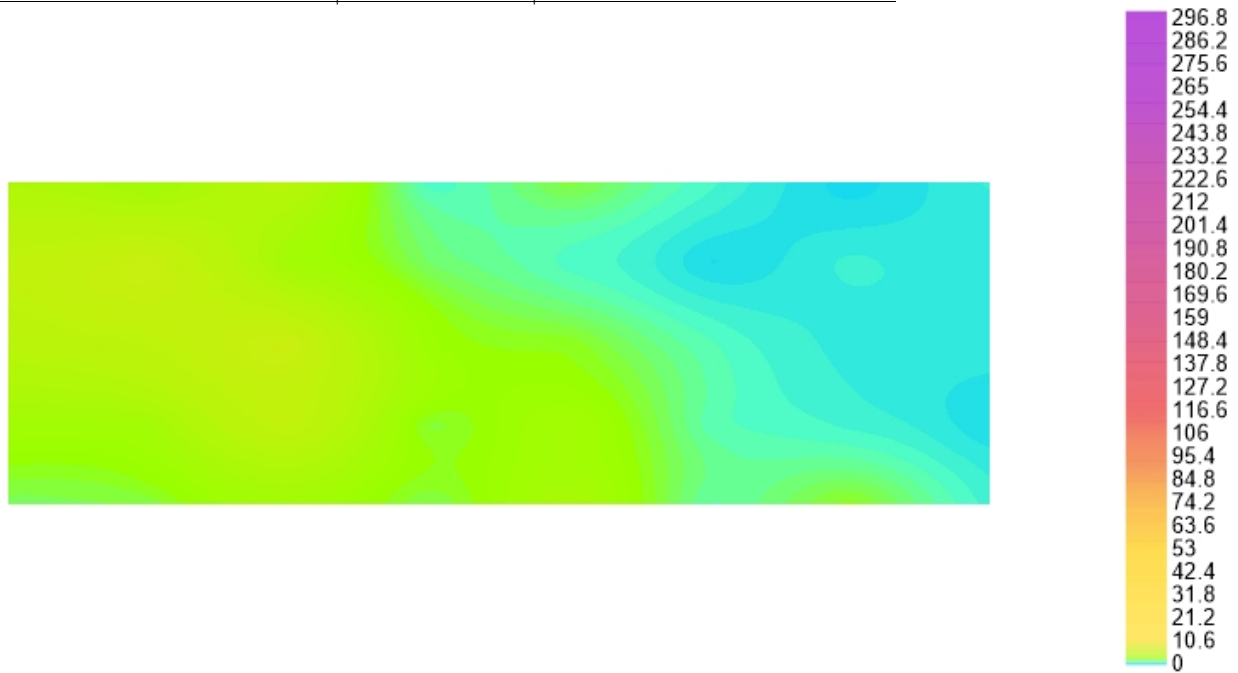


Figure 6: 50% Corrosion Rate (μm/yr)

	Corrosion Rate (μm/yr-1) (50%)
Minimum	0.47
Maximum	6.35
Average	2.44

Table 8 – Results for LPR Area Using 50% Corrosion Rate

3.3.3 Corrosion Rates Assumption on 25% Exposed Steel (moderate to high values)



Figure 7: 25% Corrosion Rate ($\mu\text{m}/\text{yr}$)

	Corrosion Rate ($\mu\text{m}/\text{yr}$-1) (25%)
Minimum	0.94
Maximum	12.70
Average	4.88

Table 9 – Results for LPR Area Using 25% Corrosion Rate

3.3.4 Corrosion Rates Assumption on 5% Exposed Steel (high values)

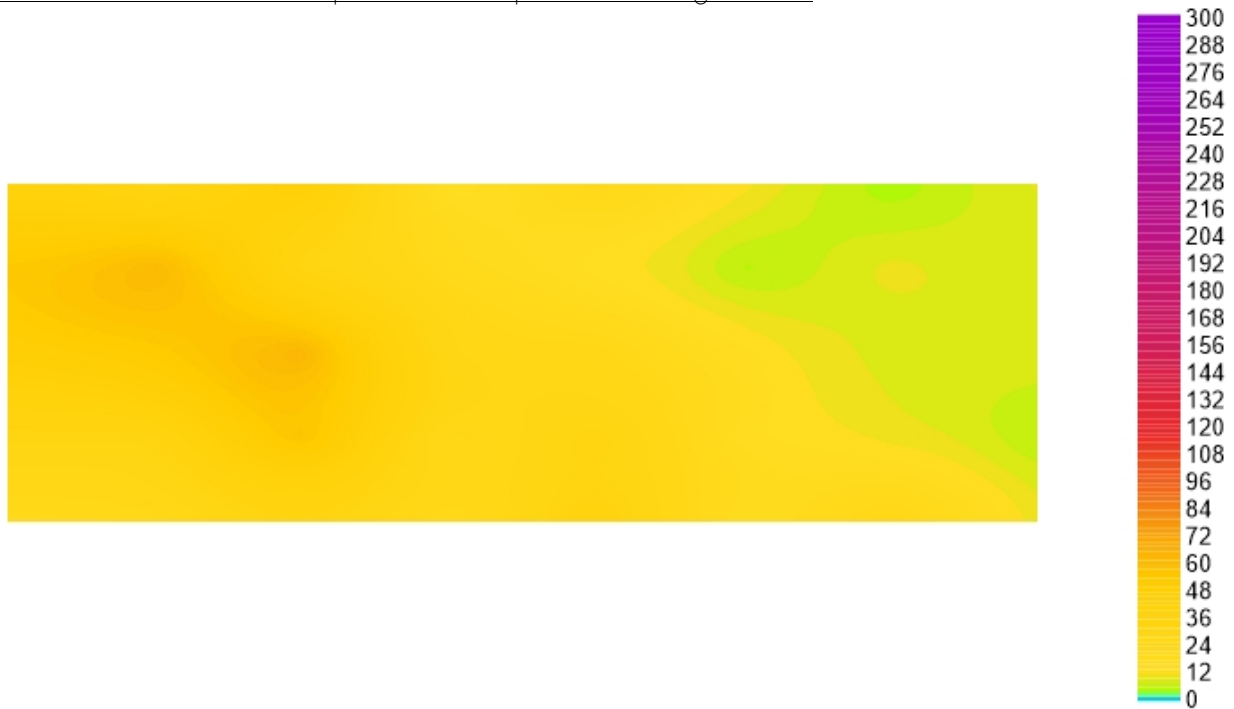


Figure 8: 5% Corrosion Rate ($\mu\text{m}/\text{yr}$)

	Corrosion Rate ($\mu\text{m}/\text{yr}$ -1) (5%)
Minimum	4.68
Maximum	63.50
Average	24.38

Table 10 – Results for LPR Area Using 5% Corrosion Rate

3.4 Resistivity

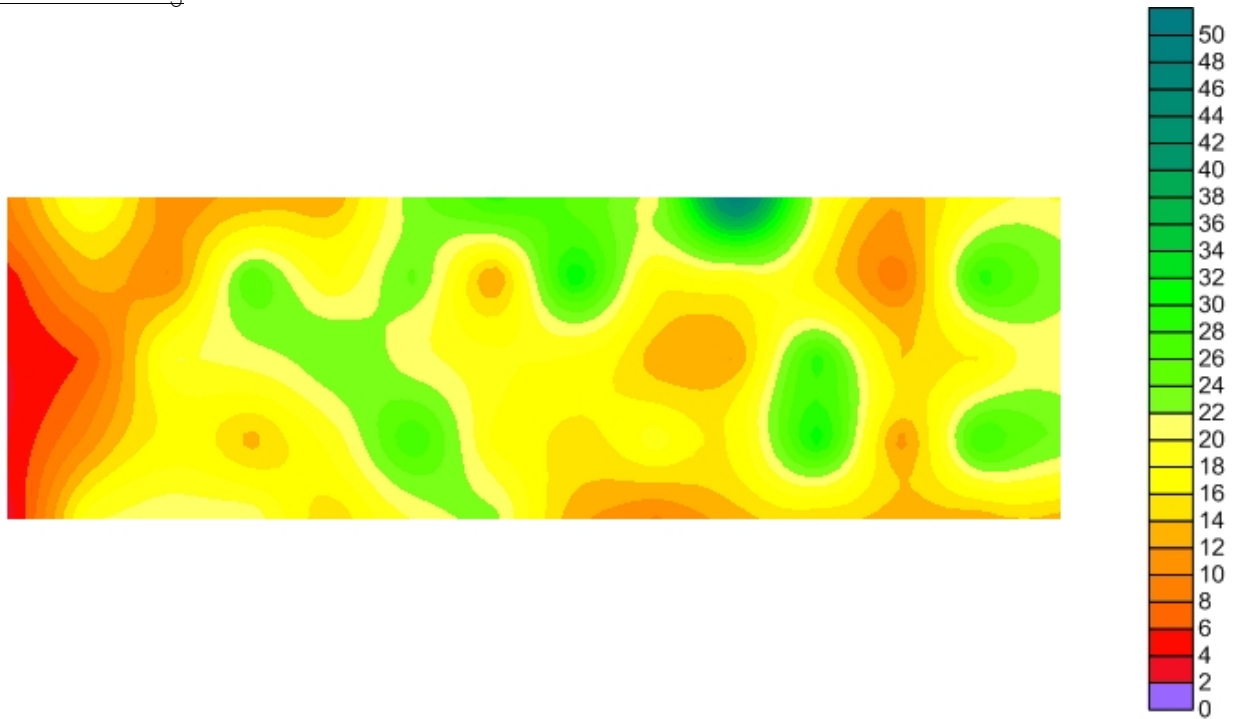


Figure 9: Resistivity of Affected Concrete ($k\Omega/cm^2$)

	Resistivity ($k\Omega/cm^2$)
Minimum	2.50
Maximum	50.30
Average	17.62

Table II – Results for Concrete Resistivity

3.1 Time to Cracking Models – Steel and Concrete

Time to Cracking Models are used to project deterioration which occurs to concrete cover when tensile forces from the accumulation of corrosion scale exert forces onto through the surrounding electrolyte or concrete, causing microcracking of the masonry. As seen at the Irish Hunger Memorial, the concrete has already developed existing cracks in select locations. This would most likely be due thermal movement, settlement, as the concrete cured, which are not corrosion related. In the instance where cracking of the concrete is present but corrosion has not yet propagated, it must be recognized that compromised and deficient concrete assist in the acceleration of corrosion related damages upon corrosion initiation.

The cracking model used for this study is a reflection of 'general' or uniform corrosion related deterioration, however rates used for factor increases with epoxy coating have also been used to illustrate variations of behavior based increasing corrosion activity.

The model presumes that the deterioration to the concrete caused by rust accumulation will start from the time of testing, going forward. This data should be viewed in relation to the durability of the structure and its performance in the future. Where damages have already occurred on this structure these parameters should be viewed guidelines the urgency of repairs.

Time to Cracking models are used on existing structures to determine two parameters: 1) when the structure may exhibit damages in relatively sound material based on current corrosion activity and/ or 2) when the structure may exhibit damages after a traditional repair in which corrosion is not addressed.

This model is a function of steel size (geometry and surface), masonry cover, and the compressive strength of the masonry cover. This calculation determines the time frame from which tensile forces created by the formation of iron oxide or rust (based on actual corrosion current) will cause cracking and damages to the masonry cover. Variations occur in reactions based on all factors. For this model, a 0.5mm crack was used in the calculation. 0.5mm is considered by the corrosion industry to be a crack width that is sufficient in size to support corrosion activity. Cracks which are 0.5mm and greater will allow oxygen, moisture and atmospheric solids into the masonry/ concrete electrolyte.

Irish Hunger Memorial			
LPR Rates, Average/ Maximum per data set	Corrosion Model (Ave, Max)	Time to Cracking w/ Corrosion Rate (Years)	Notes
100%	Average	42.76	
	Maximum	16.40	
50%	Average	21.38	
	Maximum	8.2	
25%	Average	10.69	
	Maximum	4.10	
5%	Average	2.15	
	Maximum	<1 year	

Table I2 - Time to Cracking Summary

At present the models indicate, that based on the intensity of the corrosion activity, there may be corrosion related damages occurring the present time through the next 40 years in the best case scenario. As macro-cell corrosion is more intense than general corrosion, it would be presumed that corrosion related damages would occur between 4 and 10 years.

Results Summary

Corrosion is a function of multiple influencing factors, including the presence of oxygen and moisture, temperature and contaminants. Corrosion activity can be reduced by highly saturated conditions, where the lack of oxygen will inhibit the oxidation reaction which is commonly associated with rust, mil scale, and general corrosion or pitting corrosion. Where high moisture is present, corrosion can slow to negligible levels, and can occur in solution. Damage from aqueous reactions will not present themselves until such time the concrete or surrounding electrolyte dries. There is often a period of time where accelerated corrosion occurs prior to the concrete reaching a state of equilibrium.

Corrosion is more active in areas where there is a variation in oxygen and moisture levels. While time of wetness does play a role in corrosion, wetting and drying cycles can be more detrimental to embedded steel. It is presumed that the epoxy coated reinforcing may be subject to corrosion in solution where the concrete is highly saturated. Where the concrete has more frequent wetting and drying cycles, there will be a more pronounced reaction as seen in the rebar chairs along the surface of the soffit.

The visual survey revealed that there are signs of ongoing water infiltration, water and rust staining, leaching of calcium carbonate from the concrete, and early signs of material degradation.

Continuity testing illustrated that the epoxy coated reinforcing was continuous within the test area.

The concrete cover was adequate in most locations, with 48mm average cover to 78mm maximum cover. 50mm or 2 inches is desirable for increasing long term durability of reinforced concrete structures.

The half-cell potential testing did not yield a high risk of corrosion based on ASTM C876, however it was noted that of the values recorded, 38% of the readings had a potential gradient equal to or greater than $\pm 25\text{mV}$. This is indicative of corrosion activity based on the half-cell data for carbonated concretes.

For the corrosion test program, the LPR readings registered active corrosion within the concrete to the epoxy coated reinforcing steel. This indicates that there are holidays within the coatings and that the actual corrosion activity would be presumed higher. The results of the program were scaled to illustrate the potential risk of corrosion activity based on macro-cell corrosion.

The resistivity values range from being extremely low to moderate for sound concrete. The lowest reading, $2.5\text{K}\Omega$, correlates with the potential for extremely high corrosion activity. This would be a function of the saturated conditions.

The time to cracking models, which presume the development of a 0.5mm crack based on corrosion current, cover and steel diameter, indicate that the more active areas on the structure may exhibit signs of deterioration between 1 – 10 years where the structure is at high risk or between 16 and 42 in lower risk conditions. As mentioned in Section 3.1 Time to Cracking Models 'Time to Cracking Models' presume that the deterioration will start from the time of testing, going forward. Time to Cracking models are used on existing structures to determine two parameters: 1) when the structure may exhibit damages in relatively sound material based on current corrosion activity and/ or 2) when the structure may exhibit damages after a traditional repair in which corrosion is not addressed.

It is anticipated that as the structure begins to dry, that corrosion may be accelerated where there are holidays in the coatings.

Conclusions

In conclusion, the concrete of the Irish Hunger Memorial at the area tested is at a moderate risk of corrosion activity in the majority of the instances, and isolated areas of high risk based on the findings of our limited investigation.

Cover is fair to adequate. Half-cell values, while not high in accordance with ASTM C876, are revealing areas of corrosion risk based on potential gradients. The LPR data is registering corrosion activities in the holidays of the epoxy coated reinforcing which indicates that higher rates of activity are present. The resistivity values range between very high corrosion risk to moderate corrosion risk.

Recommendations

As an addition to this testing program which has identified active corrosion based on the conditions recorded, Echem recommends the following to enhance our understanding of the conditions impacting corrosion and long term durability of the Irish Hunger Memorial:

1. Create a full corrosion index for the area tested, this includes adding the following test methods
 - a. Carbonation Testing
 - b. Chloride Testing
 - c. Petrographic Analysis
2. Perform a durability analysis and corrosion study for the entire elevated concrete cantilevered slab to include all aforementioned testing procedures to create a corrosion index.
3. Perform water testing and leak evaluation upon completion of the new waterproofing program.
4. Provide corrosion mitigation management options for areas of high risk as part of the repair program for new waterproofing membrane. This will help minimize any damages which may occur as the concrete begins to dry.

Please let me know if you have any questions. We look forward to continuing to work with the Battery Park City Authority.

Respectfully Submitted,



Gina Crevello
Principal
EChem Consultants, LLC