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## **COLD FLUID APPLIED ROOFING SYSTEM**

### **DIVISION 7 – THERMAL AND MOISTURE PROTECTION**

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**REF** CPDDESIGN2016001 – Roof Parapet Replacement with Railings  
CPDDESIGN2016002 – Compactor Stacks  
CPDDESIGN2016003 – Sidewalk Shed

This *Standard Notice* addresses the Procedure and Criteria to be considered for the removal of an existing roofing system down to the structural deck and installation of a new thermal and moisture protection roofing system.

#### **INTRODUCTION**

Office of Design convened a “working” meeting on March 25, 2015 to discuss the roofing systems and details currently being used at NYCHA. The meeting was comprised of staff from Office of Design, Program Units, Quality Assurance and Maintenance, Repair and Skilled Trades. As a result of this meeting, roofing standards and procedures were revised and updated. Many of the roofs at NYCHA were originally designed as ‘no-slope’ coal-tar roofs. This roofing system allowed for standing water and fewer roof drains. The cold fluid applied roofing system follows this same concept and is well-suited to buildings with fewer roof drains where tapered insulation designs are problematic. Problematical items include, but are not limited to, gravel stop height due to tapered depth, uplift testing and openings at the bulkhead.

The following references shall be considered during the design and installations of roofs.

- 2014 NYC Construction Code, Chapter 15
- 2014 NYC Energy Conservation Code, Chapter C4
- 2014 Rules of the City of New York (RCNY)
- NYCHA Standard Procedural Manual-SP 076:15:1 Roof Replacement Buildings Surveys.

## DESIGN TO REPAIR APPROACH

The NYCHA standard detail for Cold Fluid Applied Roofing System, as suggested in the attached detail drawings and specifications, proposes to remove the existing roofing down to the structural deck and applying a non-IRMA assembly; This process entails (1) scarifying to create a sound concrete surface, (2) applying a torch-down SBS modified asphalt membrane with mineralized surface vapor barrier, (3) installing a ridged polyisocyanurate insulation with min. LTTR R-25 (except at drain sumps and enhancers), (3) installing a cementitious cover board, and (4) applying a cold liquid applied membrane, fully reinforced with polyester fleece. This roofing system would include installation of 'water stopping' at 400 s.f. maximum areas to prevent penetration of moisture from adjacent insulation areas and overflow scuppers at the roof edge.

The specifications offer two (2) options for the contractor to choose from for bidding and procuring. Option one is a Two Component Applied Reinforced Polyurethane and option two is a Polymethyl Methacrylate (PMMA). NYCHA accepts both systems and believes that providing both systems will create greater competition in the market place. The construction details are similar for both systems.

### Waivers and Variances:

The 2014 Rules of the City of New York (RCNY) exempt roof repair or replacement from permit requirements of the New York City Construction Codes, provided that the New York City Energy Conservation Code does not require additional thermal insulation on the roof deck; 1RCNY 101-14, Chapter 100, Table 3, IV. Roofs. The 2014 NYC Energy Conservation Code (NYCECC) requires a minimum thermal resistance R-value specified in table C402.2. In New York City, all boroughs are located in climate zone 4A - The R-Value for New York City Housing Authority residential buildings, in all boroughs, is an R-25 as per Table C402.2. This is an increase from the previous code requiring an R-20.

It is presumed that all roof repair and replacement would receive additional thermal resistance and would be required to be filed with the New York City Department of Buildings.

NYC Department of Buildings has issued a waiver to the New York City Housing Authority for the requirement to file roof repair or replacement from requirements as long as the design and installation meet the requirements of the NYCECC and the NYC Municipal Code. This waiver is limited to roof work only. Any structural work shall be filed with the New York City Department of Buildings.

Attachments: Letter from NYC Buildings, dated July 9, 2015  
Specification Section 07 14 00 – Option 1 and Option 2  
Drawing EN001.00 – Energy Code Compliance  
Drawing A101.00 – Typical Roof Plan  
Drawing A401.00 – Typical Roof Details  
Drawing A404.00 – Typical Bulkhead and Entrance Canopy Details

**\*\*\*End of Standard Notice #2016006\*\*\***



Updated Specifications  
& Drawings added on:  
January 31, 2019

Rick D. Chandler, P.E.  
Commissioner

July 9, 2015

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Executive Director  
Technical Affairs  
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Re: 1-RCNY 101-14, Chapter 100 Subchapter A Administration, IV. Roofs

Dear Mr. Lovci:

This letter is in response to your correspondence dated May 8, 2015 to First Deputy Commissioner Thomas Fariello. In that letter, the Office of Design at the New York City Housing Authority (NYCHA), is proposing to meet or exceed the roof insulation requirement of the 2014 New York City Energy Conservation Code (NYCECC) in its new roof replacement work and is requesting confirmation that such work may be considered exempt from the permit requirements of the New York City Construction Codes. After reviewing NYCHA's proposal and request, the Department's position is that such work may be considered a minor alteration that does not require a permit provided the scope of work is limited to the proposed roof replacement and does not diminish safety or the integrity of the building.

Administrative Code section §28-105.4 defines certain categories of work to be exempt from permit requirements and further allows other categories to be outlined in department rules, provided public safety is maintained. Per 1-RCNY §101-14(d), other categories of work exempt from permit requirements include the types of work listed in Tables 1 through 3, but is not limited to those items. Table 2, section IV, item 1 indicates that a permit is not required for roof repair and replacement above the roof deck or sheathing provided additional thermal insulation at the roof is not required by the NYCECC.

The NYCECC was recently updated at the end of 2014, and the Office of Design at NYCHA has stated that it will comply with the latest roof insulation requirements for new roof replacements. Where such roof replacement work is limited to the repair or replacement of roof membranes, roof coverings and insulation above the roof deck or sheathing and does not create a noncompliant or unsafe condition, such as reducing parapet height, such work may be considered as work that is exempt from permit requirements. However, any additional scope of work included such as construction at the parapet or bulkhead will require a permit to ensure compliance with all applicable construction codes. Additionally, please note that roof systems which use gravel ballast are no longer acceptable in New York City per BC 1504.8 of the 2014 Building Code.



Please feel free to contact the Department if you have any further questions.

Sincerely,

A handwritten signature in blue ink that reads "Gus Sirakis".

Constadino (Gus) Sirakis  
Executive Director  
Technical Affairs Division

Cc: Thomas Fariello, RA, First Deputy Commissioner

**NEW YORK CITY HOUSING AUTHORITY  
90 CHURCH STREET, NEW YORK, NY 10007**

# **Contract**

**For**

**Roofing Replacement & Rooftop Structure Renovation  
Requirement Contract**

**At**

**Various Developments – Citywide**

**Development No.: Various**

**Borough of: Various**

**Contract No.: RF1805337**

**Department: Capital Projects Division**

**Program Unit: Project Management Team 1**

**Advertised in the City Record on:**

**Sealed proposals will be received by the New York City Housing Authority at  
90 Church Street, New York, NY 10007 on the 11<sup>th</sup> Floor, Bids/Contracts  
Reception Room until:**

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**NEW YORK CITY HOUSING AUTHORITY  
ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION  
REQUIREMENT CONTRACT – CITYWIDE**

**LIST OF DRAWINGS**

The Contract Drawing numbers and titles for this Contract are as follows:

<b>SHT No.</b>	<b>DWG No.</b>	<b>DWG Description</b>
001	T001.00	Title Sheet
002	G001.00	General Notes Sheet 1 of 2
003	G002.00	General Notes Sheet 2 of 2
004	G003.00	Organization and Abbreviations
005	G004.00	General Restoration Summary, Schematic Sidewalk Shed and Fencing Plan
006	G005.00	Sidewalk Shed Protection: PRO 01 - PRO 06 (1 of 2)
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008	G007.00	Temporary Protection Detail: FNC 01, PRO 07, PRO 08
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010	H002.00	ACM Abatement Details: ACM 05, ACM 06, ACM 07, ACM 08
011	H003.00	ACM Abatement Details: ACM 09, ACM 10, ACM 11, ACM 12
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015	A101.00	Roof Plan: Typical Building Layout
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064	A549.00	Restoration Details: WIN 01

**END OF LIST OF DRAWINGS**

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**SECTION 01 00 00  
GENERAL REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Contract Documents
- B. General Provisions

**1.02 CONTRACT DOCUMENTS**

- A. The Contract Documents include the following: the "Bid Booklet" and the "Contract Drawings"; the "Specifications"; "Special Notice to Contractors Summary Form" latest edition; the "Form of Proposal", "Amendments to General Conditions", and all amendments and addenda, all of which govern the Work of this Contract.
- B. These Specifications complement and supplement the Contract Drawings.
- C. Note that all provisions listed in Division 01 General Requirements of the Specifications herein apply to the General Contractor except where noted.

**1.03 GENERAL PROVISIONS**

- A. Bidders are to be thoroughly familiar with the work required under this contract, including having read and reviewed the Specifications and Drawings provided. Bidders are responsible for confirming that the Specifications and Drawings are missing no pages, and if pages are missing to notify NYCHA for their inclusion. The prospective bidder shall visit the Project Site and ascertain the full nature and extent of the Work required.
- B. The Contractor's Base Bid as accepted by NYCHA includes work required by the Contract Documents, including furnishing of labor, materials, engineering, equipment, tools, supervision, freight, hoisting, rigging, scaffolding, etc., as is necessary to perform the work.
- C. Prior to commencing work, the Contractor is responsible for verifying dimensions and existing conditions at the Project Site. The Contractor shall report to NYCHA's Field Representative any conditions which might prevent performance of work. The Contractor shall immediately notify NYCHA in writing of any discrepancies found between existing conditions contained in the Contract Documents vs. those found in the field.
- D. The Contractor shall take whatever precautions necessary to protect the property of NYCHA and its residents from damage or loss arising out of the Contractor's execution of this contract. The Contractor shall assume responsibility for any such damage or loss caused by them and shall, at his/her own expense, repair or replace any property that becomes damaged or destroyed. The Contract Project Manager (NYCHA) shall determine whether affected property has been damaged to such an extent that it cannot be restored to its original condition and must be replaced in-kind by contractor.
- E. All work shall be done in a neat, clean, and orderly manner by experienced and qualified trades people. Workmanship shall meet the quality specified. Any construction work that is substandard, including materials, or un-approved substitutions to specified materials, will be rejected and satisfactory corrections made at the Contractor's expense.
- F. The Contractor and/or their Subcontractor(s) shall possess the appropriate licenses and/ or certifications for all the Work of their contract as required by any Federal, State or Local Law or Agency having jurisdiction thereof.
- G. Prior to proceeding with any work, the Contractor shall obtain all necessary work permits from the NYC Department of Buildings (DOB), Department of Environmental Protection (DEP), and all other public agencies with jurisdiction. The Contractor shall prepare, file and submit to such agencies for their approval all required plans and applications; obtain all necessary work permits and certificates of compliance and deliver the same to NYCHA. Include as required the following:

1. All required documents for asbestos abatement in accordance with NYCDEP, including but not limited to contract documents, tenant safety plan, and ACP forms. Note that NYCHA will not grant any extensions due to delays in obtaining an approved abatement subcontractor and/or failing to submit the necessary documentation to NYCDEP in order to obtain the necessary abatement approvals and building permit(s).
  2. All required documents for lead abatement, also as required by the authorizing agency.
- H. The Contractor's Base Bid, as accepted by NYCHA, includes the total cost to NYCHA of all the Work of their trade required by the Contract Documents. The Contractor shall provide any and all incidentals as may be reasonably inferred to be required, but were not specifically called out, that are necessary for their proper execution of the Work of their contract.
- I. The Contractor shall provide a full-time, competent, Project Manager or Superintendent, in addition to the specialists required as per the specifications. This individual shall have the authority to make all decisions for this Contractor, attend all weekly meetings, and be responsible for all lower tier subcontractors and vendors.
- J. Electrical work shall be done by or under the Supervision of an electrician possessing a Master Electrician's License issued by the City of New York.
- K. Plumbing work shall be done by or under the Supervision of a plumber possessing a Master Plumber's License issued by the City of New York.
- L. Project Coordination: The Contractor shall coordinate his work with that of other trades. Storage of materials, use of site, access to areas of work, stockpiles of materials, etc., shall be determined by NYCHA's Field Representative or NYCHA's CM if the specifications do not address the particular condition requiring coordination. The Contractor shall fully cooperate and coordinate the work with activities of NYCHA, including building residents and management, and any other Contractors working at the development.
- M. Unless otherwise specifically provided by Code Provisions, all required inspections and tests of materials designated for Special inspection shall be made and witnessed by or under the direct supervision of a duly licensed professional retained by NYCHA and certified by DOB. This engineer shall provide the Administering Authority with all required applications and signed copies of all required inspections and test reports.
- N. In the event that any conflict or discrepancies occur or exist between any of the contract documents, the specifications shall take priority over the drawings. Any adjustments to the work by the contractor without receiving a final determination from NYCHA shall be at their own risk and expense.
- O. In the event of a discrepancy, if there exists conflict with regard to quantity and/or quality of work, the Contractor(s) shall be responsible for the greatest quantity or highest quality, regardless of the priority of the documents.
- P. The Contractor shall start duly authorized work with the required manpower and a full-time work program to deliver the project as per the contract schedule. Failure to maintain a full-time work schedule, or under-manning of the job will be at minimum grounds for NYCHA's pursuit of a contract default.
- Q. No asbestos-containing materials (ACM) shall be permitted on site or for any use, as either a temporary or permanent part of construction.
- R. Construction activities shall take place between the hours of (8:00 AM and 4:00 PM).
- S. No work shall be performed on Saturdays, Sundays and holidays without prior written approval from NYCHA. Contractor shall take all preventive measures as per NYCDOB guidelines during inclement weather and protect the Work as well as people and residents.
- T. The Contractor shall take care to avoid damage to existing trees and other landscape features on and around the project site when performing construction activities. The Contractor shall be held responsible for any damage caused by their operations

**PART 3 EXECUTION (NOT USED)**

**SECTION 01 11 16  
SUMMARY OF WORK**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. General Requirements
- B. Scope of Work
- C. Division of Work into Assemblies
- D. Additional Scope of Work Requirements
- E. Sequencing and Coordinating of Work
- F. Contractor's Responsibility Regarding Project Sequencing
- G. Contractor's use of Premises
- H. Site Protection
- I. Coordination
- J. Cooperation with Authority and Residents

**1.02 GENERAL REQUIREMENTS**

- A. The Work shall consist of providing all materials, labor, tools, related services and incidental items required, in accordance with the Contract Documents, for the execution of this Contract.
- B. This project description is a general summary only, is not a complete listing of work required under this Contract, and does not limit Contract work as stipulated in other parts of the Documents. The Contractor is responsible for every part of the Work indicated in the Contract Documents whether or not it is included in the following summary. Refer to all parts of the Contract Documents for the total work included in this Contract. In general, the Work shall consist of performing and providing the following in accordance with the Contract Documents.
- C. Local Regulations: Conform to regulations of public agencies, including any specific requirements of the city and/or state of jurisdiction.
- D. Bidders may gain access to the work area for inspection purposes by visiting the Management Office at [insert Management Office address]
- E. Structural Safety during Construction Operations: All removals must be in accordance with the requirements of current applicable code and other code sections pertaining to structural safety during construction. No work can begin until the requirements of these sections are met, and the ongoing requirements must be maintained continuously during construction.
- F. Hazardous Materials Abatement:
  - 1. Asbestos Abatement: All ACM is to be abated in accordance with hazardous material drawings, specifications, applicable laws and regulations. Where materials are scheduled for removal, such removal and disposal of materials shall be treated as abatement. All building materials containing ACM are to be abated, including but not limited to the following general items:
    - a. At roofs and bulkhead roofs: flashing at stack vents, drains, air exhaust vents, bulkhead bases, curb bases, as designated in the abatement drawing.
      - a1. Extent of ACM removal may vary at each development based on the outcome of ACM survey. All coal tar and other residue is to be removed from existing concrete to remain, which shall be mechanically scarified. Temporary protection including temporary roofing is to be provided at all areas where abatement occurs.
  - 2. To facilitate ACM removals, the Contractor is required to cut and remove a 3' perimeter strip of roofing adjacent to the parapet, and 16" perimeter strip at roof bulkheads and other

ACM items, down to the structural slab. All coal tar and other residue is to be removed from existing concrete to remain which shall be mechanically scarified. Temporary protection including temporary roofing is to be provided at all areas where abatement occurs.

3. Lead-Based Paint Abatement: All lead based paint is to be abated in accordance with hazardous materials drawings, specifications and applicable laws, including Local Law 1 of 2004 (LL1/04). Where items containing or coated with lead based paint are scheduled to be removed and replaced, such removal and disposal shall be treated as abatement. All lead based paint is to be abated, including but not limited to the following general items:
  - a. At roof bulkheads: metal doors and door frames.
  - b. At Incinerator Settling Chamber: access door and spark arrestor
  - c. At roof railings: posts, pipe sleeves and attachments
  - d. Main Roof: miscellaneous metal surfaces such as vent stacks, steel stairs, etc.

### 1.03 SCOPE OF WORK

- A. The Work under this Contract consists of but is not limited to the following items: masonry and parapet repair and replacement, roofing replacement, door replacement, louver replacement, and window replacement. Related work includes asbestos abatement, lead paint removal, and site protection work. Contractor should estimate 25% of the buildings in the contract to be 15 stories or higher.

### 1.04 DIVISION OF WORK INTO ASSEMBLIES

- A. The Work under this Contract is divided into System Assemblies for the purposed of bidding and cost determination. For a description of these assemblies see the Drawings and Specification Section 01 22 00 "Unit Price Assemblies".
- B. ADDITIONAL ASSEMBLY INFORMATION:
  1. The work of the Assemblies above is further detailed on the Drawings and qualified in the standard CSI Specification divisions which follow.

### 1.05 ADDITIONAL SCOPE OF WORK REQUIREMENTS

- A. 1. A shop drawing showing layout and details for reinstallation of equipment and security enclosures must be submitted to NYCHA by Telecommunication Company (leasee) prior to their temporary relocation of their equipment. The shop drawings will be reviewed by NYCHA and possibly the roofing manufacturer providing the guarantee for approval.

### 1.06 SEQUENCING AND COORDINATING OF WORK

- A. The number of buildings the GC shall work on at one time must be approved by NYCHA per GC's capacity, with a minimum of three (3) buildings at any given time.
- B. Sequencing and coordinating work throughout the Development: In order to maximize the Development's, City Wide use of portions of the site where no work is taking place, the Contractor shall work on groups of buildings. To accomplish this, the General Contractor shall provide a sequencing plan which takes into consideration the placement of sidewalk shed and temporary construction fence (barriers). The General Contractor shall then submit a sequencing plan along with the Sidewalk Shed/Construction Fence shop drawing showing the sequencing to the NYCHA Designated Representative. After review and approval the NYCHA Designated Representative will in turn send it to the Capital Projects Construction Group for review and approval. No work may begin before this approval is attained.
- C. Work shall begin in buildings as approved by NYCHA, and then proceed as per the approved phasing schedule.

- D. The Contractor shall refer to the following guide to the construction sequence. A detailed sequence shall be submitted The Contractor prior to the commencement of work and revised during the course or construction.
  - 1. All work shall be in accordance with availability of buildings, public spaces, stairhalls, and apartments as set forth in the Special Conditions or as directed by NYCHA.
  - 2. Structural repairs of the top floor beams, slabs and the perimeter spandrel beams and columns shall be done in conjunction with the repair of roofs and parapets to allow for inspection and repair of the top of slabs and beams or any other hidden or deteriorated concrete.
  - 3. At no time shall parapet and roofing work, both removal and reconstruction work, be conducted in more than three buildings simultaneously unless approved by NYCHA prior to commencing work. All roofs shall be protected from inclement weather to prevent damage to apartments and public areas.
  - 4. No work shall begin on the exterior until all approved protective bridging is in place.
  - 5. See drawings, specifications, and all addenda to the Contract for additional information and sequencing requirements.
  - 6. Masonry work to be completed prior to roofing
- E. Upon receiving the Notice to Proceed for a sequence of the Work, the Contractor shall commence work on the buildings in the sequence as directed. At any time during the work in a sequence, NYCHA may, at its option, direct work in any of the buildings in another sequence, as they become available.
- F. Buildings shall be completed to the complete satisfaction of NYCHA, prior to the Contractors being directed to proceed with the next available building or sequence.
- G. The number, order and date of buildings available for simultaneous repair work shall be as directed by NYCHA. Contractors are advised that from time to time, NYCHA may experience delays in resident relocation. Contractors shall anticipate re-scheduling construction sequence at no additional cost to NYCHA and shall make no claim for delay or additional expenses due to delays in the process for any reason whatsoever.
- H. Unit Prices quoted by the contractor in the Form of Proposal shall be applied to all Sequences of the Work.
- I. Coordinating Roofing and Existing Telecommunication Equipment: The work of roof replacement may require the Contractor to coordinate with telecommunications leases where equipment has to be temporarily raised or removed to permit roof removal and re-roofing/ re-flashing. The Contractor shall put in writing when the desired start date for work to initiate the coordination efforts through the NYCHA's Office of Facility Planning & Administration, 250 Broadway, New York, Tel. 212-306-4246. Ms. Anna Maria Gatti, Property Manager.
  - 1. The company leasing the roof space for the equipment shall be notified 60 days in advance prior to beginning abatement.
  - 2. The work of roof replacement shall not at any time interrupt the functionality of telecommunication equipment.
  - 3. The telecommunication Company must provide a shop drawing with reinstallation plans and details to the Designer of Record/Engineer or record and if required the roofing manufacturer for review and approval so as to not void the guarantee on the newly installed roofing system.

**1.07 CONTRACTOR'S RESPONSIBILITY REGARDING PROJECT SEQUENCING**

- A. The overall sequence of construction is the responsibility of The Contractor, as per the schedule approved by NYCHA.
- B. Whether or not the Contractor follows the limitation on construction sequence described herein, the Contractor remains fully responsible for the Work required to complete the project with minimal disturbance to the existing facility and residents. Adherence to the limitations described herein does not relieve the Contractor from that responsibility.

- C. The Contractor's attention is directed to the fact that he/she is required to submit details of the sequence of construction which fully illustrate the plan for construction and the method by which the schedule shall be met and accomplished.
  - 1. The details of the sequence of construction submitted should include construction of all elements of the work required to complete the project, including but not limited to those listed herein.
- D. Coordination: The Contractor is advised to plan and coordinate their work operations with NYCHA and the NYCHA's Designated Representative(s) in a timely fashion so as to minimize delays in construction as well as interference with resident activities and normal activities in the Development.
- E. The Contractor shall be responsible to clean all areas of work on a daily basis to the complete satisfaction of the onsite NYCHA management.
- F. Meaning and Interpretation of Specifications: These Specifications are comprehensive in nature and are intended to complement and supplement the contract drawings. In the case of any inconsistencies within the Specifications or conflict with the Drawings, the specifications shall govern. In case of discrepancy in the figures in the drawings or in the specifications, the matter shall be promptly submitted to the Project Manager who shall promptly make a determination in writing. Any adjustments by the Contractor without such a determination shall be at its own risk and expense.
- G. In general, all exterior installations must preserve the integrity and the present design of the buildings through the use of materials and assemblies compatible to those of the original construction details.
- H. The Contractor is hereby advised that their work must conform to materials and assemblies as approved by NYCHA. Physical samples, brochures, catalogue cuts, shop drawings and sample installations of all exterior work shall be provided by and installed by the Contractor, as required by NYCHA for approval at no additional cost to NYCHA including the resubmission and reinstallation of the disapproved items. The Contractor shall deliver all submissions to NYCHA's Project Manager. The Contractor shall coordinate their work and cooperate fully with NYCHA for the purpose of obtaining final approval.
- I. The Contractor(s) shall file for and obtain all necessary permits for the Work of this contract at no additional cost to NYCHA.
- J. No deviations from the Contract Documents or substitution of any item shown or specified shall be allowed without the expressed written approval of NYCHA. Should any Contractor wish to deviate from contract requirements or should he/she wish to substitute any item for items previously approved, the Contractor shall assume responsibility for any additional reviews and approvals, and for any contractual delays. Note that Liquidated Damages will not be waived for Contractor-initiated reviews and/or delays.

#### **1.08 CONTRACTOR'S USE OF PREMISES**

- A. General: Limit use of the premises to construction activities in areas indicated; allow for Authority occupancy and use by the public.
  - 1. Confine operations to areas within indicated Contract limits. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
  - 2. Keep driveways and entrances serving the premises clear and available to NYCHA and NYCHA's employees at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.
  - 3. Access to the site shall be as directed by NYCHA and is fully subject to NYCHA's approval.
- B. Disposal of Waste Materials: Do not dispose of organic or hazardous material on site. Do not dispose of construction debris either by burial or by burning. All waste material shall be promptly removed from the site and disposed of legally. All hazardous material shall be



removed from the site on a daily basis or as approved by NYCHA. No storage of debris shall be permitted except in approved containers.

- C. Use of the Existing Building: Repair damage caused by construction operations. Take all precautions necessary to protect the building and its residents during construction.
- D. Use of Existing Stairs and Elevators: Stairs and elevators must be made available to NYCHA and the residents at all times. Coordinate stair and elevator usage with NYCHA. Provide pads and coverings to protect all finished surfaces. At the end of construction restore all finishes to their original or better condition. Contractor may not use the elevator to transport construction materials or tools.
- E. Building staircases generally function as passageways from each apartment to a means of egress on the building roof and the ground floor building entrances. Keep staircases, stair lobbies, and roof doors clear to allow for full emergency exit from the buildings both by residents and construction personnel.

#### **1.09 SITE PROTECTION**

- A. The Contractor shall be responsible for their own site security as they deem reasonable to protect equipment, office trailers, and stored materials.

#### **1.10 COORDINATION**

- A. Coordinate work of the various Sections of the Specifications to assure an efficient and orderly sequence of installation of construction elements.
- B. The Contractor shall assume complete responsibility for coordinating access into resident apartments. The Contractor shall notify each resident in writing as to the date, time, and work to be performed. Notification may be required in three languages: English, Spanish, and Chinese. The Contractor shall be required to develop an acceptable notification procedure in conjunction with NYCHA and resident leaders. The Contractor shall be back charged by NYCHA for any loss suffered by NYCHA, including failure to keep a scheduled appointment to do work in an apartment which was agreed upon by NYCHA, resident leaders and the Contractor and such failure shall constitute a breach of this contract. The Contractor's repeated failure to keep a scheduled appointment may result in a declaration of the Contractor's default and termination of the Contractor's performance under the contract.

#### **1.11 COOPERATION WITH AUTHORITY RESIDENTS**

- A. The Contractor shall coordinate work with residents and NYCHA. The Contractor shall be responsible for notifying residents of work schedules and for giving residents written notice of dates of work. The Contractor shall make as many attempts as necessary to notify the resident to obtain access. No work shall proceed unless all residents have been given at least 48 hours' notice with no less than three (3) prior notices.
- B. Contractors shall attend resident committee meetings (which will be held at night) at the request of NYCHA.
- C. The Contractor shall prepare schedules of the dates and work to be performed in each apartment for NYCHA approval.
- D. The Contractor shall be responsible for the protection of all resident belongings within and adjacent to the Work area.
- E. The Contractor shall clean all public and resident areas at the end of each work day, including broom sweeping and wet mopping all floors. All cleaning shall be done to the complete satisfaction of NYCHA. Re-cleaning may be required in order to comply with NYCHA acceptable standards.
- F. The Contractor shall provide for his/her staff means of identification such as a photo ID that identifies him or her as an employee of the Contractor.

#### **PART 3 EXECUTION (NOT USED)**

**SECTION 01 14 00  
WORK RESTRICTIONS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Examination of Premises
- B. Hazardous Materials
- C. Surveys and Layout
- D. Scheduling
- E. Contract Documents
- F. On-Site Work Hours
- G. Existing Utility Interruptions
- H. Coordination with Residents
- I. Maintenance of Permanent Roadways
- J. Traffic Control
- K. Fire Prevention Control
- L. Rubbish Removal
- M. Discontinue, Changes and Removal
- N. Moisture and Condensation Control
- O. Storage of Materials
- P. Concessions on Site
- Q. Ownership of Removed Materials
- R. Noise, Vibration, and Odors
- S. Smoking
- T. Alcohol and Controlled Substances
- U. Employee Identification
- V. Employee Screening
- W. Access to Site

**1.02 RELATED REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Division 01 Sections of Temporary Facilities and Controls for limitations and procedures governing temporary use of NYCHA's facilities, such as:
  - 1. Section 01 51 13 - Temporary Power
  - 2. Section 01 51 26 - Temporary Lighting
  - 3. Section 01 51 36 - Temporary Water
  - 4. Section 01 52 19 - Temporary Sanitary Facilities

**1.03 WORK RESTRICTIONS, GENERAL:**

- A. Comply with restrictions on construction operations.
- B. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

**1.04 EXAMINATION OF PREMISES**

- A. Verification of Existing Conditions after Award

1. Various existing conditions at locations of the Work, which cannot be determined until removals are under way, cannot be indicated on the Drawings or described in the Specifications.
  2. Perform all such removals as required to verify all existing conditions before fabricating the Work.
  3. Where applicable, before removing any enclosure that will expose the interior of a building to the elements or before disturbing any structural work, make all possible preliminary investigations to verify the existing conditions there at.
- B. Discrepancies in Existing Conditions
1. During the process of the Work, should conditions be encountered that materially differ from those shown on the Drawings or indicated in the Specifications, or conditions which could not reasonably have been anticipated, which conditions will materially affect the cost or Period of Performance of the Work for this or any other Contract, such conditions shall immediately be called to the attention of The NYCHA's Designated Representative before they are further disturbed. NYCHA will promptly investigate the conditions and if it is found that they do so materially differ, shall issue a clarification or directive.

#### **1.05 HAZARDOUS MATERIALS**

- A. If, during the course of construction, the Contractor believes hazardous material may be disturbed during performance of the Work, the Contractor shall immediately notify NYCHA's Designated Representative of the area(s) of concern.
- B. If the presence of hazardous material is suspected, the Contractor shall be directed to suspend work in the areas in question and be redirected by NYCHA's Designated Representative to other areas or work, if available. The NYCHA's Designated Representative will coordinate the sampling of the suspected substance and expedite its analysis in order to confirm whether hazardous material is present. Should no hazardous material be found, the Contractor shall be directed to resume work immediately.

#### **1.06 SURVEYS AND LAYOUT**

- A. If, for any reason, bench marks, stakes, batter boards or monuments are disturbed, it shall be the responsibility of the Contractor to re-establish them.
- B. The NYCHA's Designated Representative may order construction work suspended at any time when location of monuments, stakes, bench marks and other layout markings established by the Contractor are not adequate to permit checking the Work.
- C. The Contractor shall furnish such stakes and other required equipment, tools and materials, and all labor as may be required in laying out all parts of the Work.
- D. In the event that the Contractor disturbs bench marks, stakes, batter boards or monuments, and that bench marks, stakes, batter boards or monuments affect other contracts, NYCHA may order other parties to reestablish the bench marks, stakes, batter boards or monuments. In such an event, there shall be withheld from any payment to the Contractor a sum determined by NYCHA sufficient to cover the cost of removal by other parties.

#### **1.07 SCHEDULING**

- A. The Contractor shall deliver to NYCHA schedules and forms in accordance with the Contract Specification Division 1 Section Scheduling.
- B. NYCHA may require the Contractor to modify schedules which the Contractor has submitted either before or after such schedules are approved so that:
  1. The Work shall not be delayed.
  2. Changes in the Work are reflected in the schedules of the Contractor.
- C. The schedule shall accommodate NYCHA's requirements for working hours between 8AM and 4PM each working day Monday through Friday.

### **1.08 CONTRACT DOCUMENTS**

- A. Documents Furnished to the Contractor - After the award of the Contract, the Contractor will be furnished with two complete sets of: Contract documents, NYC Department of Buildings, and one compact disk containing both sets.
- B. The Contractor will receive one complete set of specifications and compact disk containing a set.
- C. Additional Copies of Drawings and Specifications, when requested, will be furnished to the Contractor by NYCHA at cost.
- D. Copies to Subcontractors - The Contractor shall furnish to each of the Subcontractors such copies of Contract Drawings, Supplementary Drawings, and Specifications as may be required for each to perform its respective work.

### **1.09 ON-SITE WORK HOURS**

- A. Limit work in the existing building to normal business working hours of 8AM to 4PM, Monday through Friday, unless otherwise indicated.
- B. Weekend Hours: NYCHA may authorize work on the weekends between the hours of 8AM to 4PM. The Contractor shall request alteration to the work hours in writing 48 hours in advance of proposed alteration.
- C. Early Morning Hours: With the prior written approval of NYCHA, the Contractor may begin limited work at 7AM. The noise created by this work shall be limited and the activities shall be restricted to set up, materials and equipment, deliveries and distribution, clean-up and maintenance of the site and the protection of elevators, lobbies and corridors
- D. Hours for Utility Shutdowns: All utility shutdowns must be coordinated with NYCHA development management and should be scheduled between 8AM- 4PM. All utility service must be restored prior to 4PM.
- E. Hours for Core Drilling or other noisy activities limited to normal business working hours, unless permission received in writing from Authority prior to work.
- F. Extended Work Hours: 24 hours prior to working past 4PM, the Contractor shall request NYCHA's written permission to work extended hours. Contractor must provide all necessary permits 24 hours to performing work.

### **1.10 EXISTING UTILITY INTERRUPTIONS**

- A. Do not interrupt utilities serving facilities occupied by NYCHA or others unless permitted under the following conditions, and then only after providing temporary utility services according to the requirements indicated:
- B. Notify NYCHA's Designated Representative not less than 72 hours in advance of proposed utility interruptions.
- C. Obtain the written permission of NYCHA's Designated Representative before proceeding with utility interruptions.
- D. Except as otherwise expressly provided in the Contract, the Contractor shall submit to NYCHA's Designated Representative, for approval, a proposed schedule of all utility shutdowns and cutovers of all types which may be required in connection with the Work. Such a schedule shall provide a minimum of two weeks advance notice to NYCHA prior to the item of the proposed shutdown or cutover.
- E. Any shutdowns or cutovers shall be at the sole expense of the Contractor.

### **1.11 COORDINATION WITH RESIDENTS**

- A. Full Owner Occupancy: Owner will occupy the site during the entire construction period. Cooperate with NYCHA during construction operations to minimize conflicts and facilitate NYCHA's usage. Perform the Work so as not to interfere with NYCHA's day-to-day operations. Maintain existing exits unless otherwise indicated.

- B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from NYCHA's Designated Representative and approval of authorities having jurisdiction.
- C. Schedule work within apartment units per NYCHA requirements.
- D. Notify NYCHA's Designated Representative not less than 72 hours in advance of activities that will affect NYCHA's operations.

**1.12 MAINTENANCE OF PERMANENT ROADWAYS**

- A. The Contractor shall immediately remove dirt and debris which may collect on permanent roadways due to Work. At the end of each work day roadways shall be left either brushed clean or as required by New York City Department of Transportation, whichever is the greater requirement.

**1.13 TRAFFIC CONTROL**

- A. The Contractor shall provide routes to and from the location of the Work shall be as indicated in the Contract or as directed by NYCHA's Designated Representative. These routes shall be closed only with prior approval of NYCHA. All necessary permits and approvals shall be the responsibility of the Contractor.
- B. Parking on NYCHA property is prohibited unless previously approved by NYCHA's Designated Representative.
- C. The Contractor shall provide and keep in good condition all bridging and decking necessary to maintain vehicular and pedestrian traffic.
- D. If sidewalk, street closure or curb cuts are required the general contractor shall secure the required permits and shall provide temporary measures as required for permitting, including sidewalk sheds, signage.
- E. The Contractor shall provide flag-persons as required for construction vehicle access.
- F. The Contractor shall provide anti-tracking pads for exits from construction sites.

**1.14 FIRE PREVENTION CONTROL**

- A. The Contractor shall comply with the safety provisions of the National Fire Protection Association's "National Fire Codes" and the New York City Fire Code Provisions, which pertain to the Work and, particularly, in connection with any cutting or welding performed as part of the Work.

**1.15 RUBBISH REMOVAL**

- A. Refer to Section 01 74 00 "Cleaning and Waste Management"

**1.16 DISCONTINUE, CHANGES AND REMOVAL**

- A. The Contractor shall remove and relocate such temporary facilities without additional cost to NYCHA, and restore the Site and the Work to a condition satisfactory to NYCHA.

**1.17 MOISTURE AND CONDENSATION CONTROL**

- A. The Contractor shall provide for ventilation of all structures until Physical Completion and acceptance of the Work, and shall control such ventilation to avoid excessive rates of drying of construction materials, including but not limited to concrete and plaster, and to prevent condensation on sensitive surfaces.

**1.18 STORAGE OF MATERIALS**

- A. Provide and maintain adequate storehouses and materials sheds, and protect other structures as may be required for any of the Work, or for the storage of materials. Adopt methods, procedures and ways and means to meet the exigencies of all seasons.

**1.19 CONCESSIONS ON SITE**

- A. No restaurants, lunchrooms or other concessions of any kind whatsoever shall be operated on the site of this Project except with written permission of NYCHA.

**1.20 OWNERSHIP OF REMOVED MATERIALS**

- A. All removed materials not required to carry out the Work of the Contract and not desired to be retained by NYCHA will become the property of the Contractor and shall be removed from the premises as specified under Rubbish Removal.

**1.21 NOISE, VIBRATION AND ODORS**

- A. Coordinate with NYCHA's Designated Representative activities that may result in any kind of NYCHA occupancy disruption, such as high levels of noise and vibration, and odors.
- B. Notify NYCHA's Designated Representative not less than 72 hours in advance of proposed disruptive activities.
- C. Obtain NYCHA's Designated Representative's written permission before proceeding with disruptive activities.
- D. The Contractor shall take every precaution to minimize noise generated by construction activities. Noise levels should be in accordance with the requirements of NYCHA's Designated Representative. Sound attenuation blankets shall be installed and equipment will be selected to reduce noise levels as necessary or as directed by the NYCHA's Designated Representative and as required to comply with the NYC Noise Control Code.

**1.22 SMOKING**

- A. The use of tobacco products on the project premises is strictly prohibited. The term "smoking" is inclusive of "vaping" and use of e-cigarettes or other non-mechanical electronic and/or mechanical inhalant and exhalent devices that could potentially be harmful and/or disruptive of work duties or compromise safety.

**1.23 ALCOHOL AND CONTROLLED SUBSTANCES**

- A. The possession or use of alcoholic beverages or a controlled substance on the project premises is strictly prohibited. Workers under the influence of alcohol or a controlled substance must be removed from NYCHA premises immediately.

**1.24 EMPLOYEE IDENTIFICATION**

- A. The Contractor shall provide identification for Contractor personnel working on the Project site.

**1.25 EMPLOYEE SCREENING**

- A. Comply with NYCHA's requirements for drug and background screening of Contractor personnel working on the Project site.

**1.26 ACCESS TO SITE**

- A. General: Contractor shall have limited use of the Project site for construction operations as indicated on the Drawings by the Contract limits and as indicated by the requirements of this section.
- B. Use of Site: Limit use of Project site to areas within the Contract limits indicated. See Section 01 22 13 – Unit Price Assemblies for Sequencing and Coordinating of Work. Do not disturb portions of the Project site beyond areas in which the Work is indicated.
  - 1. Limits: Confine construction operations to areas where work is active. See phasing requirements in 01 22 13 – Unit Price Assemblies
  - 2. Driveways, Walkways and Entrances: Keep driveways parking, loading areas, and entrances serving the premises clear and available to NYCHA, NYCHA's employees, NYCHA's residents and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
    - a. Schedule deliveries to minimize the use of driveways and entrances by construction operations.

- b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Partial Owner Occupancy: NYCHA will occupy the premises during the entire construction period. Cooperate with NYCHA during construction operations to minimize conflicts and facilitate NYCHA usage. Perform the Work so as not to interfere with NYCHA's operations. Maintain existing exits.
  1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from NYCHA and authorities having jurisdiction.
  2. Provide not less than 72 hours' notice to NYCHA of activities that will affect NYCHA's operations.
  3. Where façade and roof work is to be executed, provide sidewalk sheds as per Division 2.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 20 00  
PRICE AND PAYMENT PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Administrative and procedural requirements necessary to prepare and process Applications for Payment.

**1.02 RELATED REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Other Division 01 Specification Sections, apply to this Section.
- B. Section 01 22 13 - Unit Price Assemblies
- C. Section 01 26 00 - Contract Modification Procedures
- D. Section 01 32 00 - Construction Progress Documentation
- E. Section 01 32 13 - Scheduling
- F. Section 01 42 16 - Definitions and Omissions
- G. Section 01 77 00 - Closeout Procedures

**1.03 SCHEDULE OF VALUES**

- A. Submit the schedule of values to the NYCHA Designated Representative(s) as per submittal procedures, but no later than forty-five CCDs for Federal and sixty CCDs for City after receipt of the Letter of Award. For unit price contracts, the Schedule of Value (SOV) must be based on the assembly unit prices as submitted by the Contractor in the Form of Proposal including the bid factor. For lump sum contracts, the SOV must be based on and consistent with the format of the FOP.
- B. Format and Content: Use Form of Proposal as a guide to establish line items for the schedule of values. The SOV format may be adjusted by NYCHA to accommodate different funding sources.
  - 1. Identification: Include the following Project identification items on the schedule of values:
    - a. Project name and location.
    - b. NYCHA's project number.
    - c. Contract Number.
    - d. Contractor's name and address.
    - e. Date of submittal.
    - f. Submittal Revision Number.

**1.04 APPLICATION FOR PAYMENT**

- A. Each Application for Payment shall follow one of the following:
  - 1. Application for Initial Payment.
  - 2. Application for Progress Payment.
  - 3. Application for Final Payment.
- B. Payment Application Times: Submit Application for Payment to the NYCHA Designated Representative(s) by the fifth day of the month. The period covered by each Application shall coincide with the Contractor payroll and will generally cover one month, starting from of the first the month to the last day of the month.
- C. Application for Payment Forms: Use the NYCHA specified platform (Electronic Project Management (ePM) or hard copy) for payment as the form for Applications for Payment.
  - 1. Entries shall match data on the schedule of values.
  - 2. Include amounts for work completed following previous Applications for Payment, whether or not payment has been received. Include only amounts for work completed at the time of Application for Payment.



3. Include amounts of Change Orders issued before the last day of the construction period covered by the application.
- D. Transmit each copy with a transmittal form listing attachments and recording appropriate information about the application.
  1. Application for Payments: All payments shall include the following items in this order.
- E. Invoice Section:
  1. Periodical Estimate 1st page from Electronic Project Management (ePM) platform with signatures in a blue ink
  2. Periodical Estimate 2nd page from ePM with Cost Breakdown
  3. REP, Section 3, and Monthly Equal Opportunity Report (by EACH Company)
  4. Approved Draft/Pencil Copy
  5. Task Order/Authorization/Assignment letter / LOA and NTP - Application for Initial Payment, Application for Progress Payment and Application for Final Payment
  6. Approved Cost Breakdown - 1st Payment
  7. Copy of cancelled Bond check - 1st Payment
  8. Approved Change Orders for current Payment
  9. HM-11 form for State funded Contracts only
- F. Back - up Section:
  1. Company package must include (separate for EACH Company):
    - a. Affidavit of contractor (Notarized)
    - b. Section 220 (General Contractor or Sub-Contractor)(Notarized)
    - c. Insurances (with NYCHA as Certificate Holder ONLY and NYCHA and Construction Manager, if applicable as an Additional Insured)
- G. Payroll Section:
  1. Payroll Verification form (Signed)
  2. Contractor package must include all Originals (separate for EACH Subcontractor):
    - a. Certified Payroll - Double Sided
    - b. Sign-in Sheets attached to Each week separately
- H. Additional Information:
  1. Waste manifest and summary (Originals)
  2. DOB Permit and ALL other agencies having jurisdiction SIGN-OFFs (Final Payment only).
  3. Additional information may be required at NYCHA's request.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 22 13  
UNIT PRICE ASSEMBLIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Work Included: This section specifies procedural requirements for unit prices.
  - 1. A unit price is an amount on the Form of Proposal as a price per unit of all labor, materials, tools, supplies, equipment, general conditions, supervision, security and safety management, insurance, taxes, overhead, profit and all other costs or expenses of any nature and character necessary or required.
  - 2. Unit prices on the Form of Proposal shall include full compensation for all required labor, materials, tools, supplies, equipment, general conditions, supervision, security and safety management, insurance, taxes, overhead, profit and all other costs or expenses of any nature and character necessary or required.
  - 3. Refer to descriptions of Assemblies listed herein individual Specifications Sections for construction activities requiring the establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

**1.02 RELATED REQUIREMENTS**

- A. Drawings, Specifications and general provision of Contract, including General and Supplementary Conditions Specifications Sections, apply to this Section.
- B. Instructions to Bidder
- C. Form of Proposal
- D. Section 01 20 00 - Payment Procedures for administrative and procedural requirements necessary to prepare and process Applications for Payment.

**1.03 MEASUREMENT OF QUANTITIES**

- A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section governs.
- B. Take all measurements and compute quantities. Measurements and quantities will be verified by NYCHA's Designated Representative and the Contractor on a daily basis.
- C. Perform surveys as needed to reconcile quantities, including control surveys to establish measurement reference lines.
- D. Contractor's Responsibilities: Sign surveyor's field notes or keep duplicate field notes, calculate and certify quantities for payment purposes.

**PART 2 PRODUCTS (ASSEMBLIES)**

No.	Code	Description	Unit
<b>DIVISION 02 - SITE PROTECTION</b>			
1	PRO 01	<b>Provide Sidewalk Shed – 6’ wide, 8’ high with wire mesh barrier:</b> Provide 6’ wide, 8’ high sidewalk shed as specified, including erection, lights, 3 months rental, maintenance and cleaning.	LF
2	PRO 02	<b>Provide Sidewalk Shed – 6’ wide 10’ high with wire mesh barrier:</b> Provide 6’ wide 10’ high sidewalk shed as specified, including erection, light, including 3 months rental, maintenance and cleaning	LF

3	PRO 03	<b>Provide Sidewalk Shed – 6’ wide 12’ high with wire mesh barrier:</b> Provide 6’ wide 12’ high sidewalk shed as specified, including erection, light, including 3 months rental, maintenance and cleaning	LF
4	PRO 04	<b>Provide Sidewalk Shed – 6’ wide 14’ high with wire mesh barrier:</b> Provide 6’ wide 14’ high sidewalk shed as specified, including erection, light, including 3 months rental, maintenance and cleaning	LF
5	PRO 05	<b>Provide Sidewalk Shed – 6’ wide 16’ high with wire mesh barrier:</b> Provide 6’ wide 16’ high sidewalk shed as specified, including erection, light, including 3 months rental, maintenance and cleaning	LF
6	PRO 06	<b>Provide Sidewalk Shed – 8’ wide, 8’ high with wire mesh barrier:</b> Provide 8’ wide, 8’ high sidewalk shed as specified, including erection, lights, 3 months rental, maintenance and cleaning.	LF
7	PRO 07	<b>Provide Sidewalk Shed – 8’ wide 10’ high with wire mesh barrier:</b> Provide 8’ wide 10’ high sidewalk shed as specified, including erection, light, including 3 months rental, maintenance and cleaning	LF
8	PRO 08	<b>Provide Sidewalk Shed – 8’ wide 12’ high with wire mesh barrier:</b> Provide 8’ wide 12’ high sidewalk shed as specified, including erection, light, including 3 months rental, maintenance and cleaning	LF
9	PRO 09	<b>Provide Sidewalk Shed – 8’ wide 14’ high with wire mesh barrier:</b> Provide 8’ wide 14’ high sidewalk shed as specified, including erection, light, including 3 months rental, maintenance and cleaning	LF
10	PRO 10	<b>Provide Sidewalk Shed – 8’ wide 16’ high with wire mesh barrier:</b> Provide 8’ wide 16’ high sidewalk shed as specified, including erection, light, including 3 months rental, maintenance and cleaning	LF
11	PRO 11	<b>Provide Sidewalk Shed – 10’ wide, 8’ high with wire mesh barrier:</b> Provide 10’ wide, 8’ high sidewalk shed as specified, including erection, lights, 5 months rental, maintenance and cleaning.	LF
12	PRO 12	<b>Provide Sidewalk Shed – 10’ wide 10’ high with wire mesh barrier:</b> Provide 10’ wide 10’ high sidewalk shed as specified, including erection, light, including 3 months rental, maintenance and cleaning	LF
13	PRO 13	<b>Provide Sidewalk Shed – 10’ wide 12’ high with wire mesh barrier:</b> Provide 10’ wide 12’ high sidewalk shed as specified, including erection, light, including 3 months rental, maintenance and cleaning	LF
14	PRO 14	<b>Provide Sidewalk Shed – 10’ wide 14’ high with wire mesh barrier:</b> Provide 10’ wide 14’ high sidewalk shed as specified, including erection, light, including 3 months rental, maintenance and cleaning	LF
15	PRO 15	<b>Provide Sidewalk Shed – 10’ wide 16’ high with wire mesh barrier:</b> Provide 10’ wide 16’ high sidewalk shed as specified, including erection, light, including 3 months rental, maintenance and cleaning	LF
16	PRO 16	<b>Provide Sidewalk Shed – 12’ wide, 8’ high with wire mesh barrier:</b> Provide 12’ wide, 8’ high sidewalk shed as specified, including erection, lights, 5 months rental, maintenance and cleaning.	LF
17	PRO 17	<b>Provide Sidewalk Shed – 12’ wide 10’ high with wire mesh barrier:</b>	LF

		Provide 12' wide 10' high sidewalk shed as specified, including erection, light, including 3 months rental, maintenance and cleaning	
18	PRO 18	<b>Provide Sidewalk Shed – 12' wide 12' high with wire mesh barrier:</b> Provide 12' wide 12' high sidewalk shed as specified, including erection, light, including 3 months rental, maintenance and cleaning	LF
19	PRO 19	<b>Provide Sidewalk Shed – 12' wide 14' high with wire mesh barrier:</b> Provide 12' wide 14' high sidewalk shed as specified, including erection, light, including 3 months rental, maintenance and cleaning	LF
20	PRO 20	<b>Provide Sidewalk Shed – 12' wide, 16' high with wire mesh barrier:</b> Provide 12' wide, 8' high sidewalk shed as specified, including erection, lights, 3 months rental, maintenance and cleaning.	LF
21	PRO 21	<b>Additional monthly rental and maintenance for sidewalk shed:</b> Provide additional monthly rental and maintenance including cleaning of 8'-0", 10'-0", 12'-0", 14'-0", and 16'-0" high by 6'-0", 8'-0", 10'-0" and 12'-0" wide sidewalk shed.	LF/mo.
22	PRO 22	<b>Provide Tree Protection</b> Provide tree protection on site.	EA
23	PRO 23	<b>Provide CCTV Protection</b> Provide Protection Cover for CCTV cameras that remain in its place, to be carried out as indicated on contract drawings.	EA
24	PRO 24	<b>Dismantling and Removal of Any Type of Sidewalk Shed</b> Dismantle and remove all sidewalk shed in accordance with contract documents.	LF
25	FNC 01	<b>Provide 8' High Temporary Chain Link Fence</b> Provide 8' high temporary chain link fence as indicated on contract drawings.	LF
<b>DIVISION 02 - EXISTING CONDITIONS</b>			
26	ACM 01	<b>ACM Removal of Main Roof Assembly</b> Remove asbestos containing field membrane including all components down to the roof concrete slab as ACM work per contract drawings.	SF
27	ACM 02	<b>ACM Removal of Canopy / Bulkhead / Water Tower Roof Assembly</b> Remove asbestos containing field membrane at canopy / bulkhead / water tower roof including all components down to concrete slab as ACM work per contract drawings.	SF
28	ACM 03	<b>ACM Removal at Roof Drain</b> Remove asbestos containing drain flashing as ACM work per contract drawings.	SF
29	ACM 04	<b>ACM Removal at Roof Perimeter Flashing – Parapet</b> Remove asbestos containing base flashing at parapet as ACM work per contract drawings.	SF
30	ACM 05	<b>ACM Removal at Roof Perimeter Flashing - Railing / Concrete Curb</b> Remove asbestos containing fence pitch pockets, post sleeve sealant, patching cement, base flashing and felt paper fence base metal coping	SF

		as ACM work per contract drawings.	
31	ACM 06	<b>ACM Removal at Railing Pitch Pockets</b> Perform ACM removal at railing pitch pockets per contract drawings.	EA
32	ACM 07	<b>ACM Removal at Parapet Wall Waterproofing</b> Perform ACM removal at parapet wall waterproofing per contract drawings.	SF
33	ACM 08	<b>ACM Removal at Edge Metal Flashing</b> Perform ACM removal at edge metal flashing per contract drawings.	SF
34	ACM 09	<b>ACM Removal at Bulkhead Base Flashing</b> Remove asbestos containing roof bulkhead base flashing as ACM work per contract drawings.	SF
35	ACM 10	<b>ACM Removal at Chimney Base Flashing</b> Remove asbestos containing chimney base flashing assembly as ACM work per contract drawings.	SF
36	ACM 11	<b>ACM Removal at Door Saddle Flashing</b> Perform ACM removal at door saddle flashing per contract drawings.	SF
37	ACM 12	<b>ACM Removal at Fan Curb</b> Remove asbestos containing fan curb penetration flashing assembly as ACM work per contract drawings.	SF
38	ACM 13	<b>ACM Removal at Vent Pipe Penetration</b> Remove asbestos containing vent pipe penetration flashing assembly as ACM work per contract drawings.	SF
39	ACM 14	<b>ACM Removal at Ladder Pitch Pockets</b> Perform ACM removal at ladder pitch pockets per contract drawings.	EA
40	ACM 15	<b>ACM Removal at Roof Hatch at Bulkhead Roof</b> Perform ACM removal at roof hatch at bulkhead roof per contract drawings.	SF
41	ACM 16	<b>ACM Removal of Parapet Wall - 3 wythe</b> Perform parapet removal as ACM - 3 wythe per contract drawings.	SF
42	ACM 17	<b>ACM Removal of Parapet Wall - 2 wythe</b> Perform parapet removal as ACM - 2 wythe per contract drawings.	SF
43	ACM 18	<b>ACM Removal at Coping Stone Joints</b> Perform ACM removal at coping stone joints per contract drawings.	LF
44	ACM 19	<b>ACM Removal at Bulkhead Door/Window/Louver Perimeter Sealant</b> Remove asbestos containing sealant and filler material around door frame/window/louver perimeter joint as ACM work per contract drawings.	LF
45	ACM 20	<b>ACM Removal of Caulking Around Incinerator Room Access Door</b> Remove all caulking materials around the access metal door as ACM work per contract drawings.	LF
46	ACM 21	<b>ACM Removal of Existing Flooring at Incinerator Room</b> Remove fire brick, refractory mortar and magnesium block insulation	SF

		down to the roof concrete slab as ACM work per contract drawings.	
47	ACM 22	<b>ACM Removal of Expansion Joint Between Incinerator Stack and Bulkhead Wall</b> Remove expansion joint between incinerator stack and bulkhead wall as ACM work per contract drawings.	LF
48	ACM 23	<b>ACM Removal of Coping Stone, Flashing and One Top Course of Brickwork at Parapet Wall</b> Remove coping stone, flashing and one top course of brickwork at parapet wall as ACM per contract drawings.	LF
<b>SELECTIVE DEMOLITION</b>			
49	DEM 01	<b>Demolition: Existing Built-up Roof Membrane with Insulation</b> Remove and dispose of existing gravel surfacing, roofing membranes, insulation, and initial membranes down to existing concrete deck at roof per contract drawings.	SF
50	DEM 02	<b>Demolition: Existing Built-up Roof Membrane without Insulation</b> Remove and dispose of existing roofing membranes and overburden (surfacing, fill, etc) to existing concrete deck per contract drawings.	SF
51	DEM 03	<b>Demolition: Existing SPF Roofing System</b> Remove and dispose of existing top coating with granules, base coat, spray polyurethane foam and initial membranes down to existing concrete deck per contract drawings.	SF
52	DEM 04	<b>Demolition: Existing Roof Railings including Posts and all attachments from the Main Roof (Non-Lead)</b> Remove roof railings including posts and all attachments from the main roof (non-lead) per contract drawings.	LF
53	DEM 05	<b>Demolition: Existing Parapet Wall (3 Wythe) as Non-ACM</b> Remove existing 3 wythe parapet wall as non-ACM per contract drawings.	SF
54	DEM 06	<b>Demolition: Existing Parapet Wall (2 Wythe) as Non-ACM</b> Remove existing 2 wythe parapet wall as non-ACM per contract drawings.	SF
<b>LEAD-BASE SAFE WORK PRACTICE</b>			
55	LBP 01	<b>Remove Lead-Based Paint from All Exposed Metal Surfaces</b> Remove lead-based paint from all exposed metal surfaces per contract drawings.	SF
<b>DIVISION 03 - CONCRETE</b>			
56	CON 01	<b>Concrete Spall Repair At Overhead Slab Surface</b> Perform concrete spall repair at overhead slab surface per contract drawings.	SF

57	CON 02	<b>Concrete Spall Repair At Vertical Surface</b> Perform concrete spall repair at vertical surface per contract drawings.	SF
58	CON 03	<b>Concrete Crack Restoration</b> Perform concrete crack restoration per contract drawings.	LF
59	CON 04	<b>Concrete Slab Opening Repair: Full Depth</b> Perform concrete slab opening repair per contract drawings	SF
60	SLB 01	<b>"Flash Patch" Concrete Deck</b> Provide "flash patch" concrete deck per contract drawings.	SF
61	COP 01	<b>Terra Cotta Coping Replacement at Brick Parapet (3 wythe)</b> Remove and provide terra cotta coping at brick parapet per contract drawings.	LF
62	COP 02	<b>Precast Concrete Coping Replacement at Brick Parapet (3 wythe)</b> Provide precast concrete coping at 3 wythe brick parapet per contract drawings.	LF
63	COP 03	<b>Terra Cotta Coping Installation at Brick Parapet (3 wythe)</b> Provide terra cotta coping at 3 wythe brick parapet per contract drawings.	LF
64	COP 04	<b>Precast Concrete Coping Installation at Brick Parapet (3 wythe)</b> Provide precast concrete coping at 3 wythe brick parapet per contract drawings.	LF
65	COP 05	<b>Terra Cotta Coping Replacement at Brick Parapet (2 wythe)</b> Remove and provide terra cotta coping at 2 wythe brick parapet per contract drawings	LF
66	COP 06	<b>Precast Concrete Coping Replacement at Brick Parapet (2 wythe)</b> Remove and provide precast concrete coping at 2 wythe brick parapet per contract drawings.	LF
67	COP 07	<b>Terra Cotta Coping Installation at Brick Parapet (2 wythe)</b> Provide terra cotta coping at 2 wythe brick parapet per contract drawings.	LF
68	COP 08	<b>Precast Concrete Coping Installation at Brick Parapet (2 wythe)</b> Provide precast concrete coping at 2 wythe brick parapet.	LF
<b>DIVISION 04 - MASONRY</b>			
69	CHM 01	<b>Height Reduction of Compactor Stack (Stand Alone)</b> Remove existing brick masonry chimney and rebuild at reduced height with aluminum louvers and precast concrete cap as indicated in contract drawings.	EA
70	CHM 02	<b>Height Reduction of Compactor Stack (Adjacent to Bulkhead) and Removal of Ash Setting Chamber</b> Remove portion of compactor stack and rebuild at reduced height with aluminum louvers and precast concrete cap per contract drawings.	EA
71	CHM 03	<b>Removal of Ash Setting Chamber</b> Removal of ash setting chamber (8'-6"W x 8'-6"L x 8'-0"H, actual	EA

		dimensions to be verified in field), including slab, walls, flooring, etc. per contract drawings.	
72	COR 01	<b>Corner Restoration: Brick Cavity Wall</b> Perform corner restoration at brick cavity wall per contract drawings. Refer to contract drawings for method of quantification.	SF
73	COR 02	<b>Corner Restoration: Brick Solid Wall</b> Perform corner restoration at brick solid wall per contract drawings. Refer to contract drawings for method of quantification.	SF
74	LTL 01	<b>Lintel Brick Masonry Repair</b> Perform lintel brick masonry repair per contract drawings.	LF
75	MAS 01	<b>Cracked / Spalled Brick Masonry Replacement at Solid Wall</b> Replacement of cracked / spalled brick masonry at solid wall per contract drawings.	SF
76	MAS 02	<b>Cracked / Spalled Brick Masonry Replacement at Cavity Wall</b> Replacement of cracked / spalled brick masonry at cavity wall per contract drawings.	SF
77	PNT 01	<b>Brick Re-pointing</b> Perform re-pointing of mortar joints on bulkhead walls per contract drawings	SF
78	SIL 01	<b>Slate Sill Replacement: Brick Masonry Cavity Wall</b> Replacement of slate sill at brick masonry cavity wall per contract drawings.	LF
79	SIL 02	<b>Slate Sill Replacement: Brick Masonry Solid Wall</b> Replacement of slate sill at brick masonry solid wall per contract drawings.	LF
80	SIL 03	<b>Sheet Metal Sill Replacement: Brick Masonry Cavity Wall</b> Replacement of sheet metal sill at brick masonry cavity wall per contract drawings.	LF
81	SIL 04	<b>Sheet Metal Sill Replacement: Brick Masonry Solid Wall</b> Replacement of sheet metal sill at brick masonry solid wall per contract drawings.	LF
82	PPT 01	<b>Parapet Reconstruction - 3 wythe</b> Perform parapet wall reconstruction per contract drawings.	LF
83	PPT 02	<b>Parapet Reconstruction Over Wood Deck - 3 wythe</b> Perform parapet wall reconstruction over wood deck per contract drawings.	LF
<b>DIVISION 05 - METALS</b>			
84	EXT 01	<b>Existing Railing Extension</b> Provide extension at existing railing per contract drawings.	LF
85	RAL 01	<b>Side Mounted Railing Installation</b> Provide side mounted railing per contract drawings.	LF



86	RAL 02	<b>Railing Replacement with Secondary Posts (Option 1)</b> Remove existing railing and provide with new per contract drawings.	LF
87	RAL 02	<b>Railing Replacement with Frame/Mesh Panels (Option 2)</b> Remove existing railing and provide with new per contract drawings.	LF
88	RAL 03	<b>Rail Post Sleeve Repair</b> Perform rail post sleeve repair per contract drawings.	EA
89	STR 01	<b>Bulkhead Steel Ladder</b> Provide bulkhead steel ladder per contract drawings.	EA
<b>DIVISION 07 - THERMAL &amp; MOISTURE PROTECTION</b>			
90	DRN 01	<b>Roof Drain Retrofit – Liquid Applied Membrane System</b> Perform retrofit at existing roof drains with fluid applied membrane system per contract drawings.	EA
91	DRN 02	<b>Roof Drain Replacement at Main Roof</b> Replacement of roof drain at main roof per contract drawings.	EA
92	DRN 03	<b>Roof Drain Scupper Replacement</b> Remove and provide roof drain scupper per contract drawings.	EA
93	FLA 01	<b>Perimeter Flashing at Raised Curb w/ Railing</b> Provide perimeter flashing at raised curb w/ railing per contract drawings.	LF
94	FLA 02	<b>Perimeter Flashing at Raised Perimeter</b> Provide perimeter flashing at raised perimeter per contract drawings.	LF
95	FLA 03	<b>Perimeter Flashing at Flat Concrete Edge w/ Railing</b> Provide perimeter flashing at flat concrete edge w/ railing per contract drawings.	LF
96	FLA 04	<b>Perimeter Flashing at High Parapet</b> Provide perimeter flashing at high parapet per contract drawings.	LF
97	FLA 05	<b>Perimeter Flashing at Bulkhead / Building Wall</b> Provide perimeter flashing at bulkhead / building wall per contract drawings.	LF
98	FLA 06	<b>Perimeter Flashing at Flat Concrete Edge</b> Provide perimeter flashing at flat concrete edge per contract drawings.	LF
99	FLA 07	<b>Perimeter Flashing at Sunk Slab</b> Provide perimeter flashing at sunk slab per contract drawings.	LF
100	FLA 08	<b>Edge Flashing at Canopy at Raised Concrete Edge</b> Provide edge flashing at canopy at raised concrete edge per contract drawings.	LF
101	FLA 09	<b>Edge Flashing at Canopy at Flat Concrete Edge</b> Provide edge flashing at canopy at flat concrete edge per contract drawings.	LF

102	FLA 10	<b>Edge Flashing at Projecting Slab</b> Provide edge flashing at projecting slab per contract drawings.	LF
103	FLA 11	<b>Edge Flashing at Projecting Slab (Liquid)</b> Provide edge flashing at projecting slab (liquid) per contract drawings.	LF
104	FLA 12	<b>Edge Flashing at Canopy (Metal Deck Substrate)</b> Provide edge flashing at canopy (metal deck substrate) per contract drawings.	LF
105	FLA 13	<b>Flashing at Roof to Projecting Slab Connection w/ Railing (Liquid)</b> Provide flashing at roof to projecting slab connection w/ railing (liquid) per contract drawings.	LF
106	FLA 14	<b>Flashing at Roof to Projecting Slab Connection w/ Railing</b> Provide flashing at roof to projecting slab connection w/ railing per contract drawings.	LF
107	FLA 15	<b>Perimeter Flashing at Elevated Platform</b> Provide perimeter flashing at elevated platform per contract drawings.	LF
108	FLA 16	<b>Perimeter Flashing at Low Parapet</b> Provide perimeter flashing at low parapet per contract drawings.	LF
109	FLA 17	<b>Perimeter Flashing at Canopy to Parapet Connection</b> Provide perimeter flashing at canopy to parapet connection per contract drawings.	LF
110	FLA 18	<b>Perimeter Flashing at Entrance Canopy Parapet</b> Provide perimeter flashing at entrance canopy parapet per contract drawings.	LF
111	FLA 19	<b>Perimeter Flashing at Concrete Wall / Column</b> Provide perimeter flashing at concrete wall / column per contract drawings.	LF
112	FLA 20	<b>Perimeter Flashing at Parapet Wall (Wood Deck)</b> Provide perimeter flashing at parapet wall (wood deck) per contract drawings.	LF
113	FLA 21	<b>Perimeter Flashing at Chimney Base</b> Provide perimeter flashing at chimney base per contract drawings.	LF
114	FLA 22	<b>Chimney Flashing at Water Tower Roof</b> Provide chimney flashing at water tower roof per contract drawings.	LF
115	FLA 23	<b>Perimeter Flashing at Canopy to Wall</b> Provide perimeter flashing at canopy to wall per contract drawings.	LF
116	FLA 24	<b>Flashing at Brick Wall to Slab Connection</b> Provide flashing at brick wall to slab connection per contract drawings.	LF
117	FLA 25	<b>Flashing at Brick Wall to Canopy</b> Provide flashing at brick wall to canopy per contract drawings.	LF
118	FLA 26	<b>Penetration Flashing - HVAC Unit Curb</b> Provide penetration flashing - HVAC unit curb per contract drawings.	LF

119	FLA 27	<b>Canopy Perimeter Flashing at Window</b> Provide canopy perimeter flashing at window per contract drawings.	LF
120	FLA 28	<b>Penetration Flashing - Hatch (Liquid)</b> Provide penetration flashing - hatch (liquid) per contract drawings.	EA
121	FLA 29	<b>Penetration Flashing - Hatch</b> Provide penetration flashing - hatch per contract drawings.	EA
122	FLA 30	<b>Abandoned Curb Closure and Flashing</b> Provide abandoned curb closure and flashing per contract drawings.	EA
123	FLA 31	<b>Expansion Joint Flashing</b> Provide expansion joint flashing per contract drawings.	LF
124	FLA 32	<b>Penetration Flashing - Fan Curb</b> Provide penetration flashing - fan curb per contract drawings.	EA
125	FLA 33	<b>Penetration Flashing - Fan Curb (Inclined)</b> Provide penetration flashing - fan curb (inclined) per contract drawings.	EA
126	FLA 34	<b>Penetration Flashing - Fan Curb (Inclined, Wood Deck)</b> Provide penetration flashing - fan curb (inclined, wood deck) per contract drawings.	EA
127	FLA 35	<b>Penetration Flashing - Pipe</b> Provide penetration flashing - pipe per contract drawings.	EA
128	FLA 36	<b>Penetration Flashing - Pipe (Liquid)</b> Provide penetration flashing - pipe (liquid) per contract drawings.	EA
129	FLA 37	<b>Penetration Flashing - Pipe (Wood Deck)</b> Provide penetration flashing - pipe (wood deck) per contract drawings.	EA
130	FLA 38	<b>Penetration Flashing - Insulated Pipe</b> Provide penetration flashing - insulated pipe per contract drawings.	EA
131	FLA 39	<b>Penetration Flashing - Large Pipe</b> Provide penetration flashing - large pipe per contract drawings.	EA
132	FLA 40	<b>Penetration Flashing - Ductwork</b> Provide penetration flashing - ductwork per contract drawings.	LF
133	FLA 41	<b>Penetration Flashing - Irregularly Shaped / Conduit</b> Provide penetration flashing - irregularly shaped / conduit per contract drawings.	EA
134	FLA 42	<b>Penetration Flashing - Flexible Conduit</b> Provide penetration flashing - flexible conduit per contract drawings.	EA
135	FLA 43	<b>Dunnage Support Wide Flange Flashing</b> Provide dunnage support wide flange flashing per contract drawings.	EA
136	FLA 44	<b>Stair Support Flashing</b> Provide stair support flashing per contract drawings.	EA
137	FLA 45	<b>Ladder Penetration Flashing</b> Provide ladder penetration flashing per contract drawings.	EA

138	FLA 46	<b>Duct Support Angle Flashing</b> Provide duct support angle flashing per contract drawings.	EA
139	FLA 47	<b>Diverter Replacement</b> Remove and provide diverter replacement per contract drawings.	EA
140	FLA 48	<b>Scupper Flashing at Water Tower</b> Provide scupper flashing at canopy per contract drawings.	EA
141	LDR 01	<b>Scupper Leader</b> Provide scupper leader per contract drawings.	EA
142	LDR 02	<b>Scupper Leader at Projecting Slab</b> Provide scupper leader at projecting slab per contract drawings.	EA
143	MEM 01	<b>Liquid Applied Membrane System</b> Provide liquid applied membrane system per contract drawings.	SF
144	MEM 02	<b>Liquid Applied Membrane</b> Provide liquid applied membrane per contract drawings.	SF
145	MEM 03	<b>Liquid Applied Membrane System at Wood Deck</b> Provide liquid applied membrane system at wood deck per contract drawings.	SF
146	SCU 01	<b>Bulkhead Roof Edge Scupper and Flashing</b> Provide bulkhead roof edge scupper and flashing per contract drawings.	EA
<b>DIVISION 08 - EXTERIOR METAL DOORS, FRAMES &amp; HARDWARE</b>			
147	DOR 01	<b>Bulkhead Door, Frame and Hardware Replacement</b> Remove and provide bulkhead door, frame, hardware, caulking and paint per contract drawings.	EA
148	DOR 02	<b>Raised Bulkhead Door Saddle and Flashing Replacement</b> Remove and provide bulkhead door saddle and flashing with concrete step at main roof per contract drawings.	EA
149	DOR 03	<b>Raised Bulkhead Door Saddle and Flashing with Metal Landing Replacement</b> Remove and provide bulkhead door saddle and flashing with metal landing per contract drawings.	EA
150	WIN 01	<b>Bulkhead Stairwell Window Replacement</b> Remove and provide bulkhead window and all associated hardware with caulking and paint per contract drawings.	EA
151	LOU 01	<b>Bulkhead Stairwell Louver Replacement</b> Remove and provide bulkhead louver and all associated hardware with caulking and paint per contract drawings.	EA
<b>DIVISION 08 - SEALANT</b>			
152	JNT 01	<b>Joint Sealant at Window / Louver Perimeter</b> Provide joint sealant at window perimeter per contract drawings.	LF

153	JNT 02	<b>Expansion Joint</b> Provide expansion joint per contract drawings.	LF
<b>DIVISION 09 - FINISHES</b>			
154	COA 01	<b>Steel Coating of Exposed Shelf Angle / Lintel</b> Provide steel coating of exposed shelf angle / lintel per contract drawings.	LF

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 25 00  
SUBSTITUTION PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Substitution Procedures & Related Submittals - Administrative and Procedural Requirements.

**1.02 RELATED REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Section 01 60 00 - Product Requirements for requirements for submitting Approved Equal submittals for products by listed manufacturers.
- C. See Divisions 02 through 32 Sections for specific requirements and limitations for contractor substitutions.

**1.03 DEFINITIONS**

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- B. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
- C. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer an advantage to NYCHA.

**1.04 QUALITY ASSURANCE**

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. NYCHA's designated representative shall ensure all necessary documentation and the Contractor to comply.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

**3.01 SUBSTITUTION PROCEDURES & RELATED SUBMITTALS**

- A. Substitution Requests: All substitutions will be in the form of a Request for Information (RFI). Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
- B. Documentation: Show compliance with the requirements for substitutions and the following, as applicable:
  - 1. Statement indicating why the specified product or fabrication or installation cannot be , provided where applicable.
  - 2. Coordination information, including a list of changes or revisions needed on other parts of the Work and on construction performed by separate contractors that will be necessary to accommodate proposed substitution.
  - 3. Detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as reference standards performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
  - 4. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
  - 5. Samples, where applicable or where indicated in the submittal log
  - 6. Certificates such as sustainability factory certifications, etc. and qualification data, where applicable or requested.

7. List of similar installations for completed projects with project names and addresses, and names and addresses of Designers of Record and NYCHA.
  8. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with the original product specifications.
  9. Research reports evidencing compliance with the New York State and City Building Codes in effect for the Project..
  10. Detailed comparison of the Contractor's construction schedule and the effects using proposed substitution with products specified for the Work, including the effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include a letter from the manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
  11. Cost information, including a proposal of change, if any, in the Contract Sum. Cost information shall include material supplier's certified quote for sale to be included in the change order request.
  12. Contractor's certificates that the proposed substitution complies with requirements in the Contract Documents except indicated in the substitution request.
  13. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to produce indicated results. (To be further reworded to make the intent clearer)
- C. If necessary, the Architect or Engineer of Record will request additional information or documentation for evaluation within 14 calendar days of receipt of a request for substitution. NYCHA's Designated Representative will notify the Contractor of acceptance or rejection of the proposed substitution within 14 calendar days of the receipt of the original substitution request, or within 14 calendar days of the receipt of additional information or documentation, whichever is later.
1. Forms of Acceptance: An official letter or email from NYCHA's Designated Representative indicating that the substitution is approved and directing the Contractor to initiate a Change Order.
  2. Form of Rejection: An official letter or email from NYCHA's designated representative listing out the RFI stating that the substitution is rejected.
- D. Substitutions for Cause: Submit requests for substitution immediately upon the discovery of a need for change, but not later than 30 days prior to the scheduled ordering of materials.
1. Summary
    - a. Products, materials, systems and equipment specified within the technical sections Division 02 through Division 32 and Drawings shall be used for this Project unless approval for the submitted "or Equal" substitutions is obtained from NYCHA.
    - b. Requests will not be considered if they are made for a certain item or items at such a date that will not allow time for proper NYCHA analysis and determination for a decision. Refer to Paragraph 5.
    - c. The Contractor's request for substitutions with "alternate" products, materials, systems and equipment (those that vary from the Contract Documents, i.e. not an "or Equal") will be evaluated on a case-by-case basis within the sole discretion of NYCHA. The schedule for submission and review of alternate products, materials, systems, and equipment shall be the same as described in the Submission Submittal Schedule below.
    - d. Submittals
      - 1) Substitution Submittal Schedule: Request for substitution will only be considered if received within the number of days indicated below after the issuance of the Notice To Proceed (NTP).
      - 2) In addition, the request for substitutions for all materials that comprise the building envelope must be made within the time allotted per the above schedule, but shall not exceed 45 days of the Notice to Proceed (NTP).

- 3) The timeliness of the request must allow for the review, as well allow for necessary lead and installation times for the substituted item and for all construction related to and dependent on the substitution.
- 4) NYCHA may request additional information or documentation for the evaluation of the request. NYCHA will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on the use of a proposed substitute cannot be made or obtained, the Contractor must use the products specified by name. No time extensions will be granted due to the approval process or the rejection of a substitution.
- e. Substitution Submittal Procedure
  - 1) Each substitution submitted to NYCHA for consideration shall be separate and distinct from a regular submittal and shall be submitted to NYCHA as a Request for Information. See Section 01 33 00 for Submittal Procedure and Requirements. Each request shall identify the material, item of equipment, installation method, etc. proposed for substitution. Include the related Contract Specification and Contract Drawing number(s). Provide complete documentation showing compliance with the specified requirements. Such documentation shall include, but not be limited to the following:
  - f. Product data, including drawings, fabrication, calculations and installation procedures.
    - 1) Samples, where samples of the specified product are required or subsequently requested.
    - 2) Mock ups, where mock ups of the specified product are required or subsequently requested.
    - 3) A detailed comparison of significant qualities of the proposed substitution with those of the material or work specified. Significant qualities may include elements such as size, weight, durability, performance, visual effect, code compliance, maintenance requirements, energy usage, and environmental considerations.
    - 4) Coordination of information, including a list of changes or modifications to be made to other parts of the Work including the Work to be performed by other trades and for construction performed by others that will become necessary to accommodate and to accept the proposed substitution.
    - 5) Warranty information, with any deviations from the Contract requirements highlighted.
      - (a) (a) Failure by the Contractor to include the above requirements in the submittal may cause rejection of the submittal in its entirety.
- F. Approval Decision
  1. The decision for approval or rejection of a product substitution shall rest solely with NYCHA. NYCHA will endeavor to include all recommendations of the Designer of Record and NYCHA's Designated Representative.
- G. Accommodations for Substitutions
  1. In the event substitute products, materials, systems and equipment ("or Equal") and "alternate") that are accepted cause accommodations incurring additional costs, such costs shall be borne by the Contractor.
- H. Options
  1. When the Contractor's options are allowed for use of certain products, materials, systems, and equipment for this Project, conditions shall be as set out in the respective technical Sections.
- I. Substitutions for Convenience: NYCHA and the Designer of Record will consider requests for substitution if received within 30 CCDs after the Letter of Award (LOA). Requests received after that time may be considered or rejected at the discretion of NYCHA and the Designer of Record.



- J. Conditions: NYCHA and the Designer of Record will consider the Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, NYCHA's Designated Representative will return requests without action, except to record noncompliance with these requirements:
1. Requested substitution does not require any revisions to the Contract Documents. Revisions to the Contract Documents will be made at cost to the Contractor.
  2. Requested substitution is consistent with the Contract Documents and will produce the indicated results.
  3. Substitution request is fully documented and properly submitted.
  4. Requested substitution will not adversely affect the Contractor's construction schedule.
  5. Requested substitution has received necessary approvals of Authorities Having Jurisdiction.
  6. Requested substitution is compatible with other portions of the Work.
  7. Requested substitution has been coordinated with other portions of the Work.
  8. Requested substitution provides specified warranty.
  9. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
  10. NYCHA has the right and or option to reject contractor substitution submission at their discretion. Rejection of proposed substitution shall not constitute any basis for contractor's claims.

**END OF SECTION**

**SECTION 01 26 00  
CONTRACT MODIFICATION PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. NYCHA Initiated Changes.
- B. Contractor Initiated Changes.
- C. Change Order Procedures.

**1.02 RELATED REQUIREMENTS**

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

**1.03 DEFINITIONS**

- A. Potential Change Order Request: A proposal to change the Contract in response to either a NYCHA Initiated Change or Contractor Initiated Change.

**1.04 GENERAL**

- A. The Contractor shall submit a proposal in the form of a Potential Change Order Request to NYCHA in response to all proposed contract changes.
  - 1. Include a list of quantities of work items required or eliminated with their associated unit costs, with the total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
  - 2. Insure costs of all labor and supervision are included.
  - 3. NYCHA is tax exempt; all proposals shall not include tax.
  - 4. Substantiate for inclusion any general conditions not included in each unit cost.
  - 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and coordination of work.

**1.05 NYCHA INITIATED CHANGES**

- A. The CMNYCHA Designated Representative / Designer of Record will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time. Authorization for modified, additional or deleted work shall be by bulletin only. Verbal agreements without written confirmation shall not constitute authorizations for any work under any circumstance.
- B. NYCHA Designated Representative or Designer of Record will issue a Bulletin detailing the description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Bulletins issued by NYCHA Designated Representative or Designer of Record are not instructions either to stop work in progress or to execute the proposed change.
  - 2. Within 14 calendar days after receipt of the Bulletin, the Contractor is to submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
  - 3. Change Order Proposal from Contractor after 14 calendar days shall be denied at the discretion of NYCHA.

**1.06 CONTRACTOR INITIATED CHANGES**

- A. If latent or changed conditions require modifications to the Contract, the Contractor may initiate a Potential Change Order Request to NYCHA Designated Representative. Include a statement outlining reasons for the change and the effect of the change on the contract work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

**1.07 ADMINISTRATIVE CHANGE ORDERS**

- A. Allowance Adjustment: See Division 01 Section "Allowances" for administrative procedures for preparation of the Change Order Proposal for adjusting the Contract Sum to reflect the actual costs of allowances.
- B. Unit-Price Adjustment: See Division 01 Section "Unit Prices" for administrative procedures for preparation of the Change Order Proposal for adjusting the Contract Sum to reflect the measured scope of unit-price work.

**1.08 CHANGE ORDER PROCEDURES**

- A. If NYCHA Initiated Change, The Designer of Record will issue a Bulletin to the Contractor or direction from administering department.
- B. If Contractor Initiated Change, or in response to a Bulletin, the Contractor will issue a Potential Change Order Request.
  - 1. Invalid Potential Change Order requests will not be processed and will be returned to the Contractor.
    - a. The Contractor will negotiate Potential Change Order Requests with NYCHA.
- C. Potential Change Order Requests that exceed NYCHA's threshold (10% of Contract Value) will be presented to NYCHA's Board for formal consideration.
- D. Upon NYCHA's approval of a Potential Change Order Request, NYCHA will negotiate with the Contractor on the cost for the Change Order work. Once the price of the Change Order is agreed upon, NYCHA will issue execute a Change Order for signatures.
- E. No Change Order work can proceed until the Change Order is finalized and approved by the NYCHA Designated Representative(s).

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 30 00**

**ADMINISTRATION OF CONTRACTS AND PROJECT PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Administrative and Procedural Requirements.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 35 23 - NYCHA Safety Requirements

**1.03 ADMINISTRATION OF CONTRACTS**

- A. The Work of the Contract shall be under the direction and supervision of NYCHA Capital Project Division. The Contractor shall notify in writing, the designated Capital Projects Division Project Manager and the Property Manager of the Development of the date the Work shall begin. Such notification must be received by NYCHA Capital Projects Division at least two (2) business days after the issuance of the Notice to Proceed. All correspondence shall be addressed to NYCHA Capital Projects Division Designated Project Manager:
  - 1. New York City Housing Authority
  - 2. Project Management Team 1
  - 3. 90 Church Street, 10th Floor, New York, NY 10007
  - 4. NYCHA Representative

**1.04 WORK LOCATION**

- A. Development: City Wide
- B. Management Office: Various Development

**1.05 PROJECT PROCEDURES**

- A. The Contractor must commence work within three (3) days after the date specified in a written Notice to Proceed from NYCHA and continue on a full-time work program. The Work shall be fully complete in the time set forth in the Notice to Proceed.
- B. Each work day, the Contractor shall sign the Contractor Log upon arrival and before leaving the project grounds. At the start of each day the Contractor shall inform the NYCHA Designated Representative and Superintendent of the Development and NYCHA as to the location and scope of work planned. Any condition which might adversely affect the residents, whether during the workday or after close of operations, shall promptly be reported to The NYCHA Designated Representative and Project Superintendent.
- C. Conduct operations under this Contract in such a manner as to allow, at all times during the performance of the Work, ingress and egress for the residents and public with NYCHA's cooperation. The Contractor shall notify and cooperate with The NYCHA Designated Representative to coordinate their work to meet this condition.
- D. The Contractor shall be prepared to coordinate work so as to minimize disruption to the development.
- E. Work shall be provided without the disruption of services to any portion of the development. Where existing utilities serving the buildings are required to be shut off, notify NYCHA Designated Representative 3 days in advance. It shall be the responsibility of the Contractor to notify and make all arrangements with the Utility Company or other Authorities Having Jurisdiction over such utility.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 31 00**  
**PROJECT MANAGEMENT AND COORDINATION**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Administrative provisions for coordinating construction operations on the Project including, but not limited to, the following:
  - 1. General coordination procedures.
  - 2. Contractor's supervisory personnel.
  - 3. General installation provisions.
  - 4. Requests for Information (RFIs).
  - 5. Project progress meetings and site mobilization meetings.
  - 6. Requirements for the Contractor's Construction Schedule.

**1.02 RELATED REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Section 01 25 00 - Substitution Procedures: For substitutions of products or phasing
- C. Section 01 26 00 - Contract Modification Procedures: For submitting requests for changes in the contract cost or period of performance in response to an answered Request for Information.
- D. Section 01 20 00 - Payment Procedures
- E. Section 01 30 00 - Administration of Contracts and Project Procedures
- F. Section 01 32 00 - Construction Progress Documentation: For preparing and submitting the Contracts construction schedule.
- G. Section 01 33 00 - Submittal Procedures and Requirements
- H. Section 01 70 00 - Closeout Procedures: For Coordinating the Closeout of the Contract.

**1.03 ADMINISTRATIVE REQUIREMENTS**

- A. The Contractor shall dedicate their time and personal attention to the Work and shall employ and retain at the building site, from commencement to completion of the Work, a full time Contractor's Superintendent, approved by NYCHA with a minimum of five years of experience in similar work.
  - 1. The Contractor's Superintendent shall be equipped with a cellular phone or other communications device, with the number to be provided to NYCHA, and shall be reachable at all times during working hours.
  - 2. The Contractor shall submit the Superintendent's resume to NYCHA for approval prior to starting work. The Contractor's Superintendent shall maintain proper supervision and care of the Work in accordance with the contract requirements. In the absence of the Contractor, and irrespective of any superintendent or foreperson employed by any subcontractor, the Contractor's Superintendent shall see that the instructions of NYCHA are carried out.
  - 3. The Contractor's Superintendent on the job shall not be changed without the consent of NYCHA.
  - 4. NYCHA may request the replacement of personnel at any time. The Contractor must provide resumes for replacement personnel for approval.

**1.04 SUBMITTALS**

- A. Subcontractor List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
  - 1. Name, address, and telephone number of entity performing subcontractor or supplying products.

2. Number and title of related Specification Section(s) covered by subcontractor.
  3. Drawing number and detail references, as appropriate, covered by subcontractor.
- B. Key Personnel Names: Within forty-five CCDs for Federal and sixty CCDs for City days of Letter of Award, submit a list of key personnel assignments, including the superintendent and other personnel to be assigned to the Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to the Project.
1. Upon commencement of the of construction operations, post copies of the list in the field office, and by each telephone. Keep the list current at all times.

#### **1.05 GENERAL COORDINATION PROCEDURES**

- A. Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work.
1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
  2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility.
  3. Make adequate provisions to accommodate items scheduled for later installation.
- B. The Contractor shall coordinate their construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work.
1. Schedule construction operations in the sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for future installation and required maintenance, service, and repair.
  3. Prepare memoranda for distribution to each relevant party involved with construction, outlining special procedures required for coordination.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to the conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

#### **1.06 PROJECT MEETINGS**

- A. General: The NYCHA Designated Representative will schedule and conduct meetings at the Project site unless otherwise indicated.
1. Attendees: The NYCHA Designated Representative will inform project stakeholders of the date and time of each meeting.
  2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
  3. Minutes: The NYCHA Designated Representative is responsible for conducting the meeting to record significant discussions and agreements achieved, distribute the meeting minutes to everyone concerned, including NYCHA, and Designer of Record, within three days of the meeting.
- B. Get Start Meeting: The NYCHA Designated Representative will schedule and conduct a Get Start meeting before starting construction, at a time convenient to NYCHA, to be scheduled prior to the Notice to Proceed..
1. Conduct the meeting to review responsibilities and personnel assignments.
  2. Attendees: The contractor's team shall attend a Get Start job-site meeting with The NYCHA Designated Representative, NYCHA Management, and representatives of the

- Tenant Association and NYCHA's designees prior to commencing any work. All Contract documents shall be reviewed at this meeting.
3. Agenda: Discuss items of significance that could affect progress including but not limited to the following:
    - a. Introduction
    - b. Safety
    - c. Submittals/Approval
    - d. Forecast Work
    - e. Construction Schedule
    - f. REP
    - g. Payments
    - h. RFI
    - i. Change Orders
    - j. Other Issues/General
  4. Minutes: NYCHA's Designated Representative is responsible for conducting the meeting will, record and distribute meeting minutes.
- C. Progress Meetings: The NYCHA Designated Representative will conduct progress meetings at biweekly intervals which shall be held at the job site between NYCHA and the Contractor. The NYCHA Designated Representative shall fix the time for the meeting in consultation with the Contractor. The Contractor is required to attend all Contract meetings.
1. Attendees: In addition to NYCHA Designated Representative, Designer of Record, Contractor, subcontractors, suppliers, Tenant Association Representative, REES, Section 3 and other entities concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work. During the course of the contract work the Contractor shall attend any additional job site meetings with the NYCHA Designated Representative, Designer of Record, or NYCHA's Project Manager or Construction Project Manager.
  2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project, including the following:
    - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to the Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time. Review schedule for the next period.
    - b. Review present and future needs of each entity present, including the following, but not limited to:
      - 1) Site Safety
      - 2) Sequence of operations.
      - 3) Status of submittals.
      - 4) Deliveries.
      - 5) Off-site fabrication.
      - 6) Access.
      - 7) Site utilization.
      - 8) Temporary facilities and controls.
      - 9) Progress cleaning.
      - 10) Quality and work standards.
      - 11) Status of correction of deficient items.
      - 12) Field observations.
      - 13) Status of RFIs.

- 14) Status of Change Orders.
  - 15) Pending claims and disputes.
  - 16) Documentation of information for payment requests.
  - 17) Minutes: The NYCHA Designated Representative will record and distribute the meeting minutes to each party present and to parties requiring information.
- D. Pre-installation Meetings: Conduct a pre-installation meeting at the Project site before each construction activity that requires coordination with other trades and or Development Management.
1. Attendees: General Contractor, GC's Safety Coordinator, Sub-Contractors, Development Management, and the NYCHA Designated Representative.
  2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements but not limit to the following:
    - a. Contract Documents.
    - b. Purchases.
    - c. Deliveries.
    - d. Submittals.
    - e. Review of mockups.
    - f. Possible conflicts.
    - g. Compatibility requirements.
    - h. Time schedules.
    - i. Weather limitations.
    - j. Manufacturer's written instructions.
    - k. Warranty requirements.
    - l. Temporary facilities and controls.
    - m. Space and access limitations.
    - n. Testing and inspecting requirements.
    - o. Installation procedures.
    - p. Coordination with other work.
    - q. Required performance results.
    - r. Protection of adjacent work.
    - s. Protection of construction and safety of personnel.
  3. The NYCHA Designated Representative will record significant meeting discussions, agreements, and disagreements, including required corrective measures and actions.
  4. Reporting: The NYCHA Designated Representative will distribute minutes of the meeting to each party present and to other parties requiring information.
  5. Do not proceed with installation if the meeting cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the meeting at the earliest feasible date.
- E. Project Closeout Meeting: The NYCHA Designated Representative will schedule and conduct a project closeout meeting, at a time convenient to NYCHA and Designer of Record, but no later than 90 days prior to the scheduled date of Physical Completion.
1. Attendees: The NYCHA Designated Representative, NYCHA Representative, Designer of Record, and their consultants; General Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  2. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
    - a. Preparation of record documents.
    - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
    - c. Submittal of written warranties.
    - d. Requirements for preparing operations and maintenance data.



- e. Requirements for delivery of material samples, attic stock, and spare parts.
  - f. Requirements for demonstration and training.
  - g. Preparation of Contractor's punch list.
  - h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
  - i. Submittal procedures.
  - j. Owner's partial occupancy requirements.
  - k. Responsibility for removing temporary facilities and controls.
3. Minutes: The NYCHA Designated Representative will conduct the meeting will record and distribute meeting minutes.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 32 00  
CONSTRUCTION PROGRESS DOCUMENTATION**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Administrative and procedural requirements for documenting the progress of construction during performance of the Work, including but not limited to the following:
  - 1. Daily Construction Reports
  - 2. Special Reports
  - 3. Progress Photographs

**1.02 RELATED REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Section 01 33 00 - Submittal Procedures: For submitting schedules and reports
- C. Section 01 45 00 - Quality Control: For submitting a schedule of tests and inspections.
- D. Section 01 32 13 - Scheduling
- E. Section 01 35 23 - NYCHA Safety Requirements

**1.03 DAILY REPORTS**

- A. Daily Construction Reports (Construction Progress Reporting): Prepare a daily construction report recording the following information concerning events at the Project site and submit to The NYCHA designated Representative for approval before 12:00 PM on the subsequent project work day. Submit weekly reports on Fridays:
  - 1. Date
  - 2. Report Number
  - 3. Description of General working conditions
  - 4. Description of the Contractor's work with his or her own forces
  - 5. Description of each subcontractor's work
  - 6. List of separate contractors at Project site, and any work that was coordinated with each
  - 7. Exact count of personnel at Project site by trade
  - 8. Equipment at Project site and description of the day's use
  - 9. Material deliveries
  - 10. High and low temperatures and general weather conditions, including presence of rain or snow
  - 11. Accidents
  - 12. Meetings and significant decisions
  - 13. Unusual events (see special reports)
  - 14. Stoppages, delays, shortages, and losses
  - 15. Meter readings and similar recordings
  - 16. Emergency procedures
  - 17. Orders and requests of Authorities Having Jurisdiction
  - 18. Change Orders received and implemented
  - 19. Services connected and disconnected
  - 20. Equipment or system tests and startups
  - 21. Partial completions and occupancies
  - 22. Substantial Completions authorized
  - 23. Work that is not under control by the Contractor that is on-site or nearby, which may be impacted by the activities of the Contractor, or which may impact the Contractor.

**1.04 SPECIAL REPORTS**

- A. General: Submit special reports directly to NYCHA within one (1) day(s) of an occurrence. Distribute copies of the report to parties affected by the occurrence.

- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at the Project site, whether or not related directly to the Work, prepare and submit a special report. List the chain of events, persons participating, response by the Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.
- C. Refer to 01 35 23 "NYCHA Safety Requirements" should any unexpected Hazardous Conditions arise on site. Submit reports to Authority and NYCHA Designated Representative immediately.

**1.05 PROGRESS PHOTOGRAPHS**

- A. The Contractor shall provide to the Authority, digital color photographs of the Site and the Work being performed under this Contract. The digital photographs shall be taken prior to start of Work, thereafter on a monthly basis, and at the completion of the Work. The Contractor shall take photographs of work completed each day and attach it to the daily log. The number and locations from which the digital photographs are taken shall be subject to the direction and approval of the Authority. The pictures taken prior to the start shall be sufficient to record the conditions existing prior to the commencement of Work. This includes the areas of work as well as the finishes that may affect the work. Those taken on a monthly basis shall be as directed by the Authority to sufficiently document and record the overall progress of the Work, including site, construction, architectural and structural details. This includes site and building conditions of adjoining properties prior to and during the construction.
- B. All digital color photographs shall be in the JPEG color format and shall be concisely labeled with date, time project number and subject. The digital photographs shall be stored on CD's, DVD's or flash drives; each labeled with the project and date taken. The digital photographs shall be, at a minimum, 10.0 mega-pixel, high resolution, best quality.
- C. The electronic media shall be delivered to the Authority's representative monthly and, at the latest, must accompany the monthly requisition for the period photographed.
- D. The cost for taking, processing and delivering the electronic media shall be included in the Contractors Bid Amount.
- E. The Contractor shall provide an average of twenty (20) digital photographs (as described above) per month. The preconstruction photos shall be sufficient to adequately document pre-existing conditions of existing buildings and adjacent properties. For existing building work, they must document the area to be worked on prior to any removals.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 32 13  
SCHEDULING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
  - 1. Preliminary (Startup) construction schedule.
  - 2. Contractor's detailed construction schedule.
  - 3. Construction schedule updating reports.
  - 4. Daily construction reports including manpower counts.
  - 5. Material location reports.
  - 6. Field condition reports.
  - 7. Special reports as requested by NYCHA.

**1.02 RELATED REQUIREMENTS**

- A. A. The contract documents including but not limited to the Drawings and individual specifications, general provisions of the Contract include but not limited to contract clauses, and construction duration apply to this section.
- B. Section 01 11 16 - Summary of Work
- C. Section 01 14 00 - Work Restriction: For requirements on Resident access to apartments during construction and other work restrictions.
- D. Section 01 26 00 - Contract Modification Procedures: For requirements to submit updated schedules with Potential Change Order Requests.
- E. Section 01 20 00 - Payment Procedures: For requirements to submit updated schedules with Payment requisitions.
- F. Section 01 31 00 - Project Management and Coordination
- G. Section 01 77 00 - Closeout Procedures: For requirements on schedules regarding Substantial Completion and Final Acceptance.

**1.03 SCHEDULING SUMMARY**

- A. The purpose of the Construction Schedule shall be to:
  - 1. Assure adequate planning, scheduling, manpower and reporting during execution of construction and related activities so that the work of the contract is delivered in accordance with the contract duration as well as project milestones as stipulated by the Contract;
  - 2. Assure coordination of the Work of the Contractor and the various subcontractors and suppliers at all tiers;
  - 3. Assist in the preparation and evaluation of the Contractor's monthly progress payments;
  - 4. Assist in monitoring the progress of the Work and evaluating proposed changes to the Contract and the Construction Schedule;
  - 5. Assist over the duration of the project, in determining variances in the schedule and budget and support plans for required corrective actions.

**1.04 SUBMITTALS**

- A. ACTION SUBMITTALS
  - 1. Contractor shall submit a resume of the proposed scheduler for review and acceptance by NYCHA and NYCHA's Designated Representative (if applicable) prior to the preparation of any schedule. The proposed scheduler should be an experienced specialist in critical path method (CPM) scheduling and reporting, with the capability of producing CPM reports and diagrams within timeframes requested by NYCHA. At the minimum, the scheduler shall have a minimum 5 years of scheduling experience on capital projects of similar scope and magnitude. If NYCHA does not accept the proposed scheduler, the

Contractor shall propose another scheduler within five business days of NYCHA's rejection.

2. Format for Submittals: Submit required submittals in the following format:
    - a. Two electronic copies of all computer disks, charts, graphs, reports and other required schedules. PDF electronic format is acceptable for charts, graphs, and reports.
    - b. A working electronic copy of the schedule using software indicated. Indicate the type of schedule (initial or updated) and the data date with the Submittal.
    - c. Two legible paper copies. CPM schedule of 11x17 inches size required to display entire construction period as well as a summarized (executive level) version.
  3. Schedule Submittals for Construction
    - a. Detailed Construction Schedule: The detailed schedule of all work required to complete the project scope within the entire construction period.
      - 1) The Contractor shall submit a comprehensive and detailed construction schedule within 21 calendar days after the of Letter of Award, which captures the work of the contract. No payment requisitions will be reviewed past the 90 day period from the NTP without a schedule approved.
      - 2) Upon acceptance by NYCHA, the Detailed Construction Schedule shall become the Construction Baseline Schedule for the project.
      - 3) (NOTE: Approval of cost-loaded construction schedule will not constitute approval of schedule of values for cost-loaded activities, but shall be the basis for monthly payment requisition back up.)
    - b. The Contractor shall submit monthly schedule updates with each invoice, three-week rolling schedule per bi-weekly project meeting, and recovery schedules as requested by NYCHA.
  4. Schedule Narrative: Each detailed construction schedule submittal shall include a written narrative that details the Contractor's approach to performance of the Work; assumptions made in the determination of durations, number of shifts and work days planned each week; equipment planned, including number of units and their capacity; and any other elements established to define the schedule. The project scheduler shall describe the nature of the submission, interpretation of calculations, issues affecting progress, and a milestone analysis comparing progress to the baseline and update schedules.
  5. CPM Reports: Concurrent with the CPM schedule, submit each of the following reports. The format for each activity in the reports shall contain Activity ID, Activity Name, Cost and Resource loading, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, and Total Float in work days.
    - a. Activity Report: List of all activities sorted by activity number and then early start date or actual start date (if known) in each phase, area and level following physical division of work.
    - b. Short Term Activity Report: Lists all activities occurring from the update data date in a two month forward and one month back window.
    - c. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date (if known). Include activity ID number and float path(s).
    - d. Total Float Report: Provide a cumulative list of total float from each update period with comments associated to any and all variances sorted in ascending order of total float.
- B. INFORMATIONAL SUBMITTALS**
1. Construction Schedule Updating Reports: Submit with Applications for Payment monthly.
  2. Daily Construction Reports: Submit at weekly intervals.
  3. Two-week "Look-Ahead" Schedule: Submit at weekly intervals indicating work achieved in the prior week and planned for the upcoming two-week period.
  4. Material Location Reports: Submit at weekly intervals material fabrication and delivery status with the location of fabrication.

5. Field Condition Reports: Submit at the time of discovery notice of differing conditions affecting the project schedule.
6. Qualification data: Submit credentials of Project Scheduler.

### **1.05 QUALITY ASSURANCE**

- A. Pre-scheduling Conference: Conduct conference at the Project site to comply with requirements in the contract documents. Review methods and procedures related to the construction schedules, including, but not limited to, the following:
  1. Review software limitations, settings and content and format for reports.
  2. Verify availability of qualified personnel needed to develop and update the schedule.
  3. Discuss constraints and assumptions unique to the Project, including activity sequence, phasing, work stages, area separations, interim milestones, and partial Owner occupancy.
  4. Review procedures for development, cost and resource loading of activities.
  5. Code structures including work breakdown structure (WBS) as per the contract requirements.
  6. Procedures for assessing impacts.
  7. Procedures for schedule modifications.
  8. Procedures for mitigation or recovery schedules.
  9. Review delivery dates for NYCHA-furnished products and coordination of the same.
  10. Review schedule for work of NYCHA's separate contracts and coordination of the same.
  11. Review submittal requirements and procedures.
  12. Review time required for review of submittals and re-submittals.
  13. Review requirements for tests and inspections by independent testing and inspecting agencies and coordination of the same.
  14. Review requirements for permits and building inspections and coordination of same.
  15. Review time required for Project closeout and NYCHA startup procedures, [including commissioning activities] [and] [submittal of sustainable design documentation].
  16. Review and finalize the list of construction activities and the required work package durations to be included in the schedule.
  17. Review procedures for updating the schedule as per Update Requirements.
- B. Attendance at the pre-schedule conference is mandatory for the Contractor's Project Manager, Superintendent, and Project Scheduler with the NYCHA Designated Representative.

### **1.06 COORDINATION**

- A. Coordinate Contractor's construction schedule with the approved schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
- B. Secure time commitments for performing critical elements of the Work from entities involved.
- C. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

## **PART 2 PRODUCTS (NOT USED)**

## **PART 3 EXECUTION**

### **3.01 COMPUTER SCHEDULING SOFTWARE**

- A. Contractor shall use the latest version of Primavera P6 for Enterprise by Oracle or equivalent scheduling software backward compatible with P6 approved by NYCHA to produce and maintain the contract schedules and reports as specified herein. The scheduling software shall be capable of being cost and resource loaded; processing; and plotting time scaled logic diagrams, histograms, charts and layouts and pertinent schedule data.
  1. The requirements for use of the Primavera software will be reviewed during the pre-schedule conference to ensure compatibility and facilitate data transfer between NYCHA and Contractor systems.
  2. System user and administration settings will be established.
  3. Use of "global," "enterprise," and "project" elements will be defined and discussed.

- B. File formats required for data transfer:
  - 1. Schedule data backups (XER file format).
  - 2. Layout and Filter Layouts (PLF files).
  - 3. Report Specification Formats (ERP files).

### 3.02 CONSTRUCTION SCHEDULE REQUIREMENTS

- A. General Requirements
  - 1. Contracted Period of Performance shall be from the Notice to Proceed to the date of Final Acceptance with milestones identified.
  - 2. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by contract modification.
  - 3. Work shall be scheduled on a 5-day work week, unless otherwise approved by NYCHA.
  - 4. Multiple calendars may be defined to indicate contract durations as "calendar days," and/or activity durations as "work days." "Holidays" shall be included but not limited to as observed by NYCHA: New Year's Day, Martin Luther King Jr Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Election Day, Veteran's Day, Thanksgiving Day, Christmas Day. NYCHA may require additional non-work days which shall be identified in the special conditions.
  - 5. Normal weather conditions influenced by high or low ambient temperatures or precipitation shall be considered in the planning and scheduling of the Work to ensure completion of all the Work in the contract time. No time extension shall be given for inclement weather days.
- B. Float is not for the exclusive use or benefit of either the Contractor or the NYCHA. Float is a jointly owned resource that either the Contractor or NYCHA can use on a first come first serve basis.
- C. Activities: The proposed schedule shall include all activities that will need to be performed to achieve the intent of the contract. Comply with the following:
  - 1. Activity scope shall represent the continuous operation of a responsible entity performing the Work. Activities shall be identified through applicable organizational codes such as work breakdown structure (WBS), phase, unit, building floor, area, type of work, and subcontractor/party performing the Work.
  - 2. Activity Name: Activity Name shall clearly indicate scope of work and activity location.
  - 3. Procurement Activities: Include procurement process activities for the following long-lead items and major items, requiring a cycle of more than 60 days, as separate activities in the schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
  - 4. Submittal Review Time: Include review and re-submittal times, indicated in contract documents, in the schedule. Coordinate submittal review times in the Contractor's construction schedule with the submittal schedule.
  - 5. Startup and Testing Time: Include activities and duration for all project equipment, both contractor and NYCHA furnished, for startup and testing.
  - 6. Punch List: See Division 1 Section 01 78 13 "Punch List".
  - 7. Final Acceptance: See Division 1 Section 01 77 00 "Closeout Procedures."
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
- E. Phasing: Arrange list of activities on schedule by phase in collaboration with NYCHA Designated Representative. [Design/ Construction to determine specific details]
  - 1. Work under More Than One Contract: Include a separate activity for each contract, as applicable.
  - 2. Work by NYCHA: Include a separate activity for each portion of the Work performed by NYCHA, as applicable.

3. Products Ordered in Advance (Pre-purchase): Include a separate activity for each product. Include the delivery date indicated in the contract documents. Delivery dates indicated stipulate the earliest possible delivery date.
  4. NYCHA-Furnished Products: Include a separate activity for each product. Include the delivery date indicated in the contract documents. Delivery dates indicated stipulate the earliest possible delivery date.[Include only as applicable]
  5. Work Restrictions: Show the effect of the following items on the schedule such as:
    - a. Coordination with existing construction.
    - b. Limitations of continued occupancies.
    - c. Uninterruptible services.
    - d. [this is for new construction]Use of premises restrictions.
    - e. Seasonal variations.
    - f. Environmental control.
    - g. In addition refer to Division 1 Section 01 14 00 " Work Restrictions"
- F. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
1. Subcontract awards.
  2. Mobilization.
  3. Submittals.
  4. Purchases of materials with long lead times.
  5. Mockups.
  6. Fabrication.
  7. Sample testing.
  8. Deliveries.
  9. Installation.[Identify major milestones]
  10. Tests and inspections including DOB.
  11. Adjusting.
  12. Curing.
  13. Building flush-out, as applicable.
  14. Commissioning, Startup, Testing and placement into final use and operation.
  15. Physical Construction Completion.
  16. Punch list.
  17. Final Acceptance.
  18. Demobilization.
  19. Close out documentation.
- G. Construction Areas: Identify each major area of construction for portion of the Work (i.e. building/floor). Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities as required per NYCHA and scope of work.
- H. Milestones: Include milestones indicated in the Contract Documents in the schedule, including, but not limited to, the Notice to Proceed, 25%, 50%, 75% Construction Complete, Physical Construction Completion and final acceptance. Other milestones may include but not limited to:
1. Phase Completions (as required by the contract).
  2. Utility shut-downs and/or start-ups by phase of construction.
  3. Temporary enclosure and space conditioning, including temp heat.
  4. Other points of coordination (such as border opening dates), as required.
  5. Major equipment startup and turnover to NYCHA.
- I. Cash Flow: Superimpose on the schedule a cost correlation timeline, indicating planned and actual costs. On the line and in a spreadsheet, show planned and actual dollar volume on a monthly basis of the Work performed as of planned and actual dates which shall be used for preparation, processing and approval of payment requests.
1. Refer to Division 1 Section 01 20 00 "Payment Procedures"



- J. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to the submittal of the next schedule update. Summarize the following issues:
  - 1. Unanswered RFIs.
  - 2. Unresolved issues.
  - 3. Rejected or unreturned submittals.
  - 4. Notations on returned submittals.
  - 5. Pending modifications affecting the Work and Contract Time.
- K. Recovery Schedule: When periodic update indicates the Work is 30 or more calendar days behind the current approved schedule critical path, submit a separate recovery schedule indicating the means by which the Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and the date by which recovery will be accomplished.

**3.03 DETAILED CONSTRUCTION SCHEDULE REQUIREMENTS**

- A. General: Prepare network diagrams in accordance with the general schedule requirements stated herein.
- B. CPM Schedule: Prepare contemporaneous schedules for sequencing the Work in the Contractor's construction schedule using a cost- and resource-loaded PDM based time-scaled CPM network analysis diagram for the Work.
  - 1. Develop a network diagram within 21 calendar days of the Letter of Award to submit a CPM schedule so that it can be accepted for use no later than 60 calendar days after the date established for the Notice to Proceed.
  - 2. The proposed schedule shall include all activities that will need to be performed to achieve the intent of the contract.
  - 3. Failure by the Contractor to include any element of work required to complete the scope of the contract shall not relieve the Contractor from completing all work required within the scope of the contract and within the length of time allotted by the contract.
  - 4. In the event that the Contractor fails to define any element of work, activity or logic and NYCHA review does not detect this omission or error, such omission or error, when discovered by the Contractor or NYCHA, shall be corrected by the Contractor at the next monthly Schedule Update and shall not adversely affect the critical path or the construction time.
- C. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to correlate with Contract Time.
- D. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities.
  - 1. Include estimated time frames for the following activities but not limited to:
    - a. Preparation and processing of submittals.
    - b. Mobilization and demobilization.
    - c. Purchase of materials.
    - d. Fabrication.
    - e. Delivery.
    - f. Utility interruptions.
    - g. Installation.
    - h. Work by NYCHA or other projects that may affect or be affected by Contractor's activities.
    - i. Testing and commissioning.
    - j. Sustainable design documentation submittal.
    - k. Punch list and final completion.
    - l. Activities occurring following final completion.
    - m. NYCHA furnished equipment and material.
  - 2. Actual Activity Dates: Once an activity has been assigned an actual date of occurrence, the status of that activity shall not change. Any change to actual dates must be

- accompanied with supporting data and approved by NYCHA. No actual start date shall occur ahead of the data date.
3. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
  4. Processing: Process data to produce output data status on a computer-drawn, Precedence Diagram Methods network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract duration.
  5. Calculations: The schedule network shall be calculated allowing activities to retain their original logic. Progress override shall not be used when calculating the network status.
  6. Logic: Leads and lags will not be used when the creation of an activity will perform the same function. Lag durations contained in the schedule shall not have negative value. Lead and lag durations shall not exceed the durations of the activity they are assigned.
    - a. There shall be only two open ended activities: (1) Notice to Proceed, with no predecessor logic, and (2) Final Payment, with no successor logic. All intermediate activity logic shall be connected.
    - b. Out of sequence activities that have progressed before all preceding logic will be allowed only on a case by case basis, as approved by the NYCHA. The Contractor shall propose logic corrections to eliminate all out of sequence progress and correct out of sequence progress that continues for more than two update cycles by logic revisions, as approved by the NYCHA.
- E. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
1. Format: Mark the critical path. Locate the critical path near the center of the network; locate paths with most float near the edges.
  2. Sub networks on separate sheets are permissible for activities clearly off the critical path.
  3. When separate sheets are produced, group headings and structure codes shall be repeated to appear on all pages.
- F. Float: NYCHA will reject the schedule and schedule updates for the use of float suppression techniques such as preferential sequencing, special lead lags logic constraints, zero total or zero free float constraints, extended activity times, or imposing constraint dates other than what is required by the Contract.
1. The use of resource leveling used for the purpose of artificially adjusting activity durations to consume float and influence the critical path is prohibited.
  2. A schedule showing work completing in less time than the Contract duration and accepted by NYCHA, will be considered to have float.
  3. Any float generated during the performance of the Work, due to efficiencies of NYCHA or any Contractor is not for sole use of the party generating the float.
  4. Negative float will not be a basis for requesting time extensions and will not be construed as a means of acceleration or schedule extension.
- G. Cost- and Resource-Loading of CPM Schedule:
1. Assign cost to construction activities on the CPM schedule. Each activity cost shall reflect an appropriate value subject to approval by NYCHA.
  2. Total summation of cost assigned to activities shall equal the total Contract Sum, and to-date at the end of the reporting period.
  3. Do not assign costs for submittal activities; submittal costs shall be assigned to submittal approval activities as approved by NYCHA.
  4. Obtain NYCHA's approval prior to assigning costs to fabrication and delivery activities.

### 3.04 PROGRESS UPDATE REQUIREMENTS

- A. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Updates will be required at progress meetings and on payment request dates.

- B. Progress Updates shall indicate the following:
  - 1. Actual start date and actual finish date for each activity completed within the reporting period.
  - 2. Actual start date and remaining duration to percent complete for each activity started but not yet completed.
- C. The progress status date shall be set as the beginning of the next work day following the period through which work has been reported and shall match the invoice period and cutoff date.
- D. Schedule Revision Requirements
  - 1. When the periodic update indicates the Work is 30 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating the means by which the Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.
  - 2. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall project schedule.
  - 3. Submission of a request for modification shall not modify contract requirements until a formal change order has been executed by the parties.
  - 4. Monthly updates reflecting a potential change or modification shall incorporate appropriate opportunities available to mitigate potential impacts at no cost to the project.
  - 5. Need to assign categories for base contract activities and change order activities with attributes.
- E. Delay Claims and Time Impact Analysis Requirements
  - 1. If at any time the project encounters schedule impacts or the Contractor is directed to perform changed work that may warrant a time extension, the Contractor shall submit a written time impact analysis (TIA) with a request for adjustment of contract time.
    - a. The TIA must clearly demonstrate the impact of each change or delay to project completion or any other contractual milestone.
    - b. The TIA must use the latest accepted schedule prior to the event.
    - c. If NYCHA determines that the latest accepted schedule does not represent the conditions before the event, the accepted schedule must be updated to the day prior to the event.
      - 1) The Contractor shall consider and incorporate every effort to mitigate the potential delay by planning work-around approaches to the Work, where deemed effective.
      - 2) The TIA must also include an impacted schedule.
      - 3) The impacted schedule shall also include Contractor caused delays that affect the critical or near critical path and should be accounted for if they are concurrent with NYCHA caused delays at any time.
        - (a) After the impacted schedule is calculated, the difference between the scheduled completion dates of the two schedules will be the basis for granting of time extension of contract milestones affected.
- F. Reports
  - 1. REQUIRED REPORTS WITH BASELINE SCHEDULE AND MONTHLY UPDATES
    - a. Graphic Reports
      - 1) Detailed CPM Network with critical path highlighted, activities sorted by early start date organized by WBS.
      - 2) Summary Bar Chart.
      - 3) Critical Path Chart.
      - 4) Cash Flow Curves. The cumulative curve cash flow shall be produced from the schedule file and be printed on a tabloid size paper. The graph should depict monthly and Early and Late cumulative cost curves. Total costs are to be based on both early and late dates. Include the monthly summary and detailed number

- to two decimals. To-date actual shall equal previous months plus this period invoice.
- 5) Manpower Histogram. The histogram shall be produced from the schedule file and be printed on a tabloid size paper. The histogram should depict a weekly bar histogram and a cumulative curve.
- b. Tabular Reports
    - 1) Activity listing report showing all schedule activities.
    - 2) Milestone summary report listing all contractual and internal milestones.
    - 3) Cost report showing activity dollar value, value in place, and value for current period.
    - 4) Cash flow report showing monthly projection of expenditures.
    - 5) Resource report showing allocations by specific trade on each activity.
    - 6) Monthly change report to schedule (filtered report from P6).
    - 7) Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. The list shall be cumulative, showing materials previously reported plus items recently delivered. Include with the list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from the Project site.
    - 8) Field Condition Reports: Immediately upon discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.
  - c. Written Narrative Reports at Progress Meetings including:
    - 1) Critical Path.
    - 2) Description of work accomplished during the reporting period (monthly updates only).
    - 3) Discussion of any problems, current or anticipated delays with planned corrective measures to mitigate such delays.
    - 4) A list of major construction equipment planned for future use and the equipment actually used during the period (monthly updates only).
    - 5) A list of modifications made in the schedule (monthly updates only).
    - 6) Coordination of work with others and or other projects.
2. All reports may be submitted electronically in PDF format except as noted for provision of a paper printout.

### **3.05 DETAILED CONSTRUCTION SCHEDULE (CPM SCHEDULE)**

- A. No later than 21 calendar days following the Letter of Award the Contractor shall submit a detailed construction schedule for the entire project.
- B. The detailed construction schedule shall include:
  1. Cost and resources assigned at a summary level will be distributed among detail activities such that the total cumulative cost equals the contract value of the bid or area item summary.
  2. In the event there is a redistribution of cost, specific notice shall be provided by the Contractor.
- C. A minimum of 15 calendar days shall be allotted for NYCHA's review of each submittal.

### **3.06 SCHEDULE PROGRESS UPDATES**

- A. Progress Updates shall be prepared and submitted at least monthly with each monthly application for payment and with a status date reflecting the "as of date" of the application for payment.
  1. Each schedule update shall be accompanied with a narrative report.
  2. Each schedule update shall provide a current full size graphic schedule report showing at least the period prior to the data date through schedule completion.

- B. A "pencil copy" of the progress update shall be provided for review and approval BEFORE the preparation of the application for payment.
- C. In case of invoice rejection, related adjustments shall be made in the subsequent schedule update.

**3.07 SCHEDULE REVISIONS**

- A. In the event that the project update reflects a delay of more than 30 calendar days in meeting contract completion, the Contractor shall prepare and submit a plan to mitigate such delay (unless a claim of delay is made and approved).
- B. At any time the Contractor revises its work plan such that the schedule no longer reflects the approach to the Work remaining, a revised schedule shall be submitted. A summary and detailed report shall be provided on any such revisions.
- C. All Change Orders shall be included in the schedule. A revised schedule shall be issued in response to all executed Change Orders.

**3.08 DELAY CLAIMS**

- A. Within three work days of encountering an impact or the Contractor is directed to perform changed work that may warrant a time extension, the Contractor shall provide written notice of such a claimed delay.
- B. Upon determination of the extent and nature of delay the Contractor shall then prepare a Time Impact Analysis and submit a Time Extension Request.
- C. The issuance of a written change order shall be the only basis for revising a contract milestone.

**END OF SECTION**

**SECTION 01 33 00  
SUBMITTAL PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

**1.02 RELATED REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Section 01 20 00 - Payment Procedures: For submitting Applications for Payment and the schedule of values.
- C. Section 01 32 00 - Construction Progress Documentation: For submitting schedules and reports, including Contractor's construction schedule
- D. Section 01 35 23 - NYCHA Safety Requirements
- E. Section 01 43 39 - Mock-Ups and Sample Installations
- F. Section 01 77 00 - Close-Out Procedures: For submission of early close-out items.
- G. Section 01 78 39 – Project Records Documents
- H. Section 01 79 00 - Training: For submitting video recordings of demonstration of equipment and training of NYCHA personnel

**1.03 DEFINITIONS**

- A. Submittals: Written and graphic information and physical samples that require The NYCHA Designated Representative responsive action and are submittals indicated in individual Specification Sections as "action submittals." Submittals will be rejected for not complying with requirements for this Section.
- B. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

**1.04 GENERAL REQUIREMENT**

- A. A. All references to paper submissions shall be voided if Division 1 Section "Electronic Project Management" is included in the Division 1 Specifications. All paper copies shall be transmitted digitally per the Division 1 Section "Electronic Project Management" if included in these Division 1 Specifications.

**1.05 SUBMITTALS**

- A. Submittal Schedule: Within 21 days after letter of award, submit for NYCHA's approval of a schedule of submittals, arranged in chronological order. NYCHA Designated Representative will review proposed Submittal schedules for acceptance. Time frames are to be given in consecutive calendar days, not number of working days. Such schedules shall be submitted to NYCHA Designated Representative at or before the Project Pre-Construction conference. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by NYCHA's Designated Representative and additional time for handling and reviewing submittals required by those corrections

1. The General Contractor, as the Prime Contractor, shall gather, coordinate and submit all items required in all sections of this specification and to be submitted by his/her subcontractors. See other sections of this Specification for further submission requirements.
  2. Coordinate submittal schedule with list of subcontracts, the schedule of values, and the Contractor's construction schedule.
- B. Format: Arrange the following information in a tabular format:
1. Scheduled date for first submittal.
  2. Specification Section number and title.
  3. Submittal category: Action; informational.
  4. Name of subcontractor.
  5. Description of the Work covered.
  6. Scheduled date for Authority final release or approval.
  7. Scheduled date of fabrication.
  8. Scheduled dates for purchasing.
  9. CPM activity or event number requiring the material.
- C. Safety and hazardous material submittals and other guidelines
1. Hazardous Material Abatement Submissions: Means and methods submissions for hazardous materials abatement shall be submitted within 21 days of Letter of Award. See Technical Specifications for abatement.
  2. General Submissions, Long lead items, preparatory work items and other items specifically required for the Work to start, shall be submitted within 21 days of Letter of Award, and shall include, but not be limited to, the following:
    - a. Permits.
    - b. Project schedules, procedures, and phasing plan.
    - c. Site Safety Program
- D. SUBMITTAL ADMINISTRATIVE REQUIREMENTS
1. Designer of Record's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by the Designer of Record for the Contractor's use in preparing submittals. The Contractor will be required to sign a waiver for the release of the electronic digital data files of the Contract Drawings.
    - a. The Designer of Record will furnish the Contractor one (1) set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.
      - 1) Designer of Record makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
      - 2) Digital Drawing Software Program: The Contract Drawings are available in digital format as determined by NYCHA.
      - 3) Contractor shall execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement.
      - 4) Digital data drawing files will made available by the Designer of Record upon request.
    - b. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
      - 1) Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
      - 2) Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
      - 3) Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

- 4) Coordinate transmittal of different types of submittals for related parts of the Work so that processing will not be delayed because of the need to review submittals concurrently for coordination.
  - (a) All registered submittals must be submitted as one package. The NYCHA Designated Representative reserves the right to withhold action on a submittal that requires coordination with other submittals until the related submittals are received.
- 5) Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on The NYCHA Designated Representative receipt of the submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough time in advance of the Work to permit processing, including resubmittals.
  - (a) Initial Review: Allow 15 work days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. The NYCHA Designated Representative will advise the Contractor when a submittal being processed must be delayed for coordination.
  - (b) Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  - (c) Resubmittal Review: Allow 15 work days for review of each resubmittal.
  - (d) Contractor is liable for payment and cost of any other (after 3) additional reviews of the same submittal.
- 6) Submittals: Place a permanent label or title block on each submittal item for identification.
  - (a) Indicate name of firm or entity that prepared each submittal on label or title block.
  - (b) Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record the Contractor's review and approval markings and action taken by The NYCHA Designated Representative.
  - (c) Include the following information for processing and recording action taken. All submissions shall be tendered complete, at one time in a single package labeled with the following clearly displayed:
    - (1) Project name
    - (2) Date
    - (3) Name of Designer of Record
    - (4) Name of the NYCHA Designate Representative
    - (5) Name of Contractor
    - (6) Reviewed and complies with contract and site conditions
    - (7) NYCHA Project Number
    - (8) NYCHA Contact Number
    - (9) Name of subcontractor
    - (10) Name of supplier
    - (11) Name of manufacturer
    - (12) Submittal number or other unique identifier, including revision identifier
    - (13) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
    - (14) Number and title of appropriate Specification Section.
    - (15) Drawing number and detail references, as appropriate.
    - (16) Location(s) where product is to be installed, as appropriate.
    - (17) Description of item.
- 7) Submissions tendered without the above labeled information, or partial submissions, will not be accepted. The control number shall be clearly written on the upper right hand corner of each catalog cut, incorporated into the title



- block of all shop drawings, included on all transmittals, and on identifying labels affixed to all samples. Items not submitted in this format will be rejected without review. Submit all shop drawings, samples and product data from each specification section at the same time for comparison.
- 8) Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. The NYCHA Designated Representative will return, without discarding, submittals received from sources other than the Contractor.
  - 9) Transmittal Form for Submittals: Provide locations on form for the following information:
    - (a) Project name.
    - (b) Date.
    - (c) Destination (To:).
    - (d) Source (From:).
    - (e) Name and address of Designer of Record.
    - (f) Name of The NYCHA Designated Representative.
    - (g) Name of Contractor.
    - (h) Name of firm or entity that prepared submittal.
    - (i) Names of subcontractor, manufacturer, and supplier.
    - (j) Category and type of submittal.
    - (k) Submittal purpose and description.
    - (l) Specification Section number and title.
    - (m) Specification paragraph number or drawing designation and generic name for each of multiple items.
    - (n) Drawing number and detail references, as appropriate.
    - (o) Indication of full or partial submittal.
    - (p) Transmittal number, numbered consecutively.
    - (q) Submittal and transmittal distribution record.
    - (r) Remarks.
    - (s) Signature of transmitter.
  10. Options / Selection: Identify options requiring selection by NYCHA.
  11. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by The NYCHA Designated Representative on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include the same identification information as that on the related submittal.
  12. Submissions returned for corrections shall be resubmitted with the required corrections made within three consecutive calendar days, calculated from the date of receipt of the returned submission(s) by the Contractor. The procedure shall be repeated as many times as required until initial final submissions are obtained that require no further correction.
  13. Rejected submissions shall be resubmitted within ten consecutive calendar days, calculated from the date of receipt of the returned submission(s) by the Contractor. The procedure shall be limited to three times otherwise the contractor will be liable for costs associated with additional reviews and submission.
  14. Resubmittals: Make resubmittals in same form and include the same number of copies as the initial submittal.
    - 1) Note date and content of previous submittal.
    - 2) Note date and content of revision in label or title block and clearly indicate extent of revision.
    - 3) Resubmit submittals until they are marked with approval notation from NYCHA Representative.

15. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
16. Use for Construction: Retain complete copies of approved submittals at the Project site. Use only action submittals that are marked with approval notation from The NYCHA designated representative action stamp.
17. The Contractor shall be responsible for strict adherence to approved schedules unless a written request for deviation from the schedule is made to The NYCHA designated representative. The request shall not be valid until approved.
18. No work shall be fabricated, or materials delivered to the site, until final approval of all shop drawing(s) and other required submissions for that work have been obtained.

#### **1.06 SUBMITTAL PROCEDURES**

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
  1. Submittals: Submit electronic copies of each submittal unless otherwise indicated. The NYCHA Designated Representative will return electronically.
  2. Certificates and Certifications Submittals: Provide a statement that includes the signature of the entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
    - a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  1. If information must be specially prepared for submittal because standard published data is not suitable for use, submit as Shop Drawings, not as Product Data.
  2. Mark each copy of each submittal to show which products and options are applicable.
  3. Include the following information, as applicable:
    - a. Manufacturer's catalog cuts.
    - b. Manufacturer's product specifications.
    - c. Standard color charts.
    - d. Statement of compliance with specified referenced standards.
    - e. Testing by recognized testing agency.
    - f. Application of testing agency labels and seals.
    - g. Notation of coordination requirements.
    - h. Availability and delivery time information.
  4. For equipment, include the following in addition to the above, as applicable:
    - a. Printed performance curves.
    - b. Operational range diagrams.
    - c. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
  5. Submit Product Data before or concurrent with Samples.
  6. Submit Product Data in the following format:
    - a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data. Digital media of the Contract Drawings maybe released to the Contractor, after the Contractor signs the "Release and Indemnification" Form.
  1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

- a. Identification of products.
  - b. Schedules.
  - c. Compliance with specified standards.
  - d. Notation of coordination requirements.
  - e. Notation of dimensions established by field measurement.
  - f. Relationship and attachment to adjoining construction clearly indicated.
  - g. Seal and signature of professional engineer if specified.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 11 by 17 inches but no larger than 30 by 42 inches (750 by 1067 mm).
  3. Submit Shop Drawings in the following format:
    - a. PDF electronic file.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed. All physical samples shall be in their original Manufacturer's containers, wrappings, etc., and shall be labeled with the information described above. Unless otherwise specified in the Contract, all samples shall be returned to contractor. The NYCHA Designated Representative will determine which samples will be kept on site and which shall be returned.
1. Transmit Samples that contain multiple, related components (such as accessories) together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of applicable Specification Section.
    - e. Specification paragraph number and generic name of each item.
  3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
  4. Disposition: Maintain sets of approved Samples at the Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at the time of use.
    - b. Samples not incorporated into the Work, or otherwise designated as the Owner's property, are the property of the Contractor.
  5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit three full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. The NYCHA Designated Representative will return one submittal with options selected.
  6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in the manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
    - a. Number of Samples: Submit three sets of Samples. The NYCHA Designated Representative will retain one (1) Sample set; the remainder will be returned.

- 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
  - 2) If variation in color, pattern, texture, or other characteristic is inherent in the material or product represented by a Sample, submit at least three sets of paired units that show the approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating the types of products required for the Work and their intended installation location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by the Contractor if none is indicated.
  2. Manufacturer and product name, and model number if applicable.
  3. Location of installation.
  4. Submit product schedule in electronic PDF format.
- F. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
- G. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."
- H. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Designer of Records and owners, and other information specified.
- I. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- J. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- K. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- L. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- M. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- N. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- O. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

#### **1.07 DELEGATED-DESIGN SERVICES**

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of the Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria as

indicated from a New York State Licensed Engineer, Designer of Record, or Surveyor. The New York State Licensed Engineer, Designer of Record, or Surveyor shall sign and seal the submissions.

- B. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Designer of Record.
- C. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and three (3) paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to the Contractor to be designed or certified by a design professional.
  - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

**3.01 CONTRACTOR'S REVIEW**

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to The NYCHA Designated Representative.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Division 01 Section "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of the Contractor's approval, and statement certifying that the submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

**3.02 DESIGNER OF RECORD AND AUTHORITY REPRESENTATIVE ACTION**

- A. Action Submittals: The NYCHA Designated Representative will review each submittal, make marks to indicate corrections or revisions required, and return it. Designer of Record will stamp each submittal with an action stamp and will mark the stamp appropriately to indicate action, as follows:
  - 1. APPROVED - The content of this submittal has been reviewed and been found to be in general compliance with the Contract Documents. No further submission of this submittal is required and the information contained in the submittal may be built into the Work in accordance with the terms and conditions of the Contract Documents.
  - 2. APPROVED AS NOTED - The content of this submittal has been reviewed and has been found to be in general compliance with the Contract Documents. No further submission of this submittal is required and the information contained in the submittal, including review notes, may be built into the Work in accordance with the terms and conditions of the Contract Documents.
  - 3. CORRECT AND RESUBMIT - The content of this submittal has been reviewed by NYCHA and this review has indicated that additional data and/or modifications to the submitted data or other changes are required to bring the Work represented in this submittal into compliance with the Contract Documents. This submittal shall be reviewed and remarked in accordance with the comments, by the Contractor, and resubmitted for another review. The information contained in the resubmittal shall not be incorporated into the Work until the resubmittal is returned to the Contractor with an "APPROVED" or "APPROVED AS NOTED" stamp.
  - 4. REJECTED - The content of this submittal has been reviewed and this review has indicated that the Work displayed in the submittal is not in compliance with the Contract

Documents. The Contractor shall submit another submittal for this portion of the Work, which complies with the Contract Documents.

5. Informational Submittals: The NYCHA Designated Representative will review each submittal and will not return it, or will return it if it does not comply with requirements. The NYCHA Designated Representative will forward each submittal to the appropriate party.
- B. Partial submittals prepared for a portion of the Work will be reviewed when the use of partial submittals has received prior approval from The NYCHA Designated Representative.
- C. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- D. Submittals not required by the Contract Documents may be returned by The NYCHA Designated Representative without action.

### **3.03 REVIEW AND DISTRIBUTION OF SUBMISSIONS**

- A. The NYCHA Designated Representative shall review the submissions for compliance with the Contract Documents and send for final review and approval to the Designer of Record producing these Contract Documents.
- B. The Designer of Record Firm who prepared these contract documents.

### **3.04 LOCATIONS**

- A. Submissions and/or transmittals are to be delivered to The NYCHA Designated Representative.

### **3.05 DISTRIBUTION OF SUBMISSIONS-PRODUCT DATA, SAMPLES AND SHOP DRAWINGS**

- A. Distribution of Submissions
  1. The Contractor shall submit product data, samples and shop drawings to The CM.
  2. After reviewing the submissions for completeness and compliance with specifications The NYCHA Designated Representative shall send items which are ready for final review and approval by the Designer of Record.
- B. Disapprovals
  1. The Designer of Record will review and return electronically individual disapproved submissions to NYCHA's Designated Representative. The NYCHA Designated Representative will return electronically disapproved submission to the Contractor directly.
  2. In the event that all or any portion of the submitted material is rejected by the reviewer, the Contractor shall resubmit new submissions conforming to the Reviewer's comments within ten (10) CCDs, dated from the Contractor's receipt for the former submissions.
- C. Approvals
  1. If submissions have been accepted and approved, the Reviewer will affix their approval stamp to each submission and transmit the entire package to the CMA team for processing and distribution as described below:
    - a. Product Data: electronically distributed as follows:
      - 1) Contractor
        - (a) CMA
        - (b) A/E
        - (c) NYCHA's PM
        - (d) NYCHA's Design Group
    - b. Shop Drawings: electronically distributed as follows;
      - 1) Contractor
        - (a) CMA
        - (b) A/E
        - (c) NYCHA's PM
        - (d) NYCHA's Design Group
    - c. Samples: a total of three (3) samples, distributed as follows:
      - 1) One (1) sample to NYCHA's PM;

- 2) One (1) sample to the Contractor;
- 3) One (1) sample to the CMA

### 3.06 SUBMISSION REQUIREMENTS, GENERAL

- A. The Contractor's submissions shall be accompanied with a dated transmittal letter, indicating the contract number, development name, applicable specifications section number, and the Submissions Control number from the submissions list below. Submittals not accompanied by a clear transmittal will not be accepted.
- B. The Contractor shall be responsible for the delivery of all submissions under the respective contract.
- C. The Contractor shall check all submittals for accuracy, completeness, dimensions, clearances, connections, accessibility, servicing, maintenance, and compliance with the Contract Documents, including changes by addenda, change orders, and coordination drawings of related trades. In addition, the Contractor shall verify all field measurements and conditions. Submissions shall bear the Contractor's stamp of approval as evidence that they have been checked by him or her. The Contractor shall then transmit the submission(s) for review. Submissions that do not fully comply with these requirements will not be accepted.
- D. Duplication or tracing of contract drawing details will not be accepted and will be rejected without comment or notation. Shop drawings prepared by a fabricator are a contract requirement and the fabricator shall be obligated to the Contractor as to the accuracy of all work. All costs incurred to meet this requirement shall be borne by the Contractor and shall be included in the base bid.
- E. All shop drawings prepared by the fabricator shall be based on field dimensions taken by the fabricator.
- F. Contract Drawings submitted as shop drawings WILL NOT BE ACCEPTED. The shop drawing(s) shall show in detail all components, finishes, fabrication and installation methods, relationships to adjoining work on shop drawing(s), sizes, dimensions, sections, gauges, connections and anchors. Include on each sheet information as to vendor's name, drawing(s) number, date drawn, revision number and revision date.
- G. The items listed in the Contractor's submissions list do not limit the Contractor's responsibility from submitting Shop Drawings, Product Data or Samples for all equipment, accessories and operations that are to be provided under this contract. There will be no adjustment to the contract price to compensate the Contractor for submissions requested by The NYCHA Designated Representative which are not specifically listed.
- H. Except as otherwise specifically provided in the Contract Documents, The NYCHA Designated Representative reserves the right to reject any materials, equipment or articles proposed for use by the Contractor with which The NYCHA Designated Representative has had no prior experience, unless the Contractor is able to prove to the satisfaction of The NYCHA designated representative that such materials, equipment or articles have been in general use and given satisfactory performance for a minimum of one year. The Contractor shall furnish The NYCHA Designated Representative with a list of such locations, and The NYCHA Designated Representative shall conduct such investigation as will, in their sole judgment, satisfactory as to the fitness of the materials, equipment or articles for the Work intended.
- I. All substitutes requested by the Contractor shall be supported by comparison sheets for both the specified item and the proposed substitution, showing all necessary equivalent information for both. Submissions including only information on the proposed substitution will not be accepted.
- J. All items of related equipment in a system shall be the product of one manufacturer, and shall be submitted together at one time, unless otherwise noted in the schedule. The submissions for a system shall consist of original catalog cuts accompanied by an enclosed table of contents. This table of contents shall contain a list of all equipment proposed to be used, listing

the manufacturer's name, trade name, catalog number or other positive means of identification for each item.

- K. For those items required to comply with referenced standards (ASTM, FEDERAL SPECS, ANSI, etc.), certifications from the manufacturer of such compliance shall be submitted. Corresponding equipment in each system shall be the product of one manufacturer. The term "w/certification" also refers to the submittal of any and all certified mill or laboratory test reports indicating that the material submitted complies with the requirements specified and is intended generally for the applications shown.
- L. Where physical samples are required, three (3) samples shall be submitted for each item except in the case of finishes (flooring, paint, exposed masonry, paving, etc.), in which four (4) samples shall be submitted.
- M. Deviations from Contract Documents shall be clearly marked in a conspicuous manner, indicating component and system variations, additions and deletions, revised equipment locations, construction detail variations, substitutions and similar changes or deviations. Include a written description of the reason for the deviation. Indicate headroom heights, ceiling heights, clearances, and other dimensions affected by the proposed deviations. All variations from the Contract Documents not brought to the attention of the Designer of Record or Consultants shall be the sole responsibility of the Contractor even though such submittal has been accepted.
- N. Contractor's responsibility: NYCHA Representative review and acceptance shall not relieve the Contractor from responsibility for errors in shop drawings or for proper coordination and assembly of materials and equipment with other work; nor from the responsibility of furnishing materials and labor not indicated on the shop drawings, but required by the Contract Documents for completion of the Work.
- O. Equivalent Quality of Materials: All materials and equipment which are designated in the Specifications by a number in the trade name are designated for the purpose of describing the article and fixing the standard of the quality and finish. Materials and equipment which are, in the opinion of NYCHA, the equivalent to that specified, will be accepted.
- P. No work shall be fabricated, or materials delivered to the site, until final approval of all shop drawing(s) and other required submissions for that Work has been obtained. Final approved copies of all shop drawing(s) must be completed without added corrections, notes or comments, in pencil or ink on the white prints or blueprints. At the time of submission, the Contractor shall call to the attention of NYCHA, in writing, any deviations from the Contract Documents contained on the Shop Drawing(s). The approval of the Drawing(s) containing deviations not specifically brought to the attention of The NYCHA Designated Representative, or containing errors or omissions of any sort, shall not relieve the Contractor of the responsibility for executing the Work in accordance with the Contract Documents.
- Q. In submittals requiring manufacturer's literature, provide complete installation instructions for specified product and any associated miscellaneous material required to complete installation.
- R. The submission of any material, or article, as equal of the materials or articles set forth in the specifications as a standard shall be accompanied by illustrations and drawings. This includes descriptions, catalogs, records of tests, samples and any other information for both the specified item and the potential substitute item essential for judging, the quality and the materials, finish and durability of that specified as standard, as well as information indicating satisfactory use under similar operating conditions.
- S. Identify each submission by the Submission Control Number assigned on the Submission List. The control number shall be clearly written on the upper right hand corner of each catalog cut, incorporated into the title block of all shop drawings, included on all transmittals, and on identifying labels affixed to all samples. Items not submitted in this format will be rejected without review.
- T. In the event that all or any portion of a submission is rejected due to nonconformance with NYCHA's packaging and labeling requirements, or for any other reason, the Contractor shall



tender a new submission conforming to The NYCHA Designated Representative requirements within three (3) consecutive calendar days, calculated from the submission's rejection date. In no event shall a Contractor be permitted to tender submissions beyond the dates contained in the approved Submissions schedule without written approval from The NYCHA Designated Representative.

- U. Disapproved submissions are to be returned to the Contractor directly; and the Contractor shall submit copies of the transmittals only to The NYCHA Designated Representative.
- V. RECORD AND AS-BUILT DRAWINGS: The Contractor shall maintain at the site for The NYCHA Designated Representative, one (1) copy of all Drawings, Specifications, Addenda, shop drawings, authorized Change Orders and other modifications, in good order and marked to record all changes made during construction. These shall be available at all times to The NYCHA Designated Representative / NYCHA's Project Administrator. The Drawings and Specifications, marked to record all changes made during construction shall be delivered to NYCHA's Project Administrator upon completion of the Work.

**3.07 LIST OF SUBMISSIONS**

- A. Furnish Data Sheet, Shop Drawings and Sample Submittals required to provide all work and associated items as per Submittals section 01 33 00 whenever else shown on Contract Drawings and Specification. Submittals shall include but not be limited to the following items:

<b>ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION SUBMISSIONS LIST</b>	
Contract #:	Development: Citywide
Contractor Name:	
Address:	
Phone:	
Fax:	

CSI Number	NYCHA Control Number	Item Description	Sample	Literature	Shop Drawing	Calculations
<b>Division 01 – General Requirements</b>						
01 20 00	012000-01	Schedule of Values		X		
01 25 00	012500-01	Substitution Requests		X		
01 26 00	012600-01	Potential Change Order Requests		X		
01 31 00	013100-01	Sub-contractor List		X		
	013100-02	List of Key Personal		X		

CSI Number	NYCHA Control Number	Item Description	Sample	Literature	Shop Drawing	Calculations
01 32 00	013200-01	Daily Construction Reports		X		
	013200-02	Special Reports		X		
	013200-03	Progress Photographs		X		
01 32 13	013213-01	Scheduler Resume		X		
	013213-02	Format for Submittals		X		
	013213-03	Detailed Construction Schedule		X		
	013213-04	Monthly Schedule Updates		X		
	013213-05	Schedule Narrative		X		
	013213-06	CPM Reports		X		
	013213-07	Construction Schedule Updating Reports		X		
	013213-08	Daily Construction Reports		X		
	013213-09	Two Week Look Ahead Schedule		X		
	013213-10	Material Location Reports		X		
	013213-11	Field Condition Reports		X		
	013213-12	Qualification Data		X		
01 33 00	013300-01	Submittal Schedule		X		
01 35 23	013523-01	Tenant Protection Plan		X	X	
	013523-02	Site-Specific Safety Plan		X	X	
	013523-03	Confined Space Safety Procedure		X		
	013523-04	Site Safety Orientation Briefing		X		
	013523-05	Records of Tool Box Safety Talks		X		
	013523-06	Job Hazard Analysis / JHA		X		
	013523-07	Competent Person Listings		X		
	013523-08	Incident Reports / Workmen's Compensation Forms		X		

CSI Number	NYCHA Control Number	Item Description	Sample	Literature	Shop Drawing	Calculations
01 35 53	013553-01	Security Program		X		
01 40 00	014000-01	Plumbing License		X		
	014000-02	Electrical License		X		
01 41 00	014100-01	Work Permits and Certificates		X		
01 45 00	014500-01	QC Plan		X		
01 54 23	015423-01	Scaffolding			X	X
	015423-02	Pipe Scaffolding			X	X
	015423-03	Hoisting and Scaffolding			X	X
01 56 00	015600-01	Dust Control Procedure		X		
01 58 13	015813-01	Shop Drawing for Temporary Signage			X	
01 74 19	017419-01	Action Submittals		X		
	017419-02	Waste Management Plan		X		
	017419-03	Final Construction Waste Management Plan		X		
	017419-04	Waste Reduction Progress Reports		X		
	017419-05	Waste Reduction Calculations				X
01 77 00	017700-01	As-built and Record Drawings			X	
01 78 39	017839-01	Record Drawings		X	X	
	017839-02	Record Specifications		X		
	017839-03	Record Product Data		X		
	017839-04	Miscellaneous Record Submittals		X		
	017839-05	Weekly Reports		X		
01 79 00	017900-01	Training Plans		X		
	017900-02	Training Manuals		X		
	017900-03	Training Reports		X		
	017900-04	Demonstration and Training DVD		X		

CSI Number	NYCHA Control Number	Item Description	Sample	Literature	Shop Drawing	Calculations
<b>Division 02 – Existing Conditions / Sidewalk Shed</b>						
02 41 19	024119-01	Qualification Data		X		
	024119-02	Schedule of Selective Demolition Activities		X		
	024119-03	Inventory		X		
	024119-04	Pre-Demolition Photographs		X		
02 82 14	028214-01	Detailed Asbestos Work Plan		X	X	
	028214-02	Asbestos Removal Foam		X		
	028214-03	Asbestos Removal Encapsulant		X		
	028214-04	Asbestos Removal Wetting Agent		X		
	028214-05	Copies of Filings and Certifications		X		
02 83 19	028319-01	Paint Remover		X		
	028319-02	Safety Data Sheets		X		
	028319-03	Description of Removal Method		X	X	
	028319-04	Copies of Current Staff Certification		X	X	
	028319-05	Three Previous Similar Jobs Performed		X	X	
	028319-06	Hazardous Communication Program		X	X	
	028319-07	Firm Conducting Exposure Monitoring and Laboratory providing Analytical Services		X	X	
	028319-08	Written Respiratory Program		X	X	
	028319-09	Chain-of-Command and Responsibilities		X	X	
	028319-10	Power/Mechanical Equipment		X	X	
	028319-11	Occupancy Protection Plan		X	X	
	028319-12	Manifests and Receipts Acknowledging Disposal of Hazardous and Non-Hazardous Waste Material		X	X	
02 90 00	029000-01	Sidewalk Shed Framing Plan			X	X
	029000-02	Beam Clamps			X	X

CSI Number	NYCHA Control Number	Item Description	Sample	Literature	Shop Drawing	Calculations
02 91 00	029100-01	Temporary Fencing Drawings		X	X	
<b>Division 03 – Concrete</b>						
03 01 00	030100-01	Samples for Injection Ports	X			
	030100-02	Manufacturer Approved Installer Credentials		X		
	030100-03	Pre-construction Test Reports		X		
	030100-04	Field Quality Control Test Reports		X		
	030100-05	Warranty Prerequisites		X		
	030100-06	Bonding Agent	X	X		
	030100-07	Corrosion Resistant Rebar Coating	X	X		
	030100-08	Curing Agent	X	X		
	030100-09	Modified Repair Mortar	X	X		
	030100-10	Patching Mortar	X	X		
03 30 00	033000-01	Concrete Design Mix		X		
	033000-02	Special Inspection Reports		X		
	033000-03	Field Quality Control Test Reports		X		
	033000-04	Shop Drawings for Reinforcement			X	
	033000-05	Welded Wire Fabric	X	X		
	033000-06	Shop Drawings for Formwork			X	
03 45 00	034500-01	Precast Architectural Concrete Coping / Cap	X	X	X	
	034500-02	Pre-construction Test reports		X		
	034500-03	Certification of Concrete Repair		X		
<b>Division 04 – Masonry</b>						
04 01 20	040120-01	Brick (Masonry Unit)	X	X		
	040120-02	CMU	X	X		
	040120-03	Epoxy Grout	X	X		

CSI Number	NYCHA Control Number	Item Description	Sample	Literature	Shop Drawing	Calculations
	040120-04	Mortar Dropping Control Device	X	X		
	040120-05	Weep Slot	X	X		
	040120-06	Weep Tube	X	X		
	040120-07	Weep Vent	X	X		
	040120-08	Grout	X	X		
	040120-09	Special Inspection Reports		X		
	040120-10	Product Test Reports		X		
04 01 30	040130-01	Terra Cotta Coping	X	X	X	
	040130-02	Special Inspection Reports		X		
	040130-03	Manufacture Approved Installer Credentials		X		
	040130-04	Sample Warranty		X		
04 05 13	040513-01	Mortar: ASTM C270 Type N	X	X		
	040513-02	Special Inspection Reports		X		
	040513-03	Field Quality Control Test Reports		X		
04 05 19	040519-01	Stainless Steel Threaded Rod	X	X		
	040519-02	Stainless Steel Pins	X	X		
	040519-03	Adhesive Anchors	X	X		
	040519-04	Deformed Steel Reinforcing Bar	X	X		
	040519-05	Dowel	X	X		
	040519-06	Epoxy Adhesive	X	X		
	040519-07	Expansion Anchor	X	X		
	040519-08	Eye Bolt	X	X		
	040519-09	Horizontal Joint Reinforcement	X	X	X	
	040519-10	Veneer Anchor	X	X		
	040519-11	Wedge Anchor	X	X		

CSI Number	NYCHA Control Number	Item Description	Sample	Literature	Shop Drawing	Calculations
	040519-12	Pre-construction Test Reports		X		
	040519-13	Certificates		X		
04 42 00	044200-01	Slate	X	X	X	
	044200-02	Pre-Construction Test Reports		X		
	044200-03	Field Quality Control Test Reports		X		
<b>Division 05 – Metals</b>						
05 12 00	051200-01	Diverter Box		X	X	
	051200-02	Shoring Angle		X	X	
	051200-03	Steel Channel		X	X	
	051200-04	Steel Diamond Plate Tread		X	X	
	051200-05	Steel Plate		X	X	
	051200-06	Steel Railing Pipe		X	X	
	051200-07	Steel Tube		X	X	
	051200-08	Special Inspection Test Reports		X		
05 52 00	055200-01	Railing System Fabrication and Assemblies			X	X
	055200-02	Railing Extension		X	X	X
	055200-03	Field Quality Control Test Reports		X		
	055200-04	Manufacturer Approved Installer Credentials		X		
<b>Division 06 – Rough Carpentry</b>						
06 10 00	061000-01	Exterior Grade Plywood	X	X	X	
	061000-02	Pressure Treated Wood	X	X	X	
	061000-03	Tongue-and-Groove Wood Board Sheathing	X	X	X	
	061000-04	Wood Blocking	X	X	X	
	061000-05	Wood Screws	X	X		X
	061000-06	Technical Data, Material Safety Data Sheets and		X		

CSI Number	NYCHA Control Number	Item Description	Sample	Literature	Shop Drawing	Calculations
		Installation Instructions				
<b>Division 07 – Thermal and Moisture Protection (Roofing)</b>						
07 56 00	075600-01	Backer Rod	X	X		
	075600-02	Base Sheet	X	X		
	075600-03	Cover Board	X	X		
	075600-04	High Density Wood Fiber Board	X	X		
	075600-05	High Thermal Foam Board Tapered Insulation	X	X	X	
	075600-06	Liquid Applied Membrane		X		
	075600-07	Patching Compound		X		
	075600-08	Primer		X		
	075600-09	Protective Coating	X	X		
	075600-10	SBS Base Sheet		X		
	075600-11	Substrate Primer		X		
	075600-12	Surfacing	X	X		
	075600-13	Vapor Barrier	X	X		
	075600-14	Waterstop	X	X		
	075600-15	Membrane System Product Data		X		
	075600-16	Manufacturer and Applicator Warranties		X		
	075600-17	Material Safety Data Sheets		X		
	075600-18	FM / UL Testing Data		X		
	075600-19	CRRC Report Data		X		
07 62 00	076200-01	Adhesive Membrane	X	X		
	076200-02	Batt Insulation	X	X		
	076200-03	Composite Fabric Flashing	X	X		
	076200-04	Door Saddle		X	X	



CSI Number	NYCHA Control Number	Item Description	Sample	Literature	Shop Drawing	Calculations
	076200-05	Drip Edge	X	X		
	076200-06	Stainless Steel Fastener	X	X		
	076200-07	Insulation		X	X	
	076200-08	Interlocking Stainless Steel Flashing	X	X		
	076200-09	Lead Wedges	X	X		
	076200-10	Metal Clip	X	X		
	076200-11	Modified Bitumen Fabric Flashing	X	X		
	076200-12	Pop Rivet	X	X		
	076200-13	Pre-formed Sheet Metal Flashing	X	X		
	076200-14	Premanufactured Expansion Joint Flashing	X	X		
	076200-15	Termination Bar	X	X		
	076200-16	Utility Mastic	X	X		
	076200-17	Weather Jacket	X	X		
	076200-18	Wedge Anchors	X	X		
	076200-19	Certification letter with analysis for each building that their proposed FM-90 roofing assembly will resist the min. uplift.		X		
	076200-20	Fabricator Qualifications		X		
07 71 13	077113-01	Fabricator Qualifications		X		
	077113-02	Anodized Aluminum Sill Cap		X		
	077113-03	Continuous Cleat		X		
	077113-04	Edge Flashing		X		
07 92 00	079200-01	Compatibility and Adhesion Test Reports		X		
	079200-02	Field Adhesion Testing		X		
	079200-03	Joint Sealant Installation Log		X		
	079200-04	Warranty Prerequisites		X		

CSI Number	NYCHA Control Number	Item Description	Sample	Literature	Shop Drawing	Calculations
	079200-05	Sealant: NT(NS)	X	X		
	079200-06	Backer Rod	X	X		
	079200-07	Bond Breaker Tape	X	X		
	079200-08	Cleaner		X		
	079200-09	Masking Tape	X	X		
	079200-10	Pre-compressed Expansion Joint	X	X		
	079200-11	Primer		X		
	079200-12	Self-leveling Sealant	X	X		
<b>Division 08 – Openings</b>						
08 11 13	081113-01	Steel Door Frame	X	X	X	X
08 51 00	085100-01	Steel Frame		X	X	X
08 91 19	089119-01	Aluminum Louver		X		
<b>Division 09 – Coating</b>						
09 97 13	099713-01	Steel Coating: 3EN	X	X		
	099713-02	Steel Coating: 3ER	X	X		
<b>Division 22 – Plumbing</b>						
22 14 26	221426-01	Conductor Head		X	X	
	221426-02	Integral Fascia Sump Scupper		X	X	
	221426-03	Leader		X	X	
	221426-04	Roof Drain (16in Dia.) – Replacement Drain		X	X	
	221426-05	Roof Drain - Retrofit		X	X	
	221426-06	Scupper Drain Grate		X	X	
	221426-07	Splash Block		X	X	
	221426-08	Straps		X	X	

**END OF SECTION**

**1.13 SECTION 01 35 23 – OWNER SAFETY REQUIREMENTS**

**A. PART 1 – GENERAL**

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

**B. SUMMARY**

Section Includes:

- I. GENERAL SAFETY
  - a. SAFETY SUBMITTALS.
  - b. SAFETY MEETINGS
  - c. SAFETY AND FACILITIES CONTROLS
  - d. CORRECTIONS OF SAFETY DEFICIENCIES
  - e. PERMITS AND AUTHORIZATIONS
- II. GENERAL SECURITY
- III. APPENDIX A: SITE-SPECIFIC SAFETY PROGRAM TEMPLATE.

**I. GENERAL SAFETY**

1. The Contractor shall establish and implement a Site Safety Program to ensure protection of persons and property on the Site and surrounding areas. Contractor shall submit electronically the Site-specific Safety Program (SSP) for NYCHA Construction Safety & Quality Department (CSQ) approval no later than 21 calendar days after issuance of the Letter of Award. No contract work shall be performed in the absence of a CSQ approved SSP. A proposed template for the SSP is included in Appendix A at the end of this section to be used by the Contractor as a minimum requirement.
2. The Contractor shall be responsible for ensuring that all construction operations are performed in a safe and lawful manner, in full conformance with the NYC Building Code (NYC BC), the requirements of the Fire Department of New York City (FDNY), OSHA regulations, and all other Local, State, and Federal Regulatory Agencies and all regulations defined in the CSQ approved SSP (unless otherwise instructed in writing by NYCHA Program Manager), as well as accepted industry standards for worker and public safety. The Contractor shall conduct all work so as to provide complete safety to workers and the public and to provide access to buildings at all times.
3. Site Safety Manager/Coordinator/Qualified Person: The qualifications of the individual will be dependent on whether the size and nature of the project meet the thresholds established in Sections 3301.3 and 3310 of the NYC Building Code.
4. It shall be the responsibility of the contractor to designate a certified Site Safety Manager or Coordinator as per requirements of New York City Building Code. The Site Safety Manager or Coordinator must be present without exception at all times at NYCHA construction site and to ensure contract adherence to the NCYHA CSQ approved Site SSP (see template in Appendix A).

Where the New York City Building Code does not require Safety personnel, the Contractor shall provide a dedicated full-time Qualified Safety Representative. The Site Safety Representative must be present without exception at all times at NYCHA construction site and must ensure contract adherence to the NYCHA CSQ approved Site SSP (see template in Appendix A).

The Qualified Safety Representative will be responsible for safety only; he/she shall be not involved in any other construction related activities on the job site, and shall have successfully completed:

- a. Site Safety Manager 40-hr course and 7-hour Refresher every three years thereafter from a Department of buildings (DOB) approved vendor.
  - b. 32-hour Supported Scaffold Erector course and 8-hour refresher every four years thereafter from a DOB approved vendor.
  - c. 32-hour Suspended Scaffold Supervisor course and 8-hr refresher every four years thereafter from a DOB approved vendor.
  - d. 30-hr OSHA Construction Safety course from a Department of Labor approved vendor within the last five (5) calendar years.
  - e. 5 years of Construction Site Safety experience.
5. NYCHA Field Team Role: the NYCHA field team, which may include a consultant as the Construction Manager, will monitor the Contractor's safety performance, and will periodically conduct inspections to ensure that Work is done in accordance with all requirements, including the Contractor's NYCHA CSQ approved Site Safety Program. The NYCHA field team will not be responsible for the Contractor's means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work of the Contractor, since these are solely the Contractor's responsibility. The NYCHA field team reserves the right to implement an immediate stop work order or require immediate corrective action in the event of an unsafe work condition. NYCHA also reserves the right to direct the removal or suspension of any worker or supervisor who demonstrates an inability to work safely within the rules and procedures established, as detailed in these specifications.
6. Competent Person designation: define by name Site Safety competent persons for Prime and Subs (e.g., for scaffolding, for hot work, for confined space, for lock-out/tag-out, asbestos abatement, installation and dismantling of SWS etc.) along with a short description of why the individual is deemed competent. Anyone designated as a Site Safety Competent Person must hold an OSHA 30-Hour Card in Construction Standards (CFR 1926).
7. Site Safety Orientation: develop a Site Safety Orientation briefing. The briefing should be designed to take approximately 15 to 20 minutes, and include a basic project description, clearly lay out safety expectations (e.g., PPE, Fall Protection, Housekeeping, Accident Reporting), explain the emergency evacuation plan, identify key personnel including Site Safety Representative, explain the consequences for failure to follow safety policies, etc. Prior to being allowed on site all personnel, including administrative staff, must attend the site safety orientation. At the completion of orientation each individual must receive a uniquely numbered hard hat sticker indicating they have successfully completed orientation. As part of the indoctrination brief, copies of individual's Safety Certifications (e.g., OSHA 10-hour card) must be made and kept on file. As per prevailing wage rate law, NY State Labor Law §220, section 220-h, every worker employed in the performance of

a public work contract shall be certified as having completed an OSHA (Occupational Safety and Health Administration) 10-hour Construction Safety and Health Course. A sign off sheet must also be completed, acknowledging that the individual has been through the orientation.

8. PPE requirements: 100% wear of ANSI Approved hardhats, appropriate construction footwear (a minimum 6" high, with steel or composite toe), safety glasses, reflective vests, long trousers and sleeves with a minimum of 4" half-length sleeves. The requirement will be mandatory whenever inside of project boundaries.
9. Pre-Plan Meetings: conduct and document participation in safety planning for key events, including completion of Job Hazard Analyses. The NYCHA Construction Management team will participate in these meetings. Examples would be, prior to doing roofing work, prior to mobilizing a crane, prior to the 1st hot work, etc.
10. Barriers to protect residents and pedestrians: All areas within the range of falling material from the Work of this contract but not required for public access shall be barricaded with four (4) ft. high orange vinyl fence. Place warning signs thirty feet apart on all such barricades.
11. Fall Protection: NYCHA requires positive fall protection whenever a worker is exposed to anything greater than a six (6) ft. fall (measured from the worker's heels to the surface below). The requirement can be met through standard barriers (Guardrails/handrails), but where barriers are not feasible; Personal Fall Arrest Systems (PFAS) are required. Prior to allowing use of PFAS, contractors must ensure the worker has been trained and has proper documentation of the training, and that each worker knows how to use PFAS (including proper wear and fit, how to select tie-off points, how to select appropriate lanyards, etc.). Contractors must also establish procedures for inspections of workers using PFAS at the start of each shift.
12. Accident Reporting: Included in the NYCHA CSQ SSP template (see Appendix A), is the NYCHA Emergency Contact List, this list denotes all NYCHA Representatives who must be notified within 30 minutes of any site incident. The personnel on this list must be included in all subsequent updates regarding the incident in question. The NYCHA Emergency Contact List must be posted in all site trailers. The Construction Manager and/or NYCHA's Representative on site must receive copies of any completed Incident Report/Workmen's Compensation Report within 24 hours of submission by a worker. In addition, immediate phone or in-person notification to Construction Manager and/or NYCHA's Representative is required whenever a passerby or NYCHA resident is involved in any accident, or complains of unsafe practices by the Contractor.
13. Policy for failure to follow Safety Policies: NYCHA reserves the right to demand the permanent removal from the project any worker who puts him or herself or others into imminent risk situations (e.g., removing a barrier from a shaft without establishing alternate barriers, bypassing lock-out, tag-out systems, being observed outside perimeter barricade systems without PFAS). Similarly, NYCHA can direct the removal of any supervisor who fails to enforce the requirements of the safety program. NYCHA can also direct the suspension of any worker who repeatedly fails to follow PPE rules or repeatedly fails to follow established safety procedures that do not meet the "imminent risk" threshold.
14. Certification requirements: workers must carry certifications as required by the New York City Department of Buildings (NYC DOB) and FDNY. All workers must possess a valid OSHA 10-hour Construction card. In addition, workers must have the required certification for specific areas of work, including the 4-hour Scaffold User Card for any worker who will have a need to be on supported scaffolding, the

- 32-hour Supported Scaffold Erector/Dismantler card, the 16-hour Suspended Scaffold Users card, FDNY Certificates of Fitness for hot work and fire guard, etc.
15. Safety Data Sheets (SDS): maintain a binder on site in a known location including an organized grouping of SDS sheets for all products utilized on the project. This binder must be easily accessible to all workers so that they understand the risks of the materials, and the required PPE measures that must be taken when working with the materials. The binder must also be easily accessible to any member of the NYCHA field team, and to any emergency responder.
  16. Emergency Evacuation Procedures: Contractors must have a plan showing muster locations, explaining emergency evacuation signals, per OSHA 1010/1926 Standard. An emergency evacuation drill must be conducted quarterly (every three months). Coordination with the NYCHA field team is required in advance of any emergency evacuation drill.
  17. Radio Policy: use of personal radios on NYCHA job sites is prohibited. Similarly, workers will not be allowed to use ear phones/buds.
  18. Respiratory Protection: the Contractor must have a documented policy for respiratory protection, including dust mask and respirators, along with training requirements.
  19. Confined Space: the Contractor must have a documented policy and procedure addressing Confined Spaces. Site-specific Safety Plan will address and list (by inventory of buildings) any area in the scope of work of the project that could potentially be classified as a Confined Space. These spaces will be treated as Permit Required Confined Space until the space is reclassified under OSHA 1910.146, and ANSI/ASSE Z117.2009.
  20. Lock-Out/Tag-Out: the Contractor must have a documented policy for lock-out/tag-out, defining responsibilities and procedures for ensuring workers and residents will be safe from accidental activation of energized circuits.
  21. Hot Work: the Contractor must have a documented policy for hot work conforming to FDNY hot work procedures. This includes requirements for permitting, fire watches, etc.
  22. Smoking: comply with FDNY rules; smoking is prohibited on NYCHA's job sites.
  23. Alcohol/Controlled Substances: no alcohol or controlled substances will be allowed on site or consumed on site. No one on the project team will be under the influence of drugs or alcohol while on the project.
- a. SAFETY SUBMITTALS – all documents shall be submitted electronically.
1. Site-Specific Safety Program (See Appendix A)
    - I. Tenant Protection Plan: (Submit copy of the DOB approved plan [TPP-1] to NYCHA CSQ)
    - II. Site-Specific Safety Plan (See Appendix A for Safety Plan requirements).  
Site-Specific Safety Plans that require submission to New York City Department of Buildings shall be developed and signed by a New York City Site Safety Professional. Submission shall not be made to the New York City Department of Buildings until the Program and Plan have been approved by NYCHA Construction Safety & Quality.
  2. Confined Space Safety Procedure has to be approved by NYCHA CSQ before start of any activity involving work in a confined space.

3. Site Safety Orientation Briefing: within 14 calendar days of NTP provide, for NYCHA's review, a copy of a proposed Site Safety Orientation Brief as defined in these specifications.
4. Records of Tool Box Safety Talks: provide copies of weekly Tool Box Safety Talks conducted, along with copies of sign-in sheets for these meetings.
5. Job Hazard Analyses/JHA: prepare copies of completed Job Hazard Analyses, whether initiated by the Contractor, or if directed by the NYCHA Field Team.
6. Competent Person Listings: provide an initial Site Safety Competent Persons List within fourteen (14) calendar days of NTP. Provide updated copies of the listing as needed as new subcontractors are brought onto the project, and whenever a replacement is required for a previously-designated competent person.
7. Incident Reports/Workmen's Compensation Forms: copies must be submitted any time an incident occurs, immediately upon completion of the form.

#### b. SAFETY MEETINGS

1. Monthly Safety Meetings: shall be required with the NYCHA field team, and with Contractor supervisory personnel, including key subcontractor supervisory personnel. The agenda for this meeting shall include a review of any safety incident that occurred in the prior period, a review of any safety-related trend observed, and a review of safety aspects of upcoming work.
2. Safety Planning Meetings: shall be required with the NYCHA field team in advance of beginning new areas of work. The agenda for this meeting will include the review of any required Job Hazard Analyses. Participants will include key safety and supervisory personnel who will be involved in planning and supervising the Work, including Site Safety Representative and any designated Competent Person involved in the Work.
3. Tool Box Safety Meetings: shall be conducted by the Contractor weekly. Notice shall be provided to the NYCHA field team of the time and location of when and where this training will be done, to allow NYCHA to participate if time allows.

#### c. SAFETY AND FACILITIES CONTROLS

1. Provide and maintain all temporary facilities and controls required for implementation of the Site Safety Plan and Program.
2. At the start of each workday the Contractor shall inform the Construction Manager and/or NYCHA Representative as to the location and scope of work planned. Any condition which might adversely affect the tenants whether during the workday or after the close of operations shall be reported to the Construction Manager and/or NYCHA Representative promptly.
3. Provide sidewalk sheds where indicated in the Contract Documents, where required by law, and wherever the Work has the potential of creating an overhead hazard that could lead to serious injury or death.
4. Unless approved in writing by the Authority, sidewalk sheds, on site sheds, and fences shall not be dismantled or relocated as work proceeds at various locations of the building. All protection shall remain in place at all times until Construction Manager and/or NYCHA Representative directs its removal in writing.
5. Protective sheds located within the property line, on site, for protection from overhead hazards shall be constructed in the same manner as required by Code



and the Contract Documents for sidewalk sheds and shall have the same auxiliary elements including electrical lighting.

6. Where overhead protection is required, partial closing of sidewalks or streets will not be permitted. Proper protection shall be provided by means of sidewalk sheds or full street closing. Full street closing shall include the street and the sidewalks on both sides of the street.
7. While removing existing masonry or other structural components, take all measures necessary to protect and safeguard the facilities and exposed areas from any damage or loss. Use wet methods when demolishing wall or other components that produce dust during demolition. Wet all surfaces to be disturbed with a fine spray of water. Use power tools if necessary. Power tools shall be equipped with a HEPA vacuum capable of trapping and retaining 99.97% of all particles 0.3 micrometers in diameter or greater. Avoid spreading dust and debris outside of the Work area. Cover all windows in work areas with 6 mil plastic sheets and duct tape each day. Remove the plastic at the end of each day.
8. Do not work in the vicinity of any entrances before clearing those areas and advising the Authority accordingly.
9. The Contractor shall take every precaution to minimize noise generated by contract work. The site will need to conform to all noise reduction requirements of the City Department of Environmental Protection (DEP) and NYC Local Law 113. The following detailed description is for security only. The security fence may also serve as the noise reduction barrier, and the Contractor will be responsible for revising the materials listed herein to bring the fence into full compliance, with materials, details, and design as approved by the Authority and DEP. Contract noise shall not exceed fifty (50) db within any occupied apartment space at any time during the Work. All work will comply with requirements of the New York City Noise Control Code.
10. Provide a dumpster for disposal of daily debris and cart away from the project regularly to dispose of the collected debris material. At the end of each day's work, remove all debris and any material not used during the day.
11. Protect roof areas including those under the scaffold frame by laying 1/2" thick plywood boards and insulation.
12. The Contractor shall be responsible for the removal, salvage and reinstallation of any structures and/or fixtures on the building surfaces at no cost to NYCHA.
13. Identify and protect from all damage all caliper size 1-1/2", and larger trees surrounding the Work site.
14. Maintain access to fire fighting facilities at the site at all times.
15. The Contractor shall remove all snow and ice as it accumulates within the contract lines to ensure the safety of workers, residents and pedestrians.
16. All property of the Authority and/or tenants damaged or soiled as a result of the Work of this contract shall be restored or repaired by the Contractor at no cost to the Authority. Should any portion of the site be damaged, disturbed or otherwise affected due to work of the Contract, the Contractor shall report the conditions and circumstances to the Construction Manager and/or NYCHA Representative and make all necessary repairs and replacements to such damaged work at his or her own expense and with new materials to match existing work in every respect, as approved by the Construction Manager and/or NYCHA Representative. Comply with NYC DOB Buildings Bulletin 2010-019, which outlines the requirements for vertical netting, debris netting and material fall protection devices at construction sites.
17. The Contractor shall have a licensed electrician on the premises during all contract Work affecting electrical wiring, outlets, fixtures, temporary electric connections, etc.

d. CORRECTIONS OF SAFETY DEFICIENCIES

1. No unsafe condition shall be left uncorrected.
2. Where a deficiency noted during a safety inspection does not entail the existence of a hazardous condition, the maximum time for correction of the deficiency shall be twenty-four (24) hours, except where a shorter response time is required by other Contract Documents, local regulations, or the Authority's Representative. New York City Fire Department inspection deficiency and all hazardous conditions shall be acted upon immediately and corrected before leaving the site.

e. PERMITS AND AUTHORIZATIONS

Copies of all updated permits and authorizations shall be kept onsite at all times and shall be available upon request by NYCHA personnel and all local and federal agencies.

**II. GENERAL SECURITY**

1. The Contractor is responsible for the security of the Work sites and provides suitable site protection to prevent unauthorized entry onto the site until final acceptance by NYCHA.
2. The Contractor shall allow unrestricted access to all areas under the Contractor's control to Authority employees and emergency personnel in the performance of their duties.
3. The Contractor is responsible for the security of the Work site until final acceptance by the Construction Manager and/or NYCHA Representative. The Contractor shall be responsible for providing suitable site protection to prevent unauthorized entry onto the site and shall be responsible for any loss or damages for the duration of the contract until final completion and acceptance by the Construction Manager and/or NYCHA Representative.
4. No worker on this Project shall remove scrap or salvage material or grant any third party access to do so without the permission of the Contractor and Construction Manager and/or NYCHA Representative.
5. Scrap or waste material scheduled to be removed shall be removed only during designated times and under supervision of those stated in (4) above.
6. Provide and maintain fencing, footbridges, warning lights, signs, watchers, flaggers, or other personnel as required by NYC's Building code, sub article 1901, for the maintenance of the site and adjacent areas to the extent required by law.
7. The Contractor shall locate all existing utilities and service lines prior to demolition or construction. Notify the utility company or city agency affected and the Authority at least seventy-two (72) hours in advance, for any removal, relocation, or interruption in services required. Cap all existing utilities as directed.
8. Any scheduled activities that will result in interruptions of basic services or utilities or may cause inconvenience to the tenants shall be reported to the Project Superintendent.
9. Resident Management and the Contract Inspector should be notified of any basic service or utility interruption at least seven (7) calendar days prior to the anticipated date. It shall be the responsibility of the Contractor to notify and make all arrangements with the Utility Company or other Authorities Having Jurisdiction whenever utility shutdowns are required. The Contractor shall provide and

distribute/post notices of any service interruptions or other inconveniences to the tenants as required by the contract inspector, the Resident Manager Construction Manager and/or NYCHA Representative at least forty-eight (48) hours prior to the shutdown. Under no circumstances shall interruption of any service, utility, or area of the development be allowed without prior notification by the Contractor and written approval from the Authority.

10. The Contractor shall obtain a list of residents on life support equipment from the Development Manager. Any activities that result in interruptions of basic services to these residents shall be reported to the Development Management immediately and beforehand.
11. The Contractor shall adequately enclose and protect areas against the weather where the installation is incomplete at the end of the working day, and shall be responsible for any damage or inconvenience due to a failure to do so. Such protection shall be done to the complete satisfaction of Construction Manager and/or NYCHA Representative. Secure construction site by taking all precautionary measures including but not limited to the following:
  - a. Tie down and secure material and loose debris at construction sites.
  - b. Cover electrical equipment from exposure to the weather.
  - c. Secure netting, scaffolding, sidewalk sheds, etc.
  - d. Secure all crane equipment.
  - e. Secure all exterior hoists.
  - f. Brace and secure construction fences.

**END OF SECTION**

**III. Appendix A**  
Site-Specific Safety Program Template

# Site Safety Program

## Contract Type:

At

**NYCHA - Development Name**  
**Development Address (Bldg. #)**  
**Borough, NY Zip Code**  
**Project #**  
**Contract #: XXXX**

## Prepared For:

**NYC Housing Authority**  
**90 Church Street 11<sup>th</sup> Floor**  
**New York, NY 10007**

## PREPARED BY:

**Name of Contractor**  
**Address**  
**City, State, Zip Code**

## INTRODUCTION

NYCHA/CM/ Contractor  
Contract #,  
Oracle # XXXX

Development Name  
Address (Building #(s))  
Boro, NY Zip Code

Prepared By: Consultant Name (Work Plan)  
Address, State Zip Code  
Office Number, Fax Number

Date

# Site Safety Program

[Contractor Name] (The Contractor) bears all responsibility for the implementation and adherence to this safety program on-site by all site workers (Contractor & Subcontractor personnel), will take any and all precautions necessary for the health and safety of all site workers and ensure compliance with all relevant provisions of OSHA 29 CFR 1926 Construction Industry Safety and Health Standards, The New York City Building Code and all standards or codes referred to in the contract documents and this safety program.

This document is subject to change at any time due to new information, code updates and changes in site condition or contract scope.

## Definitions

Competent Person means one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures. Anyone designated as a Site Safety Competent Person must hold an OSHA 30-Hour Card in Construction Standards (CFR 1926).

NYCHA/CM/ Contractor  
Contract #,  
Oracle # XXXX

Development Name  
Address (Building #(s))  
Boro, NY Zip Code

Prepared By: Consultant Name (Work Plan)  
Address, State Zip Code  
Office Number, Fax Number  
Date

# Site Safety Program

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# Site Safety Program



## Appendices



1. Site Vicinity Map & Directions to Medical Treatment Facility
2. Site Safety Plan Drawing



# Site Safety Program

## SECTION 1: Contract Information

### Scope of work

Define scope of work

### Location Information

- a. Name of Development – [Enter Name of Development]
- b. Location of Development – [Enter location of development including Management Office address, Block and Lot Number]
- c. Building address(es) – [Enter ALL addresses & building numbers included in Scope of Work) XX Street Name (Building #) Boro, NY Zip code

### General Information

- a. Owner: New York City Housing Authority 90 Church Street New York, NY,10007  
Contact: CPD Program Unit PM/PJA –(212) 306-XXXX, Fax (212)306-XXXX
- b. Construction Manager: Company Name  
Address, Town, State Zip Code  
Contact: Name, Title  
Tel: (XXX) XXX-XXXX  
Fax: (XXX) XXX-XXXX
- c. General Contractor: Company Name  
Address, Town, State Zip Code  
Contact: Name, Title  
Tel: (XXX) XXX-XXXX  
Fax: (XXX) XXX-XXXX

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## **SECTION 2: Safety & Emergency Contact Personnel**

[List all safety & emergency contact personnel of General Contractor, Construction Manager & NYCHA Program Unit]

See Appendix A-1 for template

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## SECTION 3: Incident Investigation

An incident is defined as an unplanned, undesired occurrence which caused **or had the potential to cause** injury, illness and or property damage.

In the event of an incident on-site, the Contractor will notify the NYCHA and CM safety and emergency personnel listed in Section 2 within 30 minutes of an incident. All incidents will be investigated by the Project Superintendent/ Safety Manager. Incident Reports will be provided to NYCHA within 24 hours of the incident including documentation of Department of Labor Approved OSHA 10-hr Construction Safety Certification, Site-specific Safety Orientation and any other certifications relevant to the duties (Forklift Operator Safety training, Flagman Safety Training, etc.), for all workers involved in the incident. [Attach Blank Incident Report form here. See Appendix A-2 for template.]

Depending on the severity of the incident, the Contractor will make the following additional notifications:

1. New York City Department of Buildings (DOB) must be notified of any and all incidents resulting in injury, illness or property damage (partial or complete building/scaffolding or pedestrian protection collapse) resulting from construction activities immediately per New York City Building Code Section 3301.8 and 3302.1. See Section 2 for DOB contact information.
2. Per OSHA 29 CFR 1904.39, OSHA must be notified of incidents involving:
  - Fatalities within 8 hours of the incident,
  - In-patient hospitalizations, amputations or loss of an eye, within 24 hours of the incident. See Section 2 for OSHA contact information.

Beyond access for the provision of medical care and/ or worker egress, the Contractor will ensure that **none of the elements contributing to the incident are removed, moved or altered in anyway until CPD staff, along with all relevant authorities have completed their investigations.** The Contractor will ensure that all parties involved in the incident and site-worker eyewitnesses remain on-site and are available for interview by CPD, NYPD, DOB & OSHA and any other relevant agencies.

NYCHA Program Unit Representative will monitor the site work and inform the contractor of any observed variations from this Safety Program, maintain a Site Safety Log listing all variations from this Safety Program including all incidents and the corrective actions/ measures taken as a result. This log shall be up to date and readily available on-site for NYCHA use.

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## **SECTION 4: Training**

The Contractor will submit copies of the minimum 10-hr OSHA Construction Safety Training Certificates for all site workers to the Construction Manager prior to the start of contract work. These certificates will be available on-site upon request. This training must be current (within previous five (5) calendar years) per Local Law 41 of 2008, Section 1, Item #20 of the New York City Administrative Code.

The Contractor will administer a comprehensive site-specific safety orientation to each site worker upon first arrival at the site and provide copies of topics discussed and signed employee attendance sheet(s) for the orientation to the Construction Manager.

Topics will include but are not limited to:

- Emergency Evacuation Procedures
- Fall protection
- Scaffold Safety
- Ladder Safety
- Housekeeping
- Personal Protective Equipment
- No Smoking on-site, including site trailers per NYCHA policy
- Hot works
- Storage and use of flammable and explosive materials
- Respiratory Safety and Dust Control
- Lock-out/Tag-out Procedures
- Confined Space (Where applicable)

# Site Safety Program

## **SECTION 5: Development Log Book**

The Development Contractor's Logbook is located in Maintenance office at [Enter address where log book is located] XX Street Name, Boro, NY, Building Number.

**The Contractor's site supervisor will sign and write down his contact number in the contractor's logbook upon arrival to the site and prior to the performance of any contract work on a daily basis, detailing work location(s) and number of personnel on site as per NYCHA requirements. The Contractor will ensure that all sub-contractors' superintendents/foremen follow suit and enter their relevant data in the log book as described here.**

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## **SECTION 6: Occupational Health**

### Medical Services

The following medical facility in the site vicinity will provide medical treatment to workers injured on this job.

Facility Name, address & telephone #.

See Appendix 1 for Site Vicinity Map & Directions to [Facility Name].

### Emergency Medical Response

The Contractor will display posters with emergency telephone numbers and locations of emergency facilities in visible locations and at selected locations throughout the project area including The Contractor and subcontractor trailers. Posters will include the following:

- Hospital/Facility name, location and phone number
- Map showing site and facility (See Appendix 1) and directions from site to facility
- Police Department phone number
- Fire Department phone number
- Instruction to call 911 for major emergency
- Project Emergency Contact List

### Medical Monitoring

If there are health hazards associated with this site/project which require the implementation of medical monitoring, The Contractor will provide medical monitoring in the form of [insert monitoring required] and maintain records to be submitted to NYCHA/ CM prior to the start of work and at the intervals of [insert monitoring frequency required] for all site workers as required by the relevant authority.

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## **SECTION 7: General Safety**

The Contractor will provide a full-time Superintendent, New York City Department of Buildings (NYC DOB) licensed Site Safety Manager, Site Safety Coordinator or Qualified Person as required by New York City Building Code (NYC BC).

Where the New York City Building Code does not require Safety personnel, The Contractor will provide (for NYCHA's approval) a dedicated full-time Qualified Safety Representative. The Qualified Safety Representative will be responsible for safety only; he/she shall not be involved in any other construction related activities on the job site, shall be on site at all times during active construction work, and shall have successfully completed:

1. DOB Approved Site Safety Manager 40-hr training and 7-hour Refresher every three years thereafter (DOB License not required).
2. DOB Approved 32-hour Supported Scaffold Training and 8-hour Refresher every four years thereafter.
3. DOB Approved 32-hour Suspended Scaffold Training and 8-hour Refresher every four years thereafter (For contracts involving suspended scaffold work only).
4. US DOL Approved 30-hr OSHA Construction Safety Certification within the last 5 calendar years.
5. 5 years of construction site safety experience.

Monitoring construction work in abatement work zone and enforcing safety regulations for this Program will be carried out by asbestos supervisor/Competent Person specified in the Asbestos Work Plan.

All site workers must have completed a minimum 10-hr OSHA Construction Safety Certification within the last 5 calendar years to work on this site. See Site Personnel OSHA Certificates in Section 9.

All site workers upon first arrival on-site will participate in a Site-Specific Safety Orientation delivered by the Site Safety Representative / Competent Person. See Resume(s) in Section 9.

### **Weekly Tool-Box Safety Briefing**

Contractor Site Safety Representative will perform Weekly Toolbox Safety Briefings on-site for all site workers. Topics should include but are not limited to previously cited safety deficiencies, areas/concerns of current or future work activities. Attendance Sign-In Sheets and Topics of discussion will be documented and provided to NYCHA/CM upon request. Impromptu Tool-Box Briefings will be convened immediately when an unsafe activity is observed by the Foreman/Superintendent, the Construction Manager or a NYCHA Construction Safety & Quality (CSQ) Inspector. Attendance at such briefings is required for all workers involved in the activity.

### **Material Hazard Communication**

The Contractor will maintain a log of hazardous substances used on-site along with the associated Safety Data Sheets (SDS). This logbook will be readily available to all site workers in the Contractor trailer. The Contractor will ensure that all site-workers are made aware of the potential hazards.

For site workers handling hazardous substances, the Site Specific Safety Orientation will include:

- An explanation of what an SDS is and how to use and obtain one;
- SDS contents for each hazardous substance or class of substances;
- Explanation of "Employees' Right to Know";

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- Identification of where an employee can review the written hazard communication program;
- Location of physical and health hazards in particular work areas and the specific protective measures to be used; and
- Details of the hazard communication program, including how to use the labeling system and SDSs.
- Safe handling practices for situations involving various chemicals stored or used in the workplace such as acids, bases, caustics, epoxies, phenols, etc. All employees are required to use personal protective clothing and equipment when handling chemicals (gloves, eye protection, respirators, etc.)
- A list of hazardous chemicals referenced on SDS for all hazardous materials used on site.
- Details of container for a hazardous substance clearly labeled with product identity and corresponding hazard warning with new GHS label elements. Ensure that the proper warnings are indicated on labels and that workers are properly trained to understand those warnings. Temporary containers used between work shifts or by different workers shall be labeled.
- Detail of explanation to other employers whose employees share the same work area where the hazardous substances are used.
- Environmental health evaluation such as dizziness, headaches, nausea, irritation, skin dryness, sensitization or other factors of discomfort when they use solvents or other chemicals.
- Smoking and eating prohibited in work areas where chemicals are used.

## **Housekeeping**

The Contractor will maintain the site in an organized and clean state per OSHA 29 CFR 1926.25 in the following manner:

- Construction debris will be cleared from the work area daily and flammable/combustible debris will be removed from the site on a regular basis.
- Work areas, walkways, corridors in and around buildings will be maintained free of construction debris and other trip hazards.
- All work surfaces will be kept dry and appropriate means will be taken to assure the surfaces are slip-resistant.
- All spilled hazardous materials or liquids, including blood and other potentially infectious materials, must be cleaned up immediately.

## **Weather Alerts:**

In case of Weather Alert issued by the National Weather Service or NYCHA's Office of Emergency Management (and conveyed by NYCHA CSQ) to all Construction sites, the Contractor must take all required steps and precautions to secure the job site. These include the following items to be confirmed by the Project Management Team:

- All temporary electrical installations are weather tight
- All sidewalk sheds are inspected for loose components and necessary repairs made.
- All loose materials on-site, staging areas, scaffolding and roof tops are adequately secured from high winds.
- All Scaffold/crane operations must be suspended when wind gusts exceed 30mph.

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- All materials will be stored and handled in strict compliance with manufacturer's instructions and recommendations. Safety Data Sheets (SDSs) for all substances must be readily available on-site.
- Hazard Materials must be stored in a well-ventilated area and appropriate control procedures must be instituted.
- Stack materials will be stored on pallets no higher than safety considerations will allow per OSHA 1926.250(b).
- Materials will be stored in a location which is in close proximity to the work area to minimize transportation and handling where feasible. Protect storage from theft, vandalism and passage of vehicles.
- All site materials will be accompanied by their respective Safety Data sheets which will be kept in a log in the contractor trailer and available to all site workers at all times during construction.
- All flammable materials will be stored in a cool, dry area away from sparks and open flames and in accordance with the manufacturer's instructions for storage. Contractor personnel will inspect all material delivered to the site and promptly remove damaged or rejected materials from the worksite and dispose of them in accordance with applicable regulations.
- All construction debris generated by this operation will be staged outside of the immediate work area to avoid possible ignition. Debris will be removed daily to containers and subsequently taken off-site.
- Materials will arrive on site on an as-needed basis to avoid clutter.
- Deliveries will be made as closely as possible to the work area.
- Materials will be hoisted to the roof using Material hoists or approved equivalent. Contractors are not permitted to utilize resident elevators for material deliveries beyond the hoist components without the express written approval of the Development Superintendent. If permission is given the Building lobby floors, elevators and elevator walls must be appropriately protected from damage.
- Hoisting using a crane above an occupied building is strictly prohibited per NYC DOB Stop Work Order Violations.
- Materials/equipment in excess of 50 lbs. will be carried by two or more workers when manually transported.
- Roofing materials staged on the roof must be distributed throughout the roof area to avoid overloading one section of the roof.

## **Fire Protection and Prevention**

The Contractor will be responsible for the development of the fire protection program to be followed throughout the phases of the contract and shall provide the firefighting equipment as required by OSHA regulations 1926.150.

- Fire extinguisher, rated not less than 10 B, shall be provided within 50 feet of wherever more than 5 gallons of flammable or combustible or flammable gas are being used on the jobsite.
- Portable fire extinguishers shall be inspected periodically and maintained in accordance with Maintenance and Use of Portable Fire Extinguisher regulation.
- Fire extinguishers are required at all times when there is welding activity and/or gas operated machinery is being used on site.
- Hazard Materials must be stored in a well-ventilated area and appropriate control procedures must be instituted.

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- Smoking on construction sites is illegal. NYC Building Code 3303.7.3 and NYC Fire Code section 1404.1.
- Never thaw frozen pipes with flame. Flames Cause fires and steam explosions.
- The Fire reporting, Evacuating procedures should be posted in prominent areas.

**Tenant Protection Plan:** [Submit copy of the DOB approved (if required) plan to NYCHA CSQ]

The contractor shall include a DOB approved tenant protection plan for occupied buildings undergoing construction. The contractor must complete DOB TPP1 form prior to approval. The approved TPP1, along with all supporting attachments and drawings, must be legible and appended to the TPP1 in an (11X17) format. The DOB approved TPP must be submitted to NYCHA CSQ with this program and available on-site at all times. The elements of the TPP may vary depending on the nature and scope of the work but at a minimum shall make detailed and specific provisions listed in the NYC Buildings Service Update dated January 2016 and NYC Administrative Code: §28-104.8.4.

**Construction Noise Mitigation Plan:** (Submit copy of the plan to NYCHA CSQ)

Sites where construction activities take place must clearly post a complete and accurate Construction Noise Mitigation Plan at the site at all times. The plan must follow all the rules outlined in Title 15 of the Rules of the City of New York (RCNY) Chapter 28. Construction businesses do not need to file the plan with the Department of Environmental Protection (DEP); however, The Contractor will ensure that it is readily accessible to DEP inspectors that examine the site.

Construction businesses that cannot comply with the noise mitigation rules described in Local Law 113, must file an Alternative Noise Mitigation Plan (ANMP) with the DEP. The ANMP should be filed before construction activities take place. The approved ANMP should be posted at the construction site. DEP provides a “contact page” that should be posted on the outside of the site to inform inspectors of the plan’s location if it is not feasible to post the plan in a readily accessible location.

**Hot Weather Worker Safety Protocol:** (Keep Copy of plan on site to be presented on request)

Outdoor and indoor workers exposed to hot and humid conditions, are at high risk of heat related illness. The Contractor will develop a heat-related illness prevention plan. The competent person must be trained to monitor the risk level (heat index and exposure) and implement associated protective measures. The Hot Weather Plan must include the following basic items:

- Poster showing the health effects on heat and how it can be prevented.
- OSHA Poster for “Protecting workers from heat illness”
- A Daily Log for Field Temperature and/or humidity measurement.
- Conduct tool box meetings: train workers, track the weather for the work site daily and assess the risk to workers.
- Adjust work activities such as set up canopies, decrease the physical demands and pace of jobs, rotate worker to job tasks, permit only those workers acclimatized to heat to perform the more strenuous tasks etc.
- Establish and enforce work/rest schedules.
- Maintain effective communication with all crew at all times. Schedule frequent rest breaks in cool, shaded areas.
- Make cold water available to workers at all times.

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## Dust Control and Protection Measures:

The Contractor will ensure compliance with the following regulations in all work within and outside of the building to limit and control the creation and spreading of dust and debris during work.

- Dust and debris will be limited to the work areas to prevent exposure of residents and workers outside of the work area.
- The surface to be disturbed will be wet with a fine spray mist.
- The Contractor will utilize power tools equipped with a HEPA vacuum collection system (i.e. power sanding and cutting tools, etc.).
- **Air-blowers or shop vacuums with or without HEPA filters are not permitted on NYCHA projects; contractors must utilize HEPA vacuums for dust mitigation.**
- All equipment impacted by dust generating activities will be cleaned before removal from work location.
- There will be **NO DRY SWEEPING** of dust or debris.
- For cutting and grinding concrete surfaces - negative air ventilation will be exhausted from apartments or public spaces to HEPA dust collectors on the roof of building.
- Upon completion of shift work, work area will be cleaned to prevent subsequent occupant or worker exposure to excess dust.
- All personnel in the work area must wear appropriate PPE. For dust generating activities, this includes dust masks.

## Working with Materials Containing Crystalline Silica

The Contractor will be responsible for protecting workers exposed to materials containing crystalline silica. The Contractor must ensure the compliance with OSHA 1926.1153 Table-1 regulations. The Contractor shall fully and properly implement the engineering controls, work practices, and respiratory protection specified in OSHA1926.1153.

- For tasks performed indoors or in enclosed areas, provide a means of exhaust as needed to minimize the accumulation of visible airborne dust;
- For tasks performed using wet methods, apply water at flow rates sufficient to minimize release of visible dust;
- For measures implemented that include an enclosed cab or booth, ensure that the enclosed cab or booth:
  - (i) Is maintained as free as practicable from settled dust;
  - (ii) Has door seals and closing mechanisms that work properly;
  - (iii) Has gaskets and seals that are in good condition and working properly;
  - (iv) Is under positive pressure maintained through continuous delivery of fresh air;
  - (v) Has intake air that is filtered through a filter that is 95% efficient in the 0.3-10.0  $\mu\text{m}$  range (e.g., MERV-16 or better); and
  - (vi) Has heating and cooling capabilities.

## Electrical Safety and Power Tools

- PPE will be worn at all times including Safety Glasses/Face Shields.
- The Contractor will ensure that tools in use are appropriate for the job.
- Tools will be utilized per manufacturer specifications. Replacing tools with other tools that may seem to be fitted for the job, such as the use of a screwdriver in place of a chisel or a pair of

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pliers in place of a wrench, is prohibited as such practices present hazards. The right tool will do the job safely and more efficiently.

- All manufacturer-specified machine guards must be utilized when a power tool is in operation
- All tools will be kept in good working condition and regularly maintained.
- Tools in poor or faulty condition will not be used on the job site.
- Cords will be protected from sharp edges and traffic.
- Damaged/frayed extension cords will be immediately taken out of service and removed from the site.
- At no time will cords be used to lift or lower power tools or any type of load.
- The designated Competent Person will inspect tools regularly and immediately remove from service any damaged or malfunctioning tools.
- All tools will be operated and maintained per manufacturer recommendation.
- Tools will be held firmly while performing jobs to prevent them from slipping away.
- Tools will not be overloaded or forced to work beyond their capabilities.
- Tool handlers must be prepared at all times for unexpected occurrences such as a tools getting away, binding or coming loose from their handlers.
- Any tool that has become jammed, or otherwise overstressed, must be inspected for damage before reuse.
- Reactive force from the tools will be anticipated when starting the tool.
- When loosening or unbolting any tool component from its working position, worker must anticipate any possible outcome of such action.
- Pressures will be applied and released in a safe manner when tools that involve weights and spring tension are in use.
- Lock-out/tag-out procedures for equipment and tools will be followed as required.
- Safety interlocks on equipment will not be bypassed. Bypassing defeats the safety device and creates a possible serious hazard.
- Grinding on the side of a wheel will not be done unless the wheel is designed for such service.
- Manufacturer recommendation regarding grinding wheel speed limitation will be followed.
- When starting a new wheel workers will stand to the side of the wheel until the wheel reaches operating speed. Any noted abnormalities will be corrected before proceeding.
- Manufacturer specified guards must be in place before a wheel is started.
- Many accidents are caused by tools falling off ladders, shelves, or scaffolds. Each tool will have a designated place in a tool box or pouch and will be stored in a safe place.
- Manufacturer's safe operating procedures will be referred to for additional information on the safe operation and guarding of mechanical equipment.
- Electrically powered tools must be connected to power outlets equipped with Ground Fault Circuit Interrupters (GFCIs)

## **Ground Fault Circuit Interrupters (GFCI) Use on Construction Site:**

The Contractor will provide approved GFCI outlets as per OSHA 29 CFR 1926.404 for all 120 volt single-phase, 15 and 20 ampere receptacle outlets on construction sites that are not a part of the permanent wiring of the building or structure and that are in use by employees. If a receptacle or receptacles are installed as part of the permanent wiring of the building or structure and they are used for temporary electric power, GFCI protection shall be provided. Receptacles on the ends of extension cords

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are not part of the permanent wiring and therefore the cord's receptacle must be of the GFCI type whether or not the extension cord is plugged into permanent wiring.

## Mechanized Equipment

- Employees must be properly trained in the use of the type of mechanized equipment they operate.
- The Contractor will provide licenses (if required) for personnel allowed to operate mechanized equipment.
- Competent Person will ensure (before working shift) that the mechanized equipment has a functioning warning horn, whistle, gong, or other device that can be clearly heard above normal noise in the areas where it is operated.
- Competent Person will perform daily equipment inspections of all mechanized equipment. In the event equipment is found to be in need of repair, it will be immediately removed from service.
- All site workers will don Type II Reflective Vests on-site.

## Lockout/Tagout Procedure

### General

The procedure presented below establishes minimum requirements for the control of the unexpected release of residual energy that could cause injury to employees and/or public. Further requirements may be added as deemed necessary to the Contractor.

All employees are required to comply with the restrictions and limitations imposed upon them during the use of lock out/tag out. All employees will not attempt to start, energize or use machines or equipment that is locked out/tagged out. In the event someone is found tampering with the log out/tag out device disciplinary action will be taken.

A log will be maintained on the projects identifying date and time of logout/tag out, date and time of logout/tagout removal, and names of personnel involved.

The Contractor's Competent Person will be responsible to control all aspects of the lock out/tag out procedure.

### Lock out:

- Lock out will be the preferred method for ensuring de- energize of machines and/or equipment. If the energy isolating device cannot be locked out other means will be used.
- The lock out device will be substantial enough to prevent removal without the use of excessive force.
- The energy isolating device will be locked out by the Competent Person with an assigned individual lock. If more than one individual is required to lock out equipment, each must place his/her own personal lockout device on the energy isolating device.
- The lock out device will be labeled with the name of the designated Competent Person locking out the device and with the names of those exposed to the system being locked out.
- The subcontractors will remove their locks at the end of the shift with the Contractor being the last lock removed. Subcontractors will not leave a lock on past their shift.
- Before activation of the locked out equipment all tools and locking devices will be removed, machine guards restored and controls placed in their safest position.

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- The energy source will be activated by the Competent Person only, after all employees exposed to the system being worked on have been informed of the re-activation.

## Tag out:

- The tag out system will only be used if the energy isolating device (i.e., pull box, valve) cannot be locked out. Prior approval by the Contractor's Competent Person is required.
- Tag out devices, including their means of attachment, will be substantial enough to prevent accidental removal.
- Tag out attachments (such as an all-environment-tolerant nylon cable tie) will be for one-time use.
- The tag will warn against the energizing of the tagged system. Statements such as "Do Not Start," "Do Not Open," "Do Not Close," "Do Not Energize," "Do Not Operate" will be used..
- The names of the Contractor and designated Competent Person will be displayed on the tag.
- The Contractor's Competent Person will be responsible for the un-tagging of the system after all exposed employees have been informed of the pending removal of the tag.
- The designated Competent Person will activate the system.

## Excavation and Trenching

Excavation and trenching statistically remains one of construction's most hazardous activities. The Contractor will designate a competent person for all site excavations.

The Site Safety Competent Person (See Section 9) will ensure:

- All preparatory work is conducted before any excavation work begins.
- Compliance with NYC BC Section 3304.3 notification requirements.
- He/ She is on-site during all operations relating to the open excavation.
- All excavations will be inspected by the designated Site Safety Competent Person:
  - (i) Before entry and every working shift.
  - (ii) After every rainstorm.
  - (iii) After freezing and/or thawing temperatures occurs.
  - (iv) After any condition that can change the integrity of the soil.
  - (v) As needed, for evidence of possible cave-ins, failure of systems, hazardous atmospheres, etc.
  - (vi) Throughout the work period and stop operations when unsafe conditions exist.
  - (vii) At the end of each shift to ensure that excavations are covered using approved materials in good condition.
- Atmospheric testing will be performed on all excavations 4 feet in depth or greater where hazardous material may exist.
- The sides of all excavations, including related or resulting embankments, that are 5 feet or greater in depth will be protected to prevent collapse of the excavation. Such methods will be designed by a Registered Professional Engineer and submitted to NYCHA in this Site-specific Safety Program. If less than 5 feet deep, the competent person must determine that a protective system is not required.
- Excavations 19 inches in depth or greater will have a stairway, ladder, ramp, or other safe means of egress within 25 feet of any employee in the excavation.

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- Every site with an excavation will be enclosed with a fence that meets the requirements of NYC BC Section 3307.7.
- No employee will be permitted underneath loads handled by lifting or digging equipment.
- Employees will be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials.
- When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system will be utilized such as barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.
- Protection will be provided by placing and keeping excavation spoils, fill material or equipment from the edge of excavations per NYC BC Section 3304.4.5.
- The contractor will acquire As-Built Utility Drawings from NYCHA to determine the locations of underground utilities on NYCHA property. For Excavations on Public property, the contractor will request a utility mark-out via DigSafelyNewYork.com or by calling #811 and ensure that all utility locations are known and marked within the proposed excavation area prior to the start of actual excavation.
- When excavation operations approach the estimated location of underground installations, the exact location of the installations will be determined by safe and acceptable means.
- While the excavation is open, underground installations will be protected, supported or removed as necessary to safeguard employees.
- The Competent (or qualified) Person will classify soil.
- When excavating in paved areas or in the vicinity of structural footings, measures are immediately employed to prevent undermining of the footings/ remaining pavement, regardless of the depth of the excavation. Any undermined pavement sections will be demolished to the extent of the undermining, to facilitate controlled fill placement to restore grade and pavement in kind at the Contractor's expense. Any undermined footings will have subgrades restored as prescribed by a New York State licensed Professional Engineer and approved by the NYCHA Design Department at the Contractor's expense.

## **Personal Protective Equipment**

The Contractor staff and foremen are responsible for issuing the proper personal protective devices to site workers (other than work boots and clothing). Federal, State, City and NYCHA safety regulations will be enforced regarding the use of such equipment. Repeat offenders will be removed from the site permanently. Where applicable, the Contractor will use equipment approved by the National Institute of Safety and Health (NIOSH). New protective equipment will be issued to each employee for his continued personal use, except as noted hereunder. NYCHA Basic Standard PPE includes the following;

- Head Protection  
Hard hats, as specified by ANSI Z89.1 – 1981 standard, must be worn by all site workers and visitors while on the job site as a condition of employment or visitation. Impact-resistant hard hats provide protection only when the inside web suspension is intact and is adjusted to correct head size with proper crown clearance. Hard hats may be re-issued when cleaned and re-fitted with new head suspensions.
- Eye Protection

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Eye protection with side shields and/or one piece goggles meeting or exceeding ANSI Z87.1 are required to be worn on all projects in all construction work areas when in the vicinity of any activity that has the potential to generate projectiles.

Cup type chipper goggles will be used by workers in heavy breaking or drilling. The clear spectacle type glasses with side shields and/or one piece plastic goggles will be worn for drilling, cutting, and chipping masonry, concrete, tile, etc. and when operating powered hand tools.

Face shields will be worn for protection from flying particles produced from light drilling, breaking, chipping and from power saws, and are particularly effective for employees who wear corrective glasses. Adapters for use with hard hats or caps are recommended. Shaded spectacle glasses or shaded face shields will be worn by employees engaged in oxy-acetylene burning and welding by employees engaged as electric welders' helpers. Shade 7, 8, 9 or darker is recommended.

All employees engaged in electric or arc welding will use welding masks and hoods. Consult suppliers for the exact shade to match the amperage tube used.

- Hearing Conservation Policy

The Contractor recognizes that workers are sometimes exposed to excessive noise levels at work. Excessive noise can, and often does, cause permanent hearing loss if engineering controls or personal protective equipment is not used. The objective of this program is to prevent the unnecessary loss of hearing due to overexposure to excessive noise levels.

Limiting exposure to excessive noise through engineering controls is the preferred method of control. (Engineering controls may be as simple as removing a generator from the work area and using a longer power cord.) Where engineering controls are not feasible, supervisors should provide and ensure that employees wear hearing protection. When hearing protection is necessary, the use of protective equipment is not optional.

When protective equipment is necessary, employees will be given the opportunity to select their hearing protection from two different types of hearing protection. Usually these will be earplugs or earmuffs or a combination of the two.

Warning signs stating "High Noise Area – Hearing Protection Required" will be posted on the periphery of all work areas where employees may be exposed to excessive noise levels.

- Respiratory Protection

Employees exposed to dust, fumes, and/or gases will be provided with proper respiratory protection designed to protect against the particular substance encountered.

- Hand Protection

Various types of gloves are made to protect hands against particular hazards, i.e., rubber gloves to handle alkalis and other chemicals, leather gloves to handle rough items as reinforcing steel, lumber, masonry, etc., and special leather gloves to protect against welding heat sparks and slag. The Contractor will require their use as appropriate.

- Foot Protection

All personnel will wear sturdy work boots with durable sidewalls, toes and soles. Soft shoes or sneakers are never permitted. Visitors must wear appropriate sturdy shoes or be kept out of the construction area.

- Body Protection

All personnel will wear shirts and long trousers to protect against the elements and work site hazards. No sleeveless shirts or shorts will be permitted.



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Special clothing is required when working in very hot, cold or wet work places, or when working with some chemicals, such as alkalis.

**NOTE: Basic PPE required at all times onsite include ANSI Approved: Hard Hats, Type II Reflective Vests and Construction Work Boots. Workers observed on-site without hard hats will be asked to leave for the day and repeat offenders will be removed from any future work on the project.** All other PPE is required for specific tasks as described herein.

## Fall Protection

- All Contractor and Subcontractor employees are required to have positive 100% fall protection system whenever a fall of more than six (6) feet could occur. This equipment is also required when working on swing scaffolds, hydraulic boom lifts, or when working above the protection system at floor openings and unprotected perimeter edges. This means the use of guard rail, safety harness with a personal fall protection device, or safety net whenever ANYONE is working within 6'-0" of a potential 6'-0" fall.
- Lifelines will be a minimum of 3/4" manila or equivalent secured above the point of operation to an anchorage or structural member capable of supporting a minimum of 5,000 pounds.
- Lanyards will be a minimum of 5/8" nylon or equivalent with a shock absorbing system and a maximum length to provide for a fall of no longer than 6 feet. The rope will have a nominal breaking strength of 5,000 pounds.

## Protection of Openings and Open Sides of Floors and Decks

Falls of workers from, and workers struck by materials falling from floors and decks of structures during construction are not frequent but are usually severe. The objective of this Policy is to present the common methods of worker protection in these two loss areas. A standard railing or cover must protect open sides of floors and floor openings.

- Standard Railing

The top edge height of a top rail will be 42 inches plus or minus 3 inches above the walking/working level. When conditions warrant, the height of the edge may exceed 45-inches, provided the guardrail system meets all other criteria.

**Note:** When employees are using stilts, the top height of the top rail will be increased by an amount equal to the height of the stilts, and they will not be allowed within 10 feet of an edge or guardrail system.

Mid-rails will be installed between the top rail and the walking/working surface at a height of 21 inches, or half the overall distance.

Toe boards will be a minimum of 3-1/2 inches in vertical height with only a quarter inch clearance off the floor. There will be no opening greater than one inch between toe board members.

The top rail will have a breaking strength of 200 lbs. applied within two inches of the top edge, in any outward or downward direction at any point along the top edge.

Mid-rails members will be capable of withstanding, without failure, a force of at least 150 pounds applied in any downward or outward direction at any point along the mid-rail.

Toe boards will be capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or outward direction at any point along the toe board.

For wood railings, the posts must be at least 2" x 4" stock spaced not more than 8 feet apart. The top rail must be of 2" x 4" stock, and the intermediate rail will be at least a one by six inch board. Toe boards may be constructed of 3-1/2 inch board.

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For pipe railings, posts, top rails and intermediate railings will be at least 1-1/2 inch nominal diameter (schedule 40 pipe) with posts spaced not more than 8 feet apart on centers.

For structural steel railings, posts, top rails and intermediate rails will be at least 2" x 2" x 3/8" angles, with posts spaced no more than 8 feet apart on centers.

When wire rope is used for guardrails, the cables may be 1/2 inch wire rope, but in no situation will they be less than 3/8 inch steel cable; any coatings used on the cables to prevent cuts or lacerations will be over the 3/8 inch diameter. When wire rope is used for top rails it will be flagged at no more than six-foot intervals with highly visible materials.

Posts will not be more than 8 feet on center. For cable safety railings, cables must be looped and triple clamped at the connecting points. Single cables running past each other with one or two clamps are not acceptable.

**AT NO TIME WILL ANY GUARDRAIL BE USED AS A HORIZONTAL ANCHORAGE FOR PERSONAL FALL ARREST EQUIPMENT.**

Hanging tarps from a guardrail system is prohibited. If hanging tarps, the tarps must be hung from a separate independent cable system.

When using cables for guardrail systems, turnbuckles are to be used for every 3 bays or 100 feet, whichever is less.

- Floor and Roof Opening Covers
  - Covers must support without failure at least twice the weight of the employees, equipment and materials that may be imposed on the cover at any one time.
  - All covers must be secured so as to prevent displacement.
  - All covers will be color coded or marked with the words "**hole**" or "**cover**".

## Scaffold Requirements

- All scaffolds will be built under the supervision of the designated Competent Person. The name of this person and their qualifications are to be submitted in writing to NYCHA prior to the work commencing in Section 9 of this program.
- All scaffold erectors and users must have current training certification as per NYC BC requirements.
- Rolling scaffolds must have the wheels locked while the scaffold is in use.
- Tubular welded rolling scaffolds require horizontal/diagonal bracing.
- All rolling scaffolds must be fully planked while in use and guardrails with toe boards must be in place when the scaffold reaches a height of 6 feet.
- Baker or Perry style scaffolds must have proper guard rails with toe boards when next to shaft openings and/or windows at all times regardless of the scaffold platform height from the floor.
- Properly secured ladder access must be provided for all scaffolds. If the scaffold does not have a built in ladder, then a suitable acceptable portable ladder must be attached with proper access/egress landings.
- Scaffolds must be secured to the structure guys, ties, and braces at the closest horizontal member to the 4:1 height and be repeated vertically at locations of horizontal members every 20 feet or less thereafter for scaffolds 3 feet wide or less. For scaffolds greater than 3 feet wide, the scaffold must be secured to the closest horizontal member to the 4:1 height and be repeated vertically at locations of horizontal members every 26 feet or less.

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- Independent lifelines are required for each worker on a swing scaffold. **They must be secured to a firm anchorage point separate from the swing scaffold anchorage.** Lifelines must be protected from sharp edges and corners at all times.
- Scaffolds will be constructed on a firm, stable base. If scaffolds must be constructed on soft ground, proper mudsills will be used.  
Scaffolds will never be erected without screw jacks, base plates and mud sills. An open scaffold pipe end will never be placed directly on concrete, a wood support, asphalt paving or soil, as it may shift during use.

## Rebar Protection

During the construction of reinforced concrete buildings, employees erect forms or perform other duties over exposed vertical or upturned reinforcing bars, bolts, or other protrusions (i.e., conduits/pipes). Serious injuries and deaths have resulted from falls on these protrusions. Also, floor slab reinforcing that extends beyond a section of slab in place can be an accident hazard.

Employees must not be permitted to work above vertical protruding reinforcing steel unless it has been protected to eliminate the hazard of impalement.

The Contractor will provide rebar caps for all protruding rebar or employ some other means, approved by NYCHA, to protect workers from impalement.

## Ladders

- The designated Competent Person (see Section 9) will periodically inspect all ladders onsite. The use of ladders with broken or missing rungs or steps, broken or split rails, or other faulty or defective construction is prohibited. Ladders with such defects when discovered must immediately be withdrawn from service and tagged to prevent use, or destroyed.
- Each employee will be trained by the Competent Person to recognize the hazards relating to ladders during the site safety orientation.
- Portable ladders will be placed on a substantial base of a 4-1 pitch (toes touching at base of ladder with arms fully extended to side rails), have clear access at top and bottom, extend a minimum of thirty-six (36) inches above the landing and be secured against movement while in use.
- Ladders used in any location where they could be displaced by traffic will be secured to prevent displacement and will be barricaded. The area around the top and bottom of a ladder will be kept clear of debris and material.
- When ascending or descending a ladder, the user will face the ladder using at least one hand to grasp the ladder. An employee must not carry an object that could cause the employee to lose balance and fall.
- When working from ladders, special consideration for fall protection equipment must be taken when working near the building perimeter or open shafts.
- Step ladders will only be used in an open (fully extended) position. The top and top step of a step ladder will not be used as a step.

## Powder Actuated Fastening Tools

There are high velocity and low velocity types of Powder Actuated Fastening Tools. Fasteners driven by both types have approximately equal holding power but the greatest number of serious injuries and fatalities has been from misuse of high velocity tools. Therefore, to reduce the possibility of injuries,

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only Low Velocity Powder Actuated Fastening Tools will be used on NYCHA jobs. The stud, pin, or fastener of these tools will be caused to have a velocity not to exceed 300 feet per second when measured 6-1/2 feet from the muzzle by accepted ballistic test methods.

Superintendents must enforce compliance with local regulations governing the use of the tools along with the contents of this program.

The use of Powder Actuated Fastening Tools will be governed by the following rules:

- Tools must meet requirements of the latest edition of ANSI A10.3.
- Only employees qualified by instructions of the manufacturer's qualified representative and/or licensed by the state or local authorities will be assigned to use a Powder Actuated Fastening Tool.
- Where practical, tools of only one manufacturer will be used on a project.
- Only cartridges and fasteners supplied by the manufacturer of the tool will be used.
- Powder Actuated Fastening Tools will be handled with the same care as firearms. Horseplay by any Contractor or Subcontractor employee (i.e. pointing an armed or unarmed tool at anything other than the work, target practice, making safety devices inoperative, or other unsafe acts, etc.) will be grounds for immediate and permanent removal from the job site.
- All safety devices incorporated in the tool by the manufacturer will be used at all times.
- A sign, minimum 8" x 10" with 1" letters, stating "Powder Actuated Tool in Use" or equivalent will be posted in area of use. (ANSI A10.3)

Powder Actuated Fastening Tools approved for use on NYCHA projects include:

- (i) Piston Tool - A Low Velocity type utilizing a piston activated by the poser of a blank cartridge furnished by the Tool Manufacturer to drive a stud, pin, or fastener into a work surface.
- (ii) Powder Assisted Hammer Drive Tool - A Low Velocity type utilizing a captive piston activated by a blow from a 4 lb. hammer supplemented by the power of a blank cartridge furnished by the Tool Manufacturer to drive a stud, pin, or fastener into a work surface.

## Cranes and Derricks

- Equipment must comply with the American National Standard B30 Safety Codes for Cranes, Hoists and Derricks and to the Occupational Safety and Health Standard CFR 1926.550 Subpart N - Cranes, Hoists and Derricks.
- Rated Load capacities and recommended operating speeds, special hazard warnings or instructions must be conspicuously posted on all equipment. Instructions or warnings must be visible to the operator. The subcontractor must provide a current annual inspection of the crane. This includes proof of annual inspection before crane is used. Copies are to be maintained at the jobsite.
- **Cranes will not hoist loads over occupied buildings - per NYC DOB this is a Stop Work Violation.**
- Wire rope, its attachments, fittings, sheaves, and safety devices must be inspected as required by the manufacturer with a copy of the record of the inspection, including a maintenance lubrication check, submitted to the Contractor's Project Superintendent. A Competent Person other than the person who installed and attached the wire rope will perform the inspection.

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- Wedge sockets and fittings must be the proper size to match the wire rope and must move to wedge and hold the wire rope under load construction. The dead end will be terminated according to ANSI B30.5 and will not be attached in any manner to the live side of the load line.
- All replacement parts must be as specified by the manufacturer.
- **An anti-two-block device or warning device is required on all cranes except pile driving equipment.**
- Cranes, derricks and boom truck are not to be operated within 10 feet of overhead power lines unless the lines have been de-energized.
- The swing radius of all cranes is to be properly barricaded to prevent workers from becoming trapped in the pinch points.
- Critical lifts or critical picks are when 75% or more of a cranes total lifting capacity is used. Tandem lifts or lifts involving two or more cranes are also considered critical lifts or critical picks.

## Hoisting

- Equipment must comply with the American National Standard B30 Safety Codes for Cranes, Hoists and Derricks and to the Occupational Safety and Health Standard CFR 1926.550 Subpart N - Cranes, Hoists and Derricks.
- Hoist Operators must be qualified as required by the NYC Building Code BC3316.7, and 3320.3. Where the Building Code does not require qualifications, operator must have completed familiarization training with the Hoist manufacturer or authorized vendor.
- Hoists must be installed and operated per the manufacturer's recommendations.
- Hoists must be inspected daily for any physical damage and safe operation before use by the Competent Person and must be inspected and maintained per the Manufacturer's recommendation.
- Hoisting Area to be considered as dangerous areas and descriptive warning signs shall be provided in accordance with the requirements of the Department of Transportation by the NYC Building Code BC 3307.4.2.
- While structural members or assemblies are being hoisted, a tag line or tag lines shall be used, as needed to prevent uncontrolled movement per the NYC Building Code Section 3305.2.5.
- Where hoist locations are not detailed in the Contract Documents, locations must be determined at the pre-construction meeting in conjunction with the Development Superintendent.
- Loads will be adequately secured prior to hoisting. Competent Person will spot check rigging prior to hoisting regularly.
- A Rigger (Master Rigger for article weight > 2000 Pounds; Special Rigger < 2000 Pounds) must be present at site to hoist or lower any article outside of any building with a hoisting machine.

## Safety Signs and Safety Banners

Warning, Danger, No Trespassing, No Smoking and other signs, correctly posted, help to protect the public and Company employees from accidents. Proper signs will be posted and maintained in good condition wherever hazardous conditions exist. A sufficient supply of the necessary signs will be kept on hand for replacement and to cover new hazards as they develop. Signs will be posted without delay as hazards arise, and removed when the hazards no longer exist. Additional posting requirements are found in the Federal Occupational Safety and Health Act, Construction Standards.

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## SECTION 8: Project Specific Safety

### 1. Emergency Evacuation Procedure

Emergency evacuation procedure must be posted around site and in Contractor and Sub-contractor trailers (Include responsible parties and muster points). See Section 10 for Emergency Evacuation Procedure.

### 2. Site Safety Plan: defines

- Areas of work
- Storage Areas (Show Delivery Entrances and Exits)
- Locations of Sidewalk Sheds (SWS) including:
  - (i) SWS structural details/dimensions
  - (ii) Lighting details
- Locations of Chain Link Fences (CLF) and associated gates to prevent unauthorized site access. **All CLF will be free standing (not attached to NYCHA Steel Bar fence [SBF]) and grounded.**
- Locations and details of Tree Protections. **All Tree Protections will be free standing (not attached to NYCHA SBF) and grounded.**
- Locations of all fire hydrants/ Siamese connections on-site and means of access thereto.
- Locations of all Suspended scaffolds, Hoists and pipe scaffolds including CLF enclosures to prevent pedestrians from entry.
- All existing Fire Truck Routes must be identified.
- Locations of CCTV Cameras. **(Must remain unobstructed during construction)**
- Locations of Site worker bathroom facilities, NYCHA/ CM trailers, Contractor and Subcontractor trailers.
- Locations and Detail of fall protection at roof top and bulkhead including usage of 60” debris netting at roof perimeter (comply with DOB 3308.5.).
- Proposed location of Asphalt tanker and/or kettle.
- Site Safety Plan shall include notes as follows;
  - (i) Statement requiring that all workers be at minimum 10- hr OSHA Construction Safety Certified within the last five (5) calendar years.
  - (ii) Statement requiring that all workers be provided a Site Safety orientation prior to first work on-site.
  - (iii) Statement requiring that all site work be performed in accordance with all regulations of OSHA 29 CFR 1926 and The New York City Building code and all other applicable codes and regulations. Where regulations vary on a particular item the stricter code will govern.

3. Contractor list of Competent Person for various trades: [Contractor Designee Name].

4. Job Hazard Analysis and Accident Prevention Methods

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## Fall Prevention

- Lower roof & Upper roof (Bulkhead) perimeters will be adequately protected by a guardrail system with a top rail (~42”), a mid-rail (~21”) capable of withstanding 200 lbs. of force per OSHA 1926.502(b)
- 100% Tie-off designated areas per site plan and any location within 6ft from a potential fall of 5’ or more.
- 100% Tie-off designation areas will have additional fall arrest provisions such as guardrails.
- Lifeline anchor points will have minimum 5000 lbs. capacity (Note type of anchors to be utilized here). See Appendix 3 for approved anchor product submittal.
- Full Body Harness with lanyard/Self Retractable will be worn at all times in 100% Tie-off areas.

## Fire Prevention

- All Welders and Roofers soldering and applying torch down membrane must be certified. The certificates must be submitted to NYCHA representative on site and attached in Section 9 of this document.
- The Contractor will issue a Hot Work Permit and submit a copy to the Construction Manager prior to commencement of any hot work.
- The Contractor will submit certificates of fitness as required for specialized personnel, fire watches and attach in Section 9 of this document.
- Fire extinguishers fully charged (min. 20 lbs.) per each operating torch must be present on the roof and one in the immediate vicinity of the torch application and when flammable chemicals are in use and must be Type ABC.
- Eye wash fountains and safety showers provided in areas if corrosive chemicals are handled.
- Chemical waste disposal shall be followed manufacturer recommended procedure.
- Fire extinguishers are required at all times when there is welding activity and/or gas operated machinery is being used on site.
- Exclusion zone will be set up in the immediate vicinity of hot work.
- Firewatch(es) must be in place for the duration and 1 hour beyond performance of hot work (per NRCA recommendation). Multiple firewatches will be utilized as needed e.g. roof top hot work generating sparks will necessitate a firewatch at the location of work and at the lower level where sparks may fall.
- Each firewatch will have immediate access to a fire extinguisher during and remain in-place 1 hour beyond performance of hot work.
- Fire retardant blankets will be used to protect adjacent areas.
- Combustible construction debris will be removed from site on at least every other work day and will be secured from the public while on-site. Housekeeping in all work and staging areas will be properly maintained.
- Overnight storage of propane tanks is **strictly prohibited by NYCHA even in the event that an FDNY permit has been acquired by the contractor.**
- All NYC FD rules and regulations must be followed during welding operations.

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## **Motorized Rotating Machinery Safety**

- Equipment must be inspected daily by competent person before use.
- Equipment must be properly secured using wire rope or steel chains with padlocks if left on the roof overnight.
- Bulkhead should be surrounded by chain link fence (CLF) enclosure providing a 200 sf area for resident egress in case of emergency. In the event the CLF is not in place, all equipment fuel tanks must be locked or emptied.

## **Workers Protection during Liquid Application of Roof**

- The Contractor will comply with the manufacturer instructions/recommendations during chemical handling.
- Only trained personnel will be allowed to handle the chemicals with proper (manufacturer recommended) PPE.
- Trained supervisor or competent person must be present on roof top during chemical application.
- Used containers will be disposed of according to the manufacturer's instructions/recommendations.
- Manufacturer working procedure, safety precautions, storage and disposal instructions/recommendations must be on-site at all times during construction.

## **Safety Requirements for Sidewalk Shed (SWS) Installation and Removal**

### General

- The installation, adjustment, repair or removal of sidewalk shed will be performed under the supervision of a competent person designated by permit holder for the sidewalk shed.
- Working hours at any NYCHA Development will be as described in the contract specifications (normally between 8:00 AM to 4:00PM, except for Emergencies when requested by NYCHA).
- All workers will have DOL Approved OSHA 10-hour Construction Safety Certification (within the last five calendar years) as well as NYC DOB Approved 32-hour Supported Scaffold Installer/Remover Certificates. This will be verified by the Foreman and provided to NYCHA upon Request.
- All sidewalk shed assembly and disassembly must be supervised and witnessed by a competent person with a minimum of 5 years of experience in the carpentry trade.
- All workers will keep on their person; the Identification Cards issued along with the certifications listed here as well as a valid Photo- identification Card to be displayed to NYCHA Representatives upon request.
- The Contractor Representative will sign in Development Book upon arrival to the site daily. The following information must be entered in the log book daily: Contractor's name, no. of workers, location of work and start time.
- A copy of the sign-in sheet will be left at Maintenance/Management Office immediately after the initial sign-in daily. The Contractor will return upon completion of shift to update the sheet with the time workers have left the site for the day.
- A tool box meeting will be conducted by designated Site Safety Representative on topics specific to shed installation and all employees must attend before work begins.
- All required PPE will be worn including hard hats, safety vests, and personal fall arrest system when necessary.

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- The Contractor will cordon off area of work including the support truck, with cones and caution tape and a flagman will be posted to ensure the safety of pedestrians.
- In the event that any means of access to the building are obstructed during installation, The Contractor will provide an alternate means of entry/egress including access for the disabled to residents until work is completed.
- All ladders utilized will be tied off and will extend a minimum of 3' above the parapet to access the top of the shed.
- The Contractor will ensure that no materials or tools are left unattended during breaks.

## Installation

- The Contractor will ensure that a valid NYC DOB permit for the SWS Installation at this location is available on-site and the SWS drawings used are approved by both NYCHA and DOB and are available on-site.
- The Contractor will utilize flagmen as necessary when using moving equipment.
- The Contractor will not install any decking material unless the SWS lighting system will be installed and grounded per contract specifications before nightfall of the same day.
- Electric power supply for SWS will comply with contract requirements, NEC and DOB and all circuit breakers will be GFCI type installed at the Basement Panel.
- The Contractor will ensure that all materials (SWS members etc.) used will be as specified in the SSP and in the contract documents.
- The Contractor will ensure that there are no members, braces or rails hanging unattached, no portion of the support structure is disconnected, no section of parapet is loose, all columns remain on their supports and are supported to the ground , all columns and beams installed are braced and tied as per NYCHA & DOB-approved drawings and no sharp edges are exposed.
- All SWS installed which will be for public use will be inspected for compliance, and cleared by CPD, if public access is temporary, the Contractor will ensure that all debris has been removed from the walkways.
- Material Storage is not permitted outside of the approved staging areas designated in the Site-specific Safety Plan.
- The Contractor will provide adequate signage including 'no entry' and, 'men working overhead'.
- The Contractor will ensure that all public walkways are maintained in broom swept condition at the end of every work day.

## Removal

- The Contractor must receive written authorization to be on-site to remove SWS. Such authorization must indicate the date and time for SWS removal.
- The Contractor will convene a Toolbox meeting on 1st day of removal before start of any work activity, a copy of the Toolbox Briefing sign-in sheet and list of topics discussed will be provided to the NYCHA Representative.
- The Contractor will not disconnect power to sheds unless all decking (planks & water table) will be removed in the same day.
- Prior to the removal of any electrical components, the Contractor will ensure that power to sheds is disconnected **from the Main Panel in the BASEMENT** (lock out panel).
- Contractor will remove all ground rods or at least cut them 1 foot below grade.

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- When removing planks and water table from top of sheds (after parapet removal) an approved fall protection plan must be followed by all workers as per OSHA regulations. [Contractor to propose for NYCHA's approval].
- Dismantling junior beams, clamps and main beams will be performed from a safe working platform from the ground in case of 8 ft. high sheds. Equipment and/or high scaffolds will be used for dismantling 16 ft. height sheds.
- The Contractor will sweep the entire area to remove all garbage and any loose nails and all materials will be removed from the public area.

## **Safety Requirements for Scaffolds**

The use of suspended and supported scaffolds requires permits from the New York City Department of Buildings. A permit is not required for a supported scaffold which is less than 40 feet in height. The Contractor will obtain permit from the NYC DOB for the premise where the work is taking place and post it on the job site.

The Contractor will comply with the following regulations when performing work on

### **Supported scaffold:**

- Prior to installation of scaffolding, notification will be made to NYCHA Safety Inspector.
- All individuals who install, adjust, repair, maintain, inspect, or remove a supported scaffold will comply with training requirements set forth in New York City Building Code 3314.4.5. This includes completion of 32 hours of NYC DOB approved training for the Designated Competent Person, those who install, adjust, repair, maintain, inspect, or remove a supported scaffold and at least 4 hours of NYC DOB approved training for all other users of any supported scaffold. These training requirements apply to all scaffolds regardless of height.
- Permit required supported scaffold will have at least two (2) workers with 32 hour training to assist in modification, repair or alteration while work is in progress
- Scaffold systems assembled at any location that provide a work platform 40 feet in height or more measured from a lower level at any exposure shall conform to the requirements of New York City Building Code 3314.
- Daily inspection/maintenance log on the scaffold will be maintained by the Competent Person and be readily available for inspection as per DOB regulations.
- As per NYC Building Code 3314.19 Mast climbers shall be designed, constructed, permitted, installed, adjusted, maintained, repaired, used, operated, inspected, and removed in accordance with rules promulgated by the commissioner.
- All workers using aerial lifts will provide documentation verifying completion of training required to use such equipment.
- A Professional Design Drawing is required for all supported scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1). Details for tie-backs will include substrate construction (cavity, structural beam, etc.). Professional Engineer (PE) has to consider layout of site including any metal grating, stairs, lower roofs, etc., that may be used to support the scaffold.
- The scaffold will be inspected and certified by the PE of record as being installed in accordance with filed plans and drawings. Any deviations in the field will constitute the plans to be revised and re-filed with DOB for approval.

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- The scaffold will be re-inspected and recertified by PE of record at minimum every six (6) months or at the request of the NYCHA site representative.
- All PE drawings and inspection letters must be readily available for inspection on site by NYCHA site representative.
- The PE designed and DOB stamped and approved scaffold design drawing will be kept readily available onsite for inspection.
- PE shall inspect and certify any equipment attached or on the scaffold, including, but not limited to, electrical hoists, material chutes, tarps, etc. These inspections shall be conducted in the company of NYCHA representative. A letter of approval / acceptance from the inspecting PE shall be kept onsite and be readily available for inspection.
- A top-rail, mid-rail and toe board will be installed along every unprotected platform edge wherever there is a fall hazard of six feet or greater, in addition to the scaffold's cross braces.
- Outrigger platforms (bicycles) will be used only as work platforms for individuals. A fully planked platform on the scaffold frame bearer must be provided for material handling and access. The fully secured planked platform is to be within a maximum six feet (6') above or below the outrigger.
- Scaffold planks will be inspected before installation. Rotted/split planks will not be used.
- Scaffold platforms and outriggers will be cleaned daily of work materials and debris.
- The end of a platform 10 feet (3048 mm) or less in length will not extend over the centerline of its support more than 12 inches (305 mm) unless the platform and its tiedown are designed by a qualified person or the platform has guardrails to prevent access to the cantilevered end.
- The end of a platform more than 10 feet (3048 mm) in length will not extend over the centerline of its support more than 18 inches (457 mm) unless the platform and its tiedown are designed by a qualified person or the platform has guardrails to prevent access to the cantilevered end.
- On scaffolds where platforms are overlapped to create a long platform, the overlap will occur only over supports, and will not be less than 12 inches. The platforms will be nailed together or otherwise restrained to prevent movement.
- Stair towers will be provided as the means of access to scaffold working levels above or below ground except where the nature or the progress of the work prevents their installation. Where stair towers cannot be installed, ladders or other safe means of access will be provided.
- A minimum of one (1) stair tower will be installed on each building elevation but in no case will the travel distance on the scaffold between stair towers be more than 300 feet.
- All exterior supported scaffolds will be provided with vertical fire retardant fine mesh debris netting for their full height and width when there is exposure to the public, adjacent property or site employees. "Exposure to the public, adjacent property or site employees" refers to any exterior supported scaffold which is opposite a street, public way, employee walkway or other open area intended for public use or which is opposite any side of rear lot line. The vertical netting is required in addition to the sidewalk sheds, fence or railings.
- Where it is possible for the public to pass under, or next to a scaffold, the space between the top rail and toeboard will be enclosed with a wire screen composed of not less than no.18 steel wire gage with a maximum ½ inch (13mm) mesh or equivalent synthetic safety netting. For the purpose of this provision the term "where it is possible for the public to pass under, or next to a scaffold" means when the setback from the scaffold to the area used by the public is a distance equal to or less than half the height of the scaffold.

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- All ground level public perimeter protection as detailed on the approved Site Safety Plan will be completed prior to installation of any exterior scaffolding.

## Suspended Scaffolds

- The Special Rigger will have an original copy of the Rigger's License readily available for review on site.
- NYC DOB approved CD-5: Suspended Scaffold Application will be filed and obtained before start of work on suspended scaffold and will be kept on site at all times.
- The Special Rigger will be on site when the hanging scaffold is moved to a new location.
- A Designated Riggers' Foreman will be present on site when a hanging scaffold is in use. Rigger's foreman will have in his possession a valid Department of Building issued "tear-off" card.
- The Designated Riggers' Foreman will conduct and document daily inspections of all hanging scaffold components. A record of such inspections will be kept and maintained at the job site and will be readily available upon request. The record will be signed by the individual responsible for the inspection and will also show the individual's name clearly and legibly printed.
- Anyone using suspended scaffold must have completed a NYC DOB approved 16 hour training program. All workers must carry valid aforementioned cards on their person.
- A Certificate of Fitness will be issued to each scaffold user by the Special Master, Special Rigger, or Rigging Foreman.
- All suspended scaffolds are to be designed by a Professional Engineer; a copy of the design drawing is to be maintained at the jobsite.
- Vertical fire retardant fine mesh debris netting will be provided on the exterior side of all suspended scaffolds. The vertical netting is required in addition to the sidewalk sheds, fences, or railings required by the site safety plan.
- Counterweights will be secured by mechanical means to the outrigger beams to prevent accidental displacement without the wire rope kinking.
- Counterweights will not be removed from an outrigger beam until the scaffold is disassembled.
- Outrigger beams will be placed perpendicular to their bearing support (usually the face of the building or structure). However, where the employer can demonstrate that it is not possible to place an outrigger beam perpendicular to the face of the building or structure because of obstructions that cannot be moved, the outrigger beam may be placed at some other angle, provided opposing angle tiebacks are used.
- Tiebacks will be secured to a structurally sound anchorage on the building or structure. Sound anchorages include structural members, but do not include standpipes, vents, other piping systems, or electrical conduit.
- Tiebacks shall be equivalent in strength to the hoisting rope.
- When winding drum hoists are used on a suspension scaffold, they will contain not less than four wraps of the suspension rope at the lowest point of scaffold travel. When other types of hoists are used, the suspension ropes will be long enough to allow the scaffold to be lowered to the level below without the rope end passing through the hoist, or the rope end will be configured or provided with means to prevent the end from passing through the hoist.
- **THE USE OF REPAIRED ROPE AS SUSPENSION ROPE IS PROHIBITED.**
- Wire suspension ropes will not be joined together.
- The load end of wire suspension ropes will be equipped with proper thimbles and secured by eye

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Office Number, Fax Number

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- splicing or equivalent means.
- A Competent Person will inspect ropes for defects prior to each work shift and after every occurrence which could affect a rope's integrity. Existence of any of the following conditions will require ropes to be replaced:
    - (i) Any physical damage which impairs the function and strength of the rope.
    - (ii) Kinks that might impair the tracking or wrapping of rope around the drum(s) or sheave(s) or counter weights.
    - (iii) Any broken wires in one rope lay or three broken wires in one strand on one rope lay.
    - (iv) Abrasion, corrosion, scrubbing, flattening or peening causing loss of more than one-third of the original diameter of the outside wires.
    - (v) Heat damage caused by a torch or any damage caused by contact with electrical wires.
    - (vi) Evidence that the secondary brake has been activated during an over speed condition and has engaged the suspension rope.
    - (vii) Excessive rust or weather worn ropes.
  - Swaged attachments or spliced eyes on wire suspension ropes will not be used unless they are made by the wire rope manufacturer.
  - When wire rope clips are used on suspension scaffolds or wire rope guardrails systems the following will apply:
    - (i) There will be a minimum of 3 wire rope clips installed, with the clips a minimum of 6 rope diameters apart;
    - (ii) Clips will be installed according to the manufacturer's recommendations.
    - (iii) Clips will be retightened to the manufacturer's recommendations after the initial loading.
    - (iv) Clips will be inspected and retightened to the manufacturer's recommendations at the start of each work shift thereafter and will be included in daily inspection checklist.
    - (v) U-bolt clips will not be used at the point of suspension for any scaffold hoist.
  - Suspension scaffold power-operated hoists and manual hoists will be tested by a qualified laboratory.
  - Gasoline-powered equipment and hoists will not be used on suspension scaffolds.
  - Gears and brakes of power-operated hoists used on suspension scaffolds will be enclosed.
  - Suspension scaffold power-operated hoists and manually operated hoists will have, in addition to the normal operating brake, a braking device or locking pawl which engages automatically when a hoist makes either of the following uncontrolled movements: an instantaneous change in momentum or an accelerated over speed.
  - Manually operated hoists will require a positive crank force to descend.
  - Two-point and multi-point suspension scaffolds platforms shall have at least 20" uninterrupted clear width in all accessible work areas (No stirrup or motor interruption).
  - Two-point and multi-point suspension scaffolds will be tied or otherwise secured to prevent them from swaying, as determined to be necessary by a Competent Person. Window cleaners' anchors will be used for this purpose.
  - Devices whose sole function is to provide emergency escape and rescue will not be used as working platforms. This provision does not preclude the use of systems which are designed to function both as suspension scaffolds and emergency systems.

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## Scaffold Capacity

- Each scaffold and scaffold component will be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it. Expected load includes workers, equipment, tools and materials
- Direct connections to roofs and floors, and counterweights used to balance adjustable suspension scaffolds, will be capable of resisting at least 4 times the tipping moment imposed by the scaffold operating at the rated load of the hoist, or minimum 1.5 times the tipping moment imposed by the scaffold operating at the stall load of the hoist, whichever is greater.
- Each suspension rope, including connecting hardware, used on non-adjustable suspension scaffolds will be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope.
- Each suspension rope, including connecting hardware, used on adjustable suspension scaffolds will be capable of supporting, without failure at least 6 times the maximum intended load applied or transmitted to that rope with the scaffold operating at either the rated load of the hoist, or minimum 2 times the stall load of the hoist, whichever is greater.
- The stall load of any scaffold hoist will not exceed 3 times its rated load.
- Scaffolds that require a permit will be designed by a Professional Engineer and will be constructed and loaded in accordance with that design. All other scaffolds may be designed by a qualified person. OSHA Non-mandatory Appendix A subpart Scaffolds 29CFR 1926 contains examples of criteria that will enable an employer to comply with this section.
- All platforms will be tied down or otherwise positively restrained by hooks or equivalent means to prevent dislodgment in all directions
- End each platform, unless cleated or otherwise restrained by hooks or equivalent means, will extend over the centerline of its support at least 6 inches (150 mm).
- At all points of a scaffold where the platform changes direction, such as turning a corner, any platform that rests on a bearer at an angle other than a right angle will be laid first, and platforms which rest at right angles over the same bearer will be laid second, on top of the first platform.
- Wood platforms will not be covered with opaque finishes, except for platform edges which may be covered or marked for identification.
- Platforms may be coated periodically with wood preservatives, fire-retardant finishes, and slip-resistant finishes. However, the coating may not obscure the top or bottom wood surfaces. Platforms may not be covered by plywood.
- Scaffold components manufactured by different manufacturers will not be intermixed unless the components fit together without force and the scaffold's structural integrity is not affected as certified by Professional Engineer of Record. Bicycles or scaffold outriggers designed with pins will so be installed.
- Scaffold components made of dissimilar metals will not be used together unless certified by the PE of Record.
- Objects such ladders, boxes, barrels, etc. will not be used on top of scaffold platforms to increase height.
- The scaffold must have cross bracing installed and secured according to the manufacturer's instruction.

## Scaffold Access

Access requirements for employees using, erecting or dismantling supported scaffolds:

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- When scaffold platforms are more than 2 feet (0.6m) above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stair towers (scaffold stairways/towers), stairway-type ladders (such as ladder stands), ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold structure, personnel hoist, or similar surface will be used.
- Portable Access Ladder
  - (i) Must be secured to prevent displacement.
  - (ii) Extend at least 3' above landing to provide a handhold.
- Employees will not access the scaffold by
  - (i) Cross braces
  - (ii) Other scaffold
  - (iii) End frames

## Fall Protection

Each employee working on a scaffold 6 feet and higher of a lower level must be protected from falling to that lower level by the use of personal fall arrest systems and guardrail systems.

The Contractor Competent Person will determine the feasibility and safety of supported scaffolds. The Contractor will provide fall protection for employees erecting or dismantling supported scaffolds where the installation and use of such protection is feasible and does not create a greater hazard.

## Personal Fall Arrest System

- Anchorage used for attachment of personal fall arrest equipment will be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached.
- Personal fall arrest systems used on scaffolds will be attached by lanyard to a vertical lifeline, horizontal lifeline, or scaffold structural member. Vertical lifelines will not be used when overhead components, such as overhead protection or additional platform levels, are part of a single-point or two-point adjustable suspension scaffold.
- When vertical lifelines are used, they will be fastened to a fixed safe point of anchorage, will be independent of the scaffold, and will be protected from sharp edges and abrasion. Safe points of anchorage include structural members of buildings, but do not include standpipes, vents, other piping systems, electrical conduit, outrigger beams, or counterweights.
- Vertical lifelines, independent support lines, and suspension ropes will be neither attached to each other, nor they be attached to or use the same point of anchorage, nor they be attached to the same point on the scaffold or personal fall arrest system.

## Guardrails and Netting

The open sides and ends of scaffold platforms shall be provided with a guardrail system that meets the requirements of NYC Building Code Section 3308.7 and 3314.8.1. Debris netting shall meet the requirements of Section 3314.8.2.

- Height and Capacity of Railings and Toeboard:
  - (i) The top of the toprail will be located at a height of 39 to 45 inches above the platform.
  - (ii) The midrail will be located at a height approximately midway between the toprail and the platform, or where more than one midrail is utilized each will be located equidistant from each other, the floor, and the toprail. When midrails, screens, mesh, intermediate vertical

# Site Safety Program

- members, solid panels, or equivalent structural members are used, they will be installed between the top edge of the guardrail system and the scaffold platform.
- (iii) Screens and mesh will extend from the top edge of the guardrail system to the scaffold platform, and along the entire opening between the supports.
  - (iv) Intermediate members (such as balusters or additional rails) shall not be more than 19 inches (48 cm) apart.
  - (v) The toeboard will be at least 3½ inches (89 mm) high from the top edge of the toeboard to the level of walking/working surface and will be securely fastened in place at the outermost edge of the platform and have not more than a ¼ inch (6 mm) gap between the platform and the bottom of the toeboard.
  - (vi) The toeboards will be solid or with openings not over 1 inch (2.5 cm) in the greatest dimension.
  - (vii) Cross bracing can be used as guardrails if the center point is between 20” to 30” for midrail and 39” to 45” for toprail.
  - (viii) Toprail or equivalent member will be capable of withstanding without failure 200 lbs, midrails to 150 lbs and toeboard to 50 lbs of force in any direction.
  - (ix) Suspension scaffold hoists and non-walk through stirrups may be used as end guardrails, if the space between the hoist or stirrup and the side guardrail or structure does not allow passage of an employee to the end of the scaffold.
  - (x) Guardrails will be surfaced to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.
  - (xi) The ends of all rails will not overhang the terminal posts except when such overhang does not constitute a projection hazard to employees.
  - (xii) Steel or plastic banding will not be used as a toprail or midrail.

## Protection From Falling Objects

- Anyone working on or around a scaffold must wear a hard hat.
- Workers on or below scaffolds must be protected from falling objects by following BC 3314.8:
- Toeboards will be provided to protect workers on lower levels from falling hand tools, debris, and other small objects.
- Large, heavy and massive objects will be placed away from the edge of the surface and will be secure to prevent them from falling.
- Mesh, screens and other equivalent measures will be employed to protect employees and public from falling objects
- Where tools, materials, or equipment are piled to a height higher than the top edge of the toeboard, paneling or screening extending from the toeboard or platform to the top of the guardrail will be erected over the employees below.
- Canopies, when used for falling object protection, will comply with the following criteria:
  - (i) Canopies will be installed between the falling object hazard and the employees.
  - (ii) When canopies are used on suspension scaffolds for falling object protection, the scaffold will be equipped with additional independent support lines equal in number to the number of points supported, and equivalent in strength to the strength of the suspension ropes.



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## Responsibilities of Designated Competent Person:

- The Contractor designated Competent Person will have the knowledge and experience required to identify existing and predictable hazards.
- The Contractor Designated Competent Person will have authority to eliminate unsafe working conditions.
- The Contractor designated Competent Person will have authority to stop work if unsafe conditions exist.
- The Contractor designated Competent Person will select employees who erect, dismantle, move, or alter scaffolds.
- The Contractor designated Competent Person will determine if it is safe for employees to work on or from a scaffold during storms or high winds.
- The Contractor designated Competent Person will inspect scaffolds and scaffold components for visible defects before each work shift.

## Demolition and Renovation:

All work shall conform to the latest industry practices and standards as applicable to all OSHA 29 CFR 1926 and NYC DOB regulations including but not limited to the following.

## General Requirements

- The Contractor will post construction warning signs and use caution tape when required.
- The Contractor will ensure access to buildings and/or apartments entrances at all time.
- The Contractor will ensure all employees carry a photo ID to be allowed in Tenant's Apartments.
- The Contractor will arrange any shutdown of utilities with the Development Management and tenants will be informed with at least 48 hours advance notice or as requested by the Development Management.
- The Contractor will ensure accommodation for Tenants' special needs and/or accessibility will be prearranged with Development Management to avoid any service or access interruption.
- The Contractor will ensure that the Building Elevator is not used to transport construction equipment or materials.
- The Contractor will ensure that employees give residents priority usage of Building Elevators.
- The Contractor will ensure that Building Elevators and hallways affected by construction activity are protected at all times.

## Workers Protection

- The Contractor will implement engineering controls to limit dust employee & resident exposure.
- The Contractor will ensure full compliance to personal protective equipment requirements by employees exposed to dust to keep the exposure of employees to air contaminants within limits prescribed by the Occupational Safety and Health Administration (O.S.H.A.) regulations. All equipment and technical means used for this purpose are subject to the approval of the Construction Manager.
- The Contractor will provide all workers with dust filter respirators, properly fitted for short, intermittent or occasional dust exposure such as cleanup, dumping of dust collectors, when it is not feasible to control the dust by enclosure. Respirators will contain eye protective observation windows with safety glass protected by screening where hard deep cutting abrasives are used.
- The Contractor will provide workers with protective work clothing, booties, hard hats, gloves,

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face shields and vented goggles appropriate for the work being performed.

## Clean-Up Procedure

At the end of each shift or upon completion of the dust producing task, the Contractor will implement clean-up procedures follows:

- All debris too large to be picked up by the HEPA Vacuum will be picked up by hand and placed in a 6-mil polyethylene bag, being careful not to puncture the bag with any pointed or sharp pieces of debris.
- Remaining debris will be picked up with the HEPA Vacuum. HEPA Vacuum will travel at a moderate speed to ensure complete pick-up of all dust and remaining debris.
- The polyethylene sheeting will then be dampened with a fine mist, to keep the dust from becoming airborne, then folded inward, upon itself, so as to contain any dust and debris remaining and prevent the contamination of the work area with dust during clean-up.
- Polyethylene sheeting may not be cleaned and re-used. It will be disposed of in a 6-mil polyethylene bag, which is secured with a 5" plastic tie.
- At the completion of all work, in addition to the clean-up of gross debris described above, HEPA Vacuums will be utilized to vacuum the floor(s) and any other surfaces bearing dust generated during the work. The floor(s) will be vacuumed starting at the far end of the work area and working toward the entrance of the work area. Every inch of the window sills, window troughs and other window surfaces where dust can accumulate must be HEPA Vacuumed.
- After using HEPA Vacuum the entire work area, including window sills and wells, will be wet mopped with a cleaning solution to remove all visible dust and debris.

## Disposal

- All debris will be bagged and sealed before being removed from the work location to the specified dumpster location.
- All debris will be removed from the work area and legally disposed of at the end of each day by the Contractor, including all debris generated by the subcontractors.

## Work in Confined Spaces

Welding, cutting and other hot work may be performed in the areas with varying amounts of available space. When the work area has limited space, entry or exit and poor ventilation or where there is lack of safe breathing air and a high possibility of buildup of hazardous gases fumes and particles, the working area becomes a "confined space."

The following are examples of confined spaces: small rooms, tunnels, furnaces, pipelines, silos, boilers, pits, vats, storage tanks, and degreasers, process vessels, utility vaults ventilation ducts, sewers, unventilated room areas and **crawl spaces**.

- Crawl Space is a Confined Space: It must be Re-evaluated for Hazards prior each entry.
- Crawl Space becomes a Permit-Required Confined Space if Sewage (of any amount), Flooding, Pooling, Significant Steam Leaks (creating heat stress or reduce visibility), Sink Holes within Work Area are present. Use Permit Required Confined Space Procedures.
- Do not enter without attendant present.

Serious injuries and deaths may occur while working in confined spaces. Fire, electric shock, exposure to hazardous air contaminants, explosions and asphyxiation are main causes of deaths and serious injuries from hot work in confined spaces. Special precautions must be taken before and during the work

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in a confined space.

Contractor has to submit confined space procedure if applicable.

Minimum items to be included in the Contractors Procedure are:

- Actions Required Before Approving Work in Confined Space
- Authorized Entrants Requirements
- Actions Required during Work in Confined Space

## **Grounding of Portable and Vehicle Mounted Welding Generators**

The Contractor understands that improper grounding and bonding of portable and vehicle mounted welding generators that supply 115 or 230 volts AC auxiliary power presents hazard to the welder's wellbeing.

**HAZARD: When the generator is running, current can pass through a wire, a ladder, a hoist, welder's body, or any other conductor. If the site worker becomes a part of an electrical circuit, current can pass through his body causing a shock.**

To avoid injuries caused by improper grounding of portable or vehicle mounted welding generators the Contractor will meet the following regulations:

- Manufacturer recommended procedures for grounding the welding generator will be followed at all times.
- Attention will be given to bed liners in trucks. The welding generators frame must be securely connected to the frame of the vehicle or trailer by a ground wire or bolted metal-to-metal contact.
- Generator will be bonded to the vehicle frame or earth.
- When grounding a generator sitting directly on the earth, a driven ground rod will be used to ensure the earth connection.
- The fuel nozzle will be kept in contact with the tank when fueling to prevent static sparks and fire.

**Note: Proper grounding of the welding generator frame can help prevent electric shock.**

For generators located in a truck or trailer where power is used directly from the receptacles via plugs, the generator frame must be connected (bonded) to the vehicle frame and good metal-to-metal connection must be maintained.

Where the generator's auxiliary power is hard wired to a project or building's electrical system, the generator's frame must be connected to a driven ground rod or metal water pipe.

The decision will be based on the purpose of the auxiliary power. If the equipment is just plugged into the receptacles, connection to the vehicle frame is satisfactory. If the auxiliary power is hard wired into another electrical system, it must connect the generator's frame to a driven rod or metal water pipe. The objective is to keep the frame of the generator at zero (or earth) voltage.

## **Cylinders: Hazards, Safe Storage, Handling, and Use**

- Cylinder Hazards
  - (i) Physical Damage: Cylinders, with their high internal pressure [up to 2,500 pounds per square inch gauge (psig)], are very hazardous when exposed to damage from falling over or tipping, heat, electric circuits, motion, or vibration or anything that can cause a weakness or crack in the cylinder wall or shell. Such damage can cause the cylinder to rupture and

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- explode sending sharp metal pieces, like shrapnel, blasting through the area.
- (ii) **Valve Hazard:** The Compressed Gas Association (CGA) has established a 0.300 inch (7.62 mm) maximum valve inlet diameter as a requirement to minimize the propulsion effect in case the valve is severed. This standard has the exception of valves used in liquefied gas services and fire control systems. Special design requirements and unique applications such as fire control systems, which require a “high blow down flow”, may dictate greater diameters. The actual outcome of a broken off valve depends on the design and pressure of the valve and cylinder. If the valve is broken off and the valve inlet opening meets the CGA requirements, the cylinder will rapidly release all its gas (which could be a health and/or flammability concern), cause a whistling sound, and possibly spin uncontrollably. If the valve inlet opening is different from the standard hole-size used in most welding gases, such as those used for propane or butane and fire protection system cylinders, the cylinders may take off and become airborne.
  - (iii) **Tipping and Falling:** The most common major hazard is having a cylinder tip over or fall on the worker performing job or another nearby worker. Since cylinders are heavy and awkward to handle, they require special care and equipment in handling and securing so they don't fall or tip over and cause injury.
  - (iv) **Valve Leakage:** Cylinder valves can leak, causing their contents to discharge. To minimize hazards from leaks, proper ventilation and storage must be used.

- **Cylinder Storage**

Cylinder storage is subject to strict to regulations. The Contractor will ensure that the following rules are met:

- (i) **Flammable material will not be stored on NYCHA property overnight.**
- (ii) Cylinders will be stored upright and secured with a chain, strap, or cable to a stationary building support or to a proper cylinder cart to prevent them from tipping or falling.
- (iii) The valves will be completely closed and the valve protection devices, such as caps or guards, will be kept securely in place.
- (iv) Cylinders will be stored in a dry, well-ventilated area at least 20 feet from combustible materials. Cylinders will not be stored in lockers. A buildup of flammable or other types of gases can occur inside the locker if they leak.
- (v) Storage area will be properly marked with precautionary signs, such as flammable, oxidizer, or toxic.
- (vi) Cylinders will be placed in a location where they will not be subject to mechanical or physical damage, heat, or electrical circuits to prevent possible explosion or fire. Cylinders will be kept away from vehicle traffic.
- (vii) Empty cylinders will be stored separate from the full ones.
- (viii) Oxygen cylinders will be kept at least 20 feet away from fuel-gas cylinders, such as acetylene, or separated with a noncombustible barrier (such as a wall) at least 5 feet high with a fire-resistance rating of at least one-half hour.

- **Cylinder Handling and Use**

- (i) Right equipment, correct procedures, and number of persons sufficient to lift and move cylinders will be employed to avoid personal injury and cylinder damage.
- (ii) Protective footwear, safety glasses, and heavy gloves will be used during cylinder transport.

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- (iii) The valve protection devices, such as caps or guards will be securely installed.
- (iv) Cylinders will be secured upright to a proper hand truck or cylinder cart designed for the purpose.
- (v) Properly designed cart or hand truck will be used to move cylinders from one place to another. Dragging or rolling cylinders is prohibited.
- (vi) Proper cradles, nets, boats, or special platforms designed for the purpose will be used when crane is used to move cylinder, to prevent cylinders from falling.
- (vii) To prevent damage, cylinders will be handled with great caution. Dropping or banging them will be avoided at all times.
- (viii) Cylinders will not be lifted by the protective cap/guard and magnets or slings will not be used to move them since valves may be damaged or sheared off.

# Site Safety Program

## SECTION 9: Certificates & Resumes

- OSHA 10-hr Construction Safety Training Certificates  
[Attach Certificates here]
- Qualified Safety Representative Designee Resumes and Certificates  
[Attach Resume(s) here]
- Certificates for all personnel erecting, using or operating suspended scaffolds and supported scaffolds as required by NYC-DOB regulations.  
[Attach Certificates here]
- Welding/ Torch/ Firewatch Certificates  
[Attach Certificates here]
- Certificates of Fitness as required  
[Attach Certificates here]
- Copies of the above certifications will be available at [Name of Contractor] site office and copies included in this Site Specific Safety Program submitted to [NYCHA PU Name/ CM Name].

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Office Number, Fax Number  
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# Site Safety Program

## SECTION 10: Emergency Evacuation Plan

- Air horns will be placed in the work area. A pre-determined signal will identify a fire alarm.
- All exits will be clearly marked in the work area. An emergency evacuation plan indicating emergency exits will be posted in all Trailers. Escape routes in the work area will be clearly marked with arrows pointing to each emergency exit in red spray paint.
- Fire extinguishers will be distributed throughout the work area as per DOB regulations and will be clearly marked. These are to be used in an attempt to extinguish the fire only if personnel are trained in the use of fire extinguishers and the fire is in an initial stage and may be safely controlled with the equipment available.
- The NYC Fire Department must be notified immediately in the event of a fire by dialing 911. **This must be done even in situations where the fire appears to be easily extinguishable.**
- The first person to sound the alarm will be [Enter Name of Site Safety Competent Person] Site Supervisor who in turn will notify the Fire Department and NYCHA Personnel and all other individuals listed on the emergency contact roster posted in the trailers and around the site
- All employees will proceed to the Designated Safe Meeting Area (at least 200 feet away) at [Safe Meeting Area Address] from the work area and follow NYCHA security guidance. The Site Supervisor will check all personnel against the log book to ensure that all personnel have safely exited the work area. Information regarding any missing personnel will be communicated to FDNY immediately or to NYCHA Security if FDNY is not yet on-site. Once out of the work area, no one should be allowed to re-enter until the emergency is declared over and authorization is received from FDNY and NYCHA.

## **EMERGENCY EXIT PLAN DIAGRAM**

(Insert or attach diagram)

(Post on Site at all Work Locations)

# Site Safety Program

## EMERGENCY INFORMATION DIAL 911

<b>POLICE</b>	NYC POLICE DEPT. PRECINCT # ADDRESS: Tel:
<b>FIRE</b>	NYC FIRE DEPT. ADDRESS: Tel:
<b>MEDICAL EMERGENCY</b>	Nearest Hospital ADDRESS:  Tel:
<b>BUILDING OWNER</b>	NYC HOUSING AUTHORITY 90 CHURCH STREET NEW YORK, NY 10007 212-306-XXXX

## INFORMACION DE EMERGENCIA MARCA 911

<b>POLICIA</b>	NYC POLICE DEPT. PRECINCT #: ADDRESS: Tel:
<b>DEPARTMATO FUEGO</b>	NYC FIRE DEPT. ADDRESS: Tel:
<b>MEDICO EMERGENCIA</b>	NAME OF NEAREST HOSPITAL ADDRESS: Tel:
<b>EDIFICIO PROPIETARIO</b>	NYC HOUSING AUTHORITY 90 CHURCH STREET NEW YORK, NY 10007 Tel: 212-306-XXXX

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# Site Safety Program

## Information Resources

- American Welding Society (AWS). Welding Terms and Definitions, A3.0, published by the American Welding Society, 550 NW LeJeune Road, Miami, FL 33126; telephone 800-443-9353; Web site:aws.org
- American National Standards Institute (ANSI). Safety in Welding, Cutting, and Allied Processes (ANSI Z49.1), published by the American Welding Society, 550 NW LeJeune Road, Miami, FL 33126 (telephone: 800-443-9353; web site:www.aws.org).
- Occupational Safety and Health Administration (OSHA). Code of Federal Regulations, Title 29 Labor, Parts 1910.1 to 1910.1450 and 1919.332, available from the U.S. Government Printing Office, , 732
- North Capitol Street NW, Washington, DC 20401 (telephone: 800-321-6742; web site: [www.osha.gov](http://www.osha.gov)).
- National Fire Protection Association (NFPA). Standard for Fire Prevention During Welding, Cutting and Other Hot Work (NFPA 51B), available from National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269- 9101 (telephone: 800-344-3555; website:www.nfpa.org).
- Institute of Electrical and Electronic Engineers (IEEE), IEEE Recommended Practice for Grounding of Industrial and Commercial Power Systems—Green Book, ISBN 1-5593-7141-2, Product Number SH14498-TBR Standard 142-1991, available from IEEE Publications Office, 10662 Los Vaqueros Circle, P.O. Box 3014, Los Alamitos, CA 90720-1264 (phone: 800-272-6657, website: [www.ieee.org](http://www.ieee.org) ).
- Mine Safety and Health Administration (MSHA). Code of Federal Regulations Title 30 Mineral Resources, Parts 1 to 199, available from the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401; telephone: 202-693-9400; web site: [www.msha.gov](http://www.msha.gov).
- National Institute for Occupational Safety and Health (NIOSH) Respirator Rule. Code of Federal Regulations, Title 42 Public Health, Part 84, available from the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401; telephone: 800-356-4674; web site: [www.cdc.gov/niosh](http://www.cdc.gov/niosh).
- American National Standards Institute (ANSI). Practice for Occupational and Educational Eye and Face Protection (ANSI Z87.1), available from ANSI, 25 West 43rd Street, New York, NY 10036; telephone:212-642-4900; web site: [www.ansi.org](http://www.ansi.org).

# Site Safety Program

## APPENDIX A-1

LIST OF ALL SAFETY AND EMERGENCY PERSONELL OF NYCHA PROJECT MANAGEMENT TEAM (PMT), NYCHA CONSTRUCTION SAFETY & QUALITY DEPARTMENT (CSQ), PROPERTY MANAGEMENT, CONSTRUCTION MANAGER (CM), GENERAL CONTRACTORS (GC)

Personnel listed above **must be notified within 30 minutes** of any site incident and must be included (cc'ed) on any subsequent correspondence related to the accident.

Title	Name	Tel#	Cell#	E-mail/Web site
NYCHA Executive Project Manager				
NYCHA Senior Project Manager				
NYCHA Project Manager				
CSQ Director	Ajene Eustace	(212) 306-4107	(646) 847-5345	<a href="mailto:ajene.eustace@nycha.nyc.gov">ajene.eustace@nycha.nyc.gov</a>
CSQ Manager	Nader Faragalla	(212) 306-2819	(917) 468-4981	<a href="mailto:nader.faragalla@nycha.nyc.gov">nader.faragalla@nycha.nyc.gov</a>
NYCHA Development Property Manager				-
NYCHA Development Property Maintenance Superintendent				-
CM and/or NYCHA CPM Project Manager				-
CM and/or NYCHA CPM Supervisor				-
GC Project Manager				-
GC Safety Representative				-
NYC Department of Buildings		(212) 393-2128		<a href="http://www.nyc.gov/buildings">www.nyc.gov/buildings</a>
Occupational Safety and Health Administration		(800) 321-6742		<a href="http://www.osha.gov">www.osha.gov</a>

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# Site Safety Program

## APPENDIX A-2

### Accident/Incident Investigation Form

Check one: Injury  Incident  Both Injury & Incident  Fatality  Vehicle  Close Call/ Near Hit

#### 1. SUPERVISOR CONTACT INFORMATION

a. Supervisor / Investigator name		b. Title	c. Construction Manager	d. Phone#	e. Email address
f. Report Date: (mm/dd/yyyy)		g. Date of incident: (mm/dd/yyyy)	h. Time of incident: (military time)	i. Incident place/location: (Name of Development and Address)	
k. General Contractor		l. Was subcontractor involved? If yes, provide name and contact information:		n. OSHA Notified	o. DOB Notified

#### 2. INJURED PARTY

a. If no injury, check box and skip this section. No injury <input type="checkbox"/>	b. Injured party name:	c. Injured party contact information:
d. Injury description:		

#### 3. WITNESSES AND/OR WITNESS STATEMENT

a. Witnesses: (name and contact information)	YES <input type="checkbox"/> NO <input type="checkbox"/>
--	---

#### 4. PROPERTY DAMAGE

a. List property / material damaged :	b. Nature of damage:
c. Object / substance inflicting damage:	d. Approximate cost:

#### 5. THE INCIDENT

Causal analysis type: (to be determined by Incident Investigation program manager)	Root cause analysis <input type="checkbox"/> Apparent cause <input type="checkbox"/>
--	---

**a. Briefly describe what happened:** (description of occurrence) Investigate scene of incident or conditions. Describe who was involved, when and where the incident happened, what happened, and how. Attach photos if available.

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<b>b. Why did it happen? (description of cause)</b> <i>What actually caused the illness, injury, or incident?</i>

<b>c. What did you do in response?</b> <i>What were the results? List actions taken and results. (Do not enter corrective actions. See Section 6.)</i>

<b>d. What should be done to prevent a recurrence? Brief final evaluation and lessons learned.</b> <i>Use descriptive constructive statements (such as "worker should wear safety glasses"; "worker needs training in lifting techniques"; "a ladder should have been used"). Primary focus should be on engineering controls, where possible.</i>
---

--

**6. CORRECTIVE ACTION TAKEN AND/OR REQUIRED**

List action(s) that have or will be taken to prevent a recurrence. There should be a corrective action for each item identified in 5.d. above. Add additional lines as needed.	By whom	Target completion date	Actual completion date
1)			
2)			
3)			

**7. WORK PLANNING AND CONTROL (WPC) AUTHORIZATION REVIEW**

<p>a. Is there a Site Safety Program that authorized the task being performed when the injury or incident occurred?                  • If yes, review the document(s), answer the following questions, and attach a copy to this report.                  • If no, please explain where hazards and controls were documented, and how the worker was authorized to perform work.</p>	YES <input type="checkbox"/>  NO <input type="checkbox"/>
<p>b. Was person involved in incident in full compliance with new and refresher training requirements? If no, please explain.</p>	YES <input type="checkbox"/>  NO <input type="checkbox"/>
<p>c. Were hazards sufficiently identified? If no, please explain.</p>	YES <input type="checkbox"/>  NO <input type="checkbox"/>

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d. Were identified controls adequate? If no, please explain.	YES <input type="checkbox"/>
	NO <input type="checkbox"/>
e. Were the identified controls implemented? If no, please explain.	YES <input type="checkbox"/>
	NO <input type="checkbox"/>

<b>8. AUTHORIZED SIGNATURES</b>	
a. Investigation completed by (Include Company Name)	Date
b. Reviewed by Title	Date
c. Investigation approved by Job Title	Date
d. Investigation reviewed Job Title	Date

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 Office Number, Fax Number  
 Date

**SECTION 01 35 53  
SECURITY PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Security measures including formal security program, entry control, personnel identification, guard service, and miscellaneous restrictions.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 10 00 - Summary: use of premises and occupancy.
- B. Section 01 50 00 - Temporary Facilities and Controls.

**1.03 SECURITY PROGRAM**

- A. Protect Work, existing premises and NYCHA's operations from theft, vandalism, and unauthorized entry.
- B. Initiate program at project mobilization.
- C. Maintain program throughout construction period until NYCHA occupancy.

**1.04 ENTRY CONTROL**

- A. Restrict entrance of persons and vehicles into Project site and existing facilities.
- B. Allow entrance only to authorized persons with proper identification.
- C. Maintain log of workers and visitors, make available to NYCHA on request.
- D. NYCHA will control entrance of persons and vehicles related to NYCHA's operations.
- E. Contractor shall control entrance of persons and vehicles related to NYCHA's operations.
- F. Coordinate access of NYCHA's personnel to site in coordination with NYCHA's security forces.

**1.05 PERSONNEL IDENTIFICATION**

- A. Provide identification badge to each person authorized to enter premises.
- B. Badge To Include: Personal photograph, name, assigned number, expiration date and employer.
- C. Maintain a list of accredited persons, submit copy to NYCHA on request.
- D. Require return of badges at expiration of their employment on the Work.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 40 00**

**QUALITY REQUIREMENTS (Plumbing)**

**PART 1.00 - GENERAL**

1.01 GENERAL REQUIREMENTS

- A. The work, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.02 CODES AND STANDARDS

- A. Comply with Occupational Safety and Health Act (OSHA) requirements.
- B. All Plumbing work requiring a DOB permit must be performed by a NYCHA approved Plumbing Sub-contractor or performed by the Company's own Plumbing License.
- C. All Electrical work requiring a DOB permit must be performed by a NYCHA approved Electrical Sub-contractor or performed by the Company's own Electrical license.

1.03 FEES, PERMITS AND INSPECTIONS

- A. Secure all permits and pay all fees required by local and state governing bodies necessary to complete the construction. Failure to investigate all applicable payments before the bid submission shall not constitute grounds for additional monies from the Owner. The Owner shall be furnished with all certificates of approval.
- B. Fees, permits, taxes, or certificates required by governing bodies, Board of Fire Underwriters, OTCR (Office of Technical Certification and Research, Dept of Buildings), or other agencies affecting work as specified herein, shall be obtained and paid for by this Contractor as part of basic contract.
- C. Unless otherwise specifically provided by Code provisions, all required inspections and tests of materials designated for "special inspection" shall be made and witnessed by or under, the direct supervision of a NYS duly licensed professional engineer retained by NYCHA.

1.04 CARE OF WORK AND SAFEGUARDS

- A. Protect the work from damage by any cause until it is completed and accepted by the Owner.
- B. Any damaged property resulting from work performed either by this Contractor, his subcontractors, or anyone in his employ shall be repaired and restored to its original state at no cost to the Owner.

1.05 REFERENCE DOCUMENTS AND STANDARDS

- A. Accepted plumbing standards and organization whose abbreviations are used to identify such standards are listed below:
  - 1. A.N.S.I., American National Standards Institute, Inc.
  - 2. A.S.S.E., American Society of Sanitary Engineering.
  - 3. A.S.T.M., American Society for Testing and Materials.
  - 4. A.W.W.A., American Water Works Association.
  - 5. C.S., Commercial Standard - National Bureau of Standards.
  - 6. F.S., Federal Specifications.
  - 7. U.L., Underwriters Laboratories.

8. F.M., Factory Mutual

1.06 GUARANTEE

A. In addition to the requirements stated in the specifications, guarantee all equipment, materials and appurtenances installed to be free from all defects. Upon written notice from the Authority, promptly correct all defects without additional cost to the Owner. Make good, at no extra cost any defects in materials or workmanship that may appear. The guarantee period shall be from one (1) year after final inspection and acceptance of the project.

**PART 2.00 - PRODUCTS**

2.01 QUALITY OF MATERIALS AND SUBSTITUTIONS

- A. Materials furnished and installed shall be new and of makes and sizes specified or indicated, unless permission is obtained in writing to substitute equipment and materials for approval before placing orders. Workmanship must be first class in every respect.
- B. Replace any defective work at his own expense immediately upon notification.
- C. Remove material or equipment installed before Contractor obtained "No Exception taken" or "Make Corrections Noted" comment, and/or in the opinion of the Authority the material or equipment does not meet intent of Drawings and Specifications, at no extra cost to Owner. The Authority shall have right for final approval or disapproval for any material.
- D. Note that comments "No Exception taken" or "Make Corrections Noted" marked on shop drawings or other information submitted in accordance with requirements hereinbefore specified does not assure that the Authority representative attests to dimensional accuracy or dimensional suitability of material or equipment involved or mechanical performance of equipment. Comments on shop drawings does not invalidate Plans and Specifications if shop drawings are in conflict with Plans and Specifications.

2.02 PRODUCT HANDLING

- A. In addition to the requirements of the General Conditions, the Contractor shall be responsible for the following:
  - 1. Responsibility for care and protection of plumbing work rests with the Contractor until it has been tested and accepted.
  - 2. After delivery, before, during and after installation, protect equipment and materials against theft, injury and damage for all causes.
  - 3. Coat polished or plated metal part with Vaseline immediately after installation.
  - 4. Protect equipment outlets and pipe, openings with caps.
- B. Receive, properly house, handle, hoist, deliver to proper location, equipment and other materials required for the contract.

2.03 MATERIALS

- A. Design:
  - 1. Unless otherwise specified, equipment or material of same type or classification, used for the same purpose, shall be products of the same manufacturer. All material shall be new and of



the latest design of manufacturer providing equipment or materials.

2. Equipment and accessories not specifically described or identified by manufacturer's catalog numbers shall be designed in conformity with ASME, or other applicable technical standards, suitable for maximum working pressure and shall have neat and finished appearance.

### **PART 3.00 - EXECUTION**

#### **3.01 SUPERVISION**

- A. All work shall be performed by competent mechanics under supervision of an experienced erection supervisor. Upon initiation of construction, keep a suitable force of men (including supervisory personnel) on the site at all times.

#### **3.02 COORDINATION**

- A. Schedule construction and time limitations for each phase of the work. Work shall be coordinated to permit proper setting of the work of other trades.
- B. Where piping work and appurtenances are in place prior to completion of adjacent concrete and masonry work, protect work against damage and displacement until construction is completed.

#### **3.03 CLEANING AND PROTECTION**

- A. Protect piping, and all other equipment during storage at site, from damage, rain, dirt, and ground water.
- B. After completion of project, clean exterior surface of equipment included in this Division.
- C. During erection protect piping and equipment from damage and dirt. Cap the open top of piping installed vertically.
- D. Contractor shall be fully responsible for the safety of his own trade materials and tools on the job until final completion.
- E. Contractor shall protect the work equipment and material of all other trades from damage by the work or other personnel, and shall make good all damage thus caused.
- F. Contractor shall be responsible for all work, materials and equipment until finally inspected, tested and accepted; protect work against theft, injury or damage; and carefully store material and equipment received on site which are not immediately installed. Close open ends of work with temporary covers or plugs during construction to prevent entry of obstruction material. Contractor shall cover and protect in an acceptable manner to the Architect, all equipments and materials from damage due to water, spray-on fireproofing. construction debris, etc.
- G. Clean equipment and piping of iron cuttings and other foreign matters, as they are installed.

#### **3.04 WORK SCHEDULE AND SHUTDOWNS**

- A. Prior to starting of work, submit a proposed schedule and sequence of performing the work. Any overtime necessary to maintain this schedule shall be paid for by the Contractor at no additional cost to the Authority. For two tank systems, only one tank shall be replaced at a time; the other tank shall remain in service until the new tank is in operation.

- B. Under no conditions may water service or any portion thereof be shut down for a period exceeding eight hours in any 24 hour period. Shut down, and draining of the piping systems or any portion thereof is the responsibility of the Contractor. All work shall be performed between the hours of 8:00 A.M. and 4:00 P.M., and only after a minimum of 48 hours notice to the Development management. No shutdown will be permitted on weekends or legal holidays.
- C. There shall be a minimum of interruption to the domestic hot and cold water supply to the tenants. Schedule work so that shutdowns shall be performed only after all peripheral work has been performed and the shutdown made only as required for the final connection.
- D. Notify the Superintendent of the Development and the Project Administrator, New York City Housing Authority, at least forty-eight (48) hours before commencement of work. Sign the Contractors log upon arrival at the Development, alert the Superintendent of the Scope of Work and the location of work planned for the day. Notify the Fire Department of fire standpipe system shutdown.
- E. Notify the tenants (48 Hr. notice) as to the installation dates for each building. The Development Superintendent shall render any possible assistance during scheduling. However, it shall be the Contractor's responsibility to schedule his work with the tenants of the Development.
- F. In performing this work the Contractor shall, at his own expense provide temporary piping or means of providing water supply or making any temporary connections. All such work shall be performed in accordance with the rules and regulations of all public agencies having jurisdiction and the Contractor shall have sole responsibility for obtaining any necessary approvals.
- G. Prior to restoration of hot and cold-water service the Contractor shall, with his own staff, inspect all apartments affected by the water shutoff to ensure that all faucets are secured, to prevent flooding. The Authority will provide the Contractor access to the apartments for this purpose

### 3.05 CUTTING AND PATCHING

- A. Cutting, chasing, or boring in construction shall be done by this Contractor. Where existing foundations or walls below grade are involved, specific instructions shall first be obtained from the Authority.
- B. Cutting, chasing or boring will not be permitted in bearing walls, trusses, girders, or similar structural items unless special permission is obtained from the Authority. Be responsible for damages resulting from failure to observe this provision.
- C. All openings and cuttings shall be done as neatly as possible and shall be filled, patched and finished with material equal to existing.

### 3.06 ROUGH-IN

- A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

### 3.07 WELDING PROCEDURES

- A. Solder joints shall conform to ANSI B 9.1 code for pressure piping.
- B. Brazed joints shall conform to ANSI B 9.1 code for pressure piping and ANSI/ASHRAE standard 15-78.
- C. Brazed joints are to be made up with brazing filler metal - an alloy of copper-phosphorus (BCuP) containing no more than 15 percent silver in accordance with Fed. Spec. QQ-B-650 (to be cadmium and lead free).

- D. Soldered joints are to be coated with a paste form of flux consisting of a petrolatum base impregnated with zinc and ammonium chloride.
- E. Soldered joints are not to be "pre-tinned" prior to assembly. Soldered and brazed joints shall be thoroughly cleaned prior to assembly.

3.08 ADJUSTING AND BALANCING

- A. Make all required adjustments to plumbing system devices until all specified performances are met.

3.09 CLEAN-UP

- A. Be responsible for the general clean-up of all areas affected by the work in the Contract. All rubbish and accumulative material shall be removed from the premises and the premises left "broom clean" upon completion.

3.10 IDENTIFICATIONS

- A. Piping System:
  - 1. All piping systems shall be identified by the name of contents and the direction of flow in accordance with ANSI A13.1 (1981).
  - 2. Name of contents and directional arrows shall be placed near each valve, on both sides of pipes passing through walls, on long pipe runs at 30-foot intervals.
  - 3. Names of contents and directional arrows shall be laminated in plastic and wraparound pipe marker as manufactured by Seton Nameplate Co., or approved equal.

3.11 SCAFFOLDING AND HOISTING EQUIPMENT

- A. Provide all scaffolding, ladders and other equipment required for the proper execution of this work, all of which must conform to all laws, rules and regulations governing same.
- B. Furnish, install, operate and maintain in safe condition hoisting equipment and machinery required for the project to properly carry out and complete the work, except as may otherwise be specifically provided for in each trade sections of Specifications.
- C. Hoisting equipment and machinery, and operation to comply in all respects to applicable federal, state, and local laws, ordinances, codes, rules, and regulations applicable to the work.
- D. Remove equipment from job site after completion.

**END OF SECTION**

**DIVISION 01**  
**SECTION 01 41 00**  
**REGULATORY REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SUMMARY**

Regulatory requirements applicable to this project are the following:

- A. New York City Building Code
- B. New York City Board of Standards and Appeals
- C. New York City Local Law 58
- D. Uniform Federal Accessibility Standards, 1984
- E. 29 CFR 1910 - Occupational Safety and Health Standards; current edition.

**1.02 RELATED REQUIREMENTS**

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

**1.03 GENERAL**

- A. All Work shall be done as hereinafter specified and in accordance with the latest rules and regulations of OSHA and all regulatory (Federal, State and Local) and public agencies having jurisdiction in the Work of this contract.
- B. All Work and materials shall fulfill the requirements of but not limited to the New York City Building Code, the New York City Board of Standards and Appeals, be trademarked and grade-marked and shall meet the approval of NYCHA, and all other regulations and standards indicated on the drawings and included in the specifications and submittals.
- C. Only the latest editions or revisions of reference standards, codes, and specifications in force at the date of bid opening shall be applicable unless otherwise specifically noted. These shall be supplemented by, and superseded, if in conflict with the New York City Building Code, and applicable requirements of the code shall be followed as if especially noted herein unless otherwise directed by NYCHA.
- D. The Contractor shall be responsible for knowing and complying with regulatory requirements - Federal, State and Local - pertaining to legal disposal of all construction and demolition waste materials.
- E. All Work shall conform to the minimum accessibility standards set by New York City Local Law 58 and the Uniform Federal Accessibility Standards, 1984.

**1.04 PERMITS, APPLICATIONS AND CERTIFICATES**

- A. The Contractor shall be responsible, at no additional cost to NYCHA, for the filing of all required applications, reports and forms with all Governmental Agencies having jurisdiction. The Contractor shall obtain all work permits and certificates as required according to the final Contract Drawings and Amendments, as approved by the Building Department.
- B. If the Contractor is prevented from obtaining any required certificates of completed inspection or amended certificates of occupancy due to outstanding violations, he or she shall submit to NYCHA a copy of the violation for NYCHA's action. NYCHA will assist the Contractor by adjudicating such violations to allow the Contractor to make any additional resubmissions required by the D.O.B Department of Buildings. and other regulatory agencies to obtain required sign-offs on the Work of this contract. Responsibility for obtaining a new/amended certificate remains with the Contractor.

**PART 2 PRODUCTS - NOT USED**  
**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 42 16**  
**DEFINITIONS**

**PART 1 GENERAL**

**1.01 SUMMARY**

A. Other definitions are included in individual specification sections.

**1.02 DEFINITIONS**

- A. Unless otherwise specified, the following are definitions of terms used in these Specifications:
1. **Addendum and Addenda:** Refer to written or graphic documents issued by NYCHA prior to the start of the Contract, which modify or interpret the Bid Documents by additions, deletions, clarifications or corrections. Upon issuance, the Addenda will become part of the Contract Documents.
  2. **Agreement:** The agreement between NYCHA and the Contractor for the Project, which has been signed by the parties, and including all Attachments and Amendments, as set forth in the Agreement document.
  3. **Approved (or words of similar import):** An acceptance in writing by an agency having jurisdiction, NYCHA, or NYCHA's Designated Representative.
  4. **Approved Equal:** Qualifier for a material or product considered equivalent to those as specified by the Designer of Record.
  5. **Architect:** A professional, licensed to practice architecture in the State of New York, responsible for the preparation of the architectural design Work and for the sealing and filing of the project's architectural documents. The term "Architect" is used to mean either a single or multiple Architects that may be responsible for the Project.
  6. **Authorities Having Jurisdiction:** Any Municipal Agency, utility company or entity that has jurisdiction over the Work as this relates to City, State and Federal laws, rules, regulations and / or codes.
  7. **Bulletin:** A written notice issued by NYCHA to the Contractor after the Contract has been awarded, which becomes part of the Contract Documents.
  8. **Consecutive Calendar Days (CCD's):** The measure of time for any Work action or phase, which is based on both the Contract Duration as well as the Detailed Construction Schedule.
  9. **Certification:** Refers to the submittal of mill or laboratory test reports, prepared by a certified testing agency, indicating that the material submitted complies with the requirements specified and is intended generally for the applications shown.
  10. **City or NYC:** The City of New York.
  11. **Closeout:** The phase that begins after the Final Acceptance of the Work.
  12. **Code:** The New York City Building Code, and any and all other Codes, rules and regulations that apply.
  13. **Consultant:** The Designer of Record retained by NYCHA, responsible for the design services for the Project.
  14. **Contract:** The document which represents the entire and integrated Agreement between NYCHA and the Contractor, and which may only be amended or modified by a Modification.
  15. **Contract Change:** A revision to either the Schedule of Values or the Contract Duration, as approved by NYCHA's Designated Representative.
  16. **Contract Documents:** These are enumerated in the Agreement between NYCHA and the Contractor, and consist of the Agreement, General Terms and Conditions, Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract, such as a) a written amendment to the Contract signed by both parties, b) a Change Order, c) a Construction Change Directive, and d) a written order for a minor change in the Work issued by the Designer of Record.

17. **Contract Drawings:** The graphic component of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.
18. **Contract Duration:** The total length of time for the Contract, inclusive of the Prestart and Closeout Phases.
19. **Contract Sum:** The dollar value of the Contract between NYCHA and the Contractor for the Project, which may only be adjusted by a valid Change Order.
20. **Contractor:** The entity identified as, 'Contractor' in the Agreement and referred to throughout the Contract Documents as if singular in number. The Contractor must be licensed in New York City.
21. **Critical Path Method (CPM):** Scheduling and reporting method required, for preparation and management of the Detailed Construction Schedule.
22. **Designer of Record:** The Architect or Engineer that designed and sealed the Contract Drawings.
23. **Detailed Construction Schedule:** The coordinated construction progress schedule, approved by NYCHA Designated Representative, to manage the scope of Work; which is coordinated with the Schedule of Values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
24. **Development:** The sum of the residential buildings owned or managed by NYCHA, including the grounds and community facilities as outlined in the Contract Documents.
25. **Engineer:** A professional, licensed to practice Engineering in the State of New York, responsible for the preparation of the Engineering Design Work and for the sealing and filing of the Project's Engineering documents. The term "Engineer" is used to mean either a single or multiple Engineers, or by speciality (i.e., HVAC, Plumbing, Electrical, etc.) that may be responsible for the Project.
26. **Equal or Approved Equal:** The equivalent material in the opinion of the Designer of Record.
27. **Extension of Time:** A NYCHA approved request made by the Contractor when warranted, to extend the duration of the Contract.
28. **Final Acceptance of the Work:** The date that NYCHA accepts all Work being 100% complete, and all Project documentation has been submitted and approved by NYCHA to process the Contractor's final invoice.
29. **Form of Proposal (FOP):** Contractor's initial bid breakdown and total bid price.
30. **Furnish:** Procure, supply, and deliver the article required for the completion of that portion of the Work.
31. **Kick-Off Meeting:** The initial meeting on-site with NYCHA's Designated Representative, NYCHA Property Management, and representatives of the Tenant Association, and other NYCHA designees, that are held prior to commencing any of the Work; and at which all Contract Documents and Project procedures are reviewed.
32. **Install:** Build-in, set, or place the article into assembly.
33. **NYCHA's Designated Representative(s):** Selected personnel for the Project.
34. **Payment Schedule:** The form that delineates payments to the Contractor, based upon percentage of completed Work.
35. **Project:** The Scope of Work as defined by the Contract Documents.
36. **Provide:** Furnish and install.
37. **Punchlist Work:** List of Work items that require correction, which is jointly prepared by NYCHA's Designated Representative and the Designer of Record.
38. **Request for Information (RFI):** Written inquiries about the Work initiated by the Contractor, which require written response from the Designer of Record.
39. **Resident Economic Empowerment and Sustainability (REES):** REES manages Section 3 employment opportunities and administers the Resident Employment Program at NYCHA.
40. **Resident Employment Program (REP):** Resident Employment Program – as administered by REES (see above)

41. **Resident(s)**: The NYCHA lease-holder and their listed authorized occupants approved to be residing in the Development.
42. **Remove**: To extract an article or assembly, and to dispose of that item in an approved manner off-site, unless otherwise directed in the Contract Documents.
43. **Samples**: Physical examples that illustrate, unless otherwise directed, materials, equipment or workmanship and establish standards by which the Work will be judged.
44. **Section 3**: A HUD regulation that requires Contractors to employ to the greatest extent feasible Public Housing Residents or Resident-owned Businesses to perform some of CPD's construction Work.
45. **Shop Drawings**: Drawings, diagrams, schedules, and data specifically prepared for the Work by the Contractor or its Subcontractor(s), a manufacturer, supplier, or distributor to illustrate some portion of the Work.
46. **Site**: The area of Work as indicated on the Contract Documents, including any staging area(s) approved by NYCHA's Designated Representative.
47. **Schedule of Values (SOV)**: The detailed cost breakdown of the Project, upon which the Payment Schedule is based.
48. **Specifications**: The written requirements of the Contract documents for materials, equipment, systems, standards, and workmanship of the Work, and performance of related services.
49. **Specification Section**: The particular portion of the Specification denoted by the Construction Specification Institute (CSI) numbers.
50. **State or NYS**: The State of New York.
51. **Subcontractor**: A person or entity which has a direct contract with the Contractor, to perform a portion of the Work.
52. **Submissions**: Documents required to be submitted by the Contractor.
53. **Submittals**: Submissions required by the Specifications, which may include Shop Drawings or Sketches, Literature, Catalogue Cuts, or Samples.
54. **Superintendent**: The Contractor's on-site superintendent designated to the Project, which meets the "competent person" requirements of the NYC Department of Buildings, and is approved in writing by NYCHA. The Superintendent must have a minimum of five years of past similar Work experience, and must be assigned full time to the Project.
55. **Work**: The construction and services required by the Contract Documents including all other labor, materials, equipment and services provided or to be provided by the Contractor, to fulfill the Contractor's obligations.
  
56. **"Adequate" or "sufficient"** shall mean adequate or sufficient in the opinion of the Authority or its Authorized Representative.
  
57. **"Certification"** refers to the submittal of any and all certified mill or laboratory test reports indicating that the material submitted complies with the requirements specified and is intended generally for the applications shown.
  
58. **"Color chart"** refers to the submittal of a manufacturer's full assortment of colors available for the specified product. Submittals shall be in color; black and white copies or reproductions are not acceptable.
  
59. **"Indicated"** is a cross-reference to graphic representations, notes or



schedules on the drawings, to other paragraphs or schedules in the specifications, and to similar means of recording requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used instead of "indicated," it is for the purpose of helping the reader locate the cross-reference, and no limitation of location is intended except as may be specifically noted.

60. **Related Contracts** shall refer to related General Construction, HVAC, Plumbing and Electrical Contracts that are part of the overall Construction Project.

61. **Replace** shall mean remove the existing and furnish and install new.

62. **WORD OMISSIONS**: Omissions in the sections of the Specifications following such words as "the Contractor shall," "shall be," "shall consist of," "the" etc., are intentional. Such words and phrases shall be applied where a colon occurs or by inference as is done in the case of a note on the Drawings. **Wherever instructions are given in the Drawings or Specifications, they are directed to the Contractor unless otherwise noted.** Where clarity of intent requires it, the long form is used.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 43 39  
MOCK-UPS AND SAMPLE INSTALLATIONS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Work includes all labor, materials, equipment and services necessary to complete the installation, testing of the mock-up and/or sample installation as specified herein.
- B. Control of installation.
- C. Mock-ups and sample installation.

**1.02 RELATED REQUIREMENTS**

- A. Requirements for mock-ups and sample installations shall be described in various sections of these specifications.
- B. Section 01 33 00 - Submittal Procedures
- C. Section 01 60 00 - Product Requirements

**PART 2 PRODUCTS**

**2.01 GENERAL REQUIREMENTS**

- A. Products shall be those outlined in the specifications and drawings and previously submitted for approval.

**PART 3 EXECUTION**

**3.01 CONTROL OF INSTALLATION**

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturer's instructions, including each step in sequence.
- C. Should manufacturer's instructions conflict with the Contract Documents, request clarification from the Designer of Record before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Work to be performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

**3.02 MOCK-UPS AND SAMPLE INSTALLATIONS**

- A. Before installing portions of the Work where mock-ups and sample installations are required, construct mock-ups and sample installations in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-ups and sample installations is to demonstrate the means and methods of installation, the materials and the proposed range of aesthetic effects and workmanship.
- B. Accepted mock-ups and sample installations establish the standard of quality the Designer of Record will use to judge the Work.
- C. Exterior Mock-ups and Sample Installations: construct exterior mock-ups and sample installations as indicated on Drawings. Coordinate installation of exterior envelope materials and products as required in individual Specification Sections. Provide adequate supporting structure for mock-up materials as necessary.

- D. Interior Mock-ups and Sample Installations: Construct room mock-ups and sample installations as indicated on Drawings. Coordinate installation of materials, products, and assemblies as required in Specification Sections; finish according to requirements. Provide required lighting and any supplemental lighting where required to enable the Designer of Record to evaluate quality of the mock-up and sample installation.
- E. Notify the Designer of Record and the NYCHA Designated Representative(s) fifteen working days in advance of dates and times when mock-ups will be constructed.
- F. Provide supervisory personnel who will oversee mock-up and sample installation. Provide workers of equal qualifications during the construction of the Project.
- G. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.
- H. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- I. Obtain the Designer of Record approval of mock-ups and sample installations before starting work, fabrication, or construction.
  - 1. The Designer of Record will issue written comments within seven working days of initial review and each subsequent follow-up review of each mock-up.
  - 2. Make corrections as necessary until the Designer of Record approval is issued.
- J. Accepted mock-ups and sample installations shall be a comparison standard for the remaining Work.
- K. Where mock-up has been accepted by Designer of Record and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by the NYCHA Designated Representative(s).
- L. Where possible salvage and recycle the demolished mock-ups materials.

### 3.03 SCHEDULE OF MOCK-UPS AND SAMPLE INSTALLATIONS

- A. Sample installation shall be installed simulating actual construction conditions of work, including actual construction work, including actual structural supports and connections. Use means and methods and techniques proposed for final installation of work
- B. The sample installation shall be accurate for the work dimensions, designs, fabrication, materials, finishes, and textures, and shall be accurate for all welded and brazed connections.
- C. The Designer of Record may direct the location of sample installation.
- D. Do not proceed further with the work until the NYCHA designated Representative has approved the sample installation.
- E. The sample installation maybe incorporated into the finished work if approved by the Designer of Record.
- F. Sample installations shall include, but not limited to, the following, as outlined hereinafter. NYCHA Reserves the right to require additional sample installation as it feels are necessary, which shall conform to the requirement list.
  - 1. Brick face repointing  
Sample should illustrate color, material and workmanship.
  - 2. Brick face replacement  
Sample should illustrate color, material and workmanship.
  - 3. Brick replacement – complete stack  
Sample should include brickwork, concrete and louver. Sample should illustrating color, material and workmanship.
  - 4. Railing installation  
Sample should be at a corner and include two panels both directions. Sample should illustrating color, material and workmanship.
  - 5. Door installation

- Sample should include door, hardware, bucks, saddle and caulking. Sample should illustrate color, material and workmanship.
6. Window installation  
Sample should include window, hardware and caulking. Sample should illustrate color, material and workmanship.
  7. Roof drain installation  
Sample should include all accessories. Sample should illustrate color, material and workmanship.
  8. Parapet reconstruction  
Sample should include brickwork, coping and flashing. Sample should illustrate color, material and workmanship.
  9. Louver installation  
Sample should include louver, hardware and caulking. Sample should illustrate color, material and workmanship.
  10. Concrete repair  
Sample should illustrate color, material and workmanship.

**END OF SECTION**

**SECTION 01 45 00**  
**QUALITY CONTROL**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated.
  - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, New York City Department of Buildings, Construction Manager, or Authorities Having Jurisdiction are not limited by provisions of this Section.

**1.02 RELATED REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Sections 02 through 32 for specific test and inspection requirements.
- C. Section 01 33 00 - Submittal Procedure
- D. Section 01 43 39 - Mock-up / Sample Installations

**1.03 DEFINITIONS**

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by the Construction Manager or Architect.
- C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and where:
  - 1. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on Project site, consisting of multiple products, assemblies, and subassemblies.
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- E. Product Testing: Tests and inspections that are performed by the National Recognized Testing Laboratories (NRTL), an National Voluntary Laboratory Accreditation Program (NVLAP), or a testing agency qualified to conduct product testing and acceptable to Authorities Having Jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).
- G. Field Quality-Control Testing: Tests and inspections that are performed on- site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor to perform a particular construction operation, including installation, erection, application, and similar operations.
- J. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- K. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five (5) previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of Authorities Having Jurisdiction.

#### **1.04 PROJECT / SITE CONDITIONS**

- A. A. Field Measurements: The Contractor shall verify that the field measurements are as indicated on construction and shop drawings before confirming product orders or proceeding with work, to minimize waste due to excessive materials.

#### **1.05 CONFLICTING REQUIREMENTS**

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

#### **1.06 CONTRACTOR'S QUALITY CONTROL PLAN**

- A. Quality-Control Plan, General: Submit quality-control plan within ten (10) days of Notice to Proceed, and not less than five (5) days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.
- B. The Contractor shall provide qualified inspection specialists as necessary to assure Contract compliance. These specialists shall have a minimum of five (5) years relevant experience. Names and qualifications in Resume format shall be submitted as part of the CQC Plan. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- C. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
  - 1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
  - 2. Special inspections required by Authorities Having Jurisdiction and indicated on the "Statement of Special Inspections."
  - 3. Owner-performed tests and inspections indicated in the Contract Documents, including tests and inspections indicated to be performed by the Commissioning Authority.
- D. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- E. Monitoring and Documentation: Maintain testing and inspection reports including a log of approved and rejected results. Include work that the Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of Authorities Having Jurisdiction.

### 1.07 REPORTS AND DOCUMENTS

- A. Statement that products at Project site comply with requirements.
- B. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications testing and inspection reports, manufacturer technical representative field reports, factory authorized service representative reports, releases, jurisdictional settlements, notices, established for compliance with standards and regulations bearing on performance of the Work per the relevant technical specifications in Divisions 2 through 33 of the Contract Specifications.

### 1.08 QUALITY CONTROL

- A. Authority's Responsibilities: Authority will engage a qualified testing agency to perform these services.
  - 1. Coordinate testing and inspection requests from Contractor.
  - 2. Submission of testing and inspection reports to the Contractor.
  - 3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to the Contractor.
- B. Contractor Responsibilities:
  - 1. Notify NYCHA designated representative at least 72 hours in advance of time when Work that requires testing or inspecting will be performed.
  - 2. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  - 3. Testing and inspecting requested by the Contractor and not required by the Contract Documents are Contractor's responsibility.
  - 4. Submit additional copies of each written report directly to Authorities
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections.
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in pre-installation conferences, examination of substrates and conditions, verification of materials, observation of installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
  - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  - 4. Facilities for storage and field curing of test samples.
  - 5. Delivery of samples to testing agencies.
  - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid the necessity of removing and replacing construction to accommodate testing and inspecting.

- H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.
  - 1. Distribution: Distribute schedule to Owner, Architect, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

**1.09 SPECIAL TESTS AND INSPECTIONS**

A. STATEMENT OF SPECIAL INSPECTIONS

For a list of Special Inspections, see Cover Sheet

- B. Special Inspections required in accordance with Chapter 17 and the applicable Sections of the NYC Construction Code are listed in the table below:

Masonry	BC 1704.5
Structural Safety – Existing Buildings	BC 1704.20.1
Post-Installed Anchors	BC 1704.32

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

**3.01 ACCEPTABLE TESTING AGENCIES**

- A. Testing agencies will have prior DOB TR-1 approval.

**3.02 TEST AND INSPECTION LOG**

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
  - 1. The date the test or inspection was conducted.
  - 2. Description of the Work tested or inspected with specific location where the work was performed.
  - 3. The date the test or inspection results were transmitted to the Architect.
  - 4. Identification of testing agency or special inspector conducting the test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Construction Manager's reference during normal working hours.

**3.03 REPAIR AND PROTECTION**

- A. General: Upon completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section "Execution-"
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

**END OF SECTION**



**SECTION 01 50 00**  
**TEMPORARY FACILITIES AND CONTROLS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Dewatering
- B. Temporary utilities.
- C. Temporary telecommunications services.
- D. Temporary sanitary facilities.
- E. Temporary Controls: Barriers, enclosures, and fencing.
- F. Security requirements.
- G. Vehicular access and parking.
- H. Waste removal facilities and services.
- I. Project identification sign.
- J. Field offices.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 51 00 - Temporary Utilities.
- B. Section 01 52 13 - Field Offices and Sheds.
- C. Section 01 55 00 - Vehicular Access and Parking.

**1.03 REFERENCE STANDARDS**

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- B. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.

**1.04 DEWATERING**

- A. Provide temporary means and methods for dewatering all temporary facilities and controls.
- B. Maintain temporary facilities in operable condition.

**1.05 TEMPORARY UTILITIES - SEE SECTION 01 51 00**

- A. NYCHA will provide the following:
  - 1. Electrical power and metering, consisting of connection to existing facilities.
  - 2. Water supply, consisting of connection to existing facilities.
- B. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.
- C. Existing facilities may not be used.
- D. New permanent facilities may be used.
- E. Use trigger-operated nozzles for water hoses, to avoid waste of water.

**1.06 TELECOMMUNICATIONS SERVICES**

- A. Provide equivalent equipment and connections for NYCHA's field office.
- B. Provide equivalent equipment and connections for Architect's field office.
- C. Telecommunications services shall include:
  - 1. Windows-based personal computer dedicated to project telecommunications, with necessary software and laser printer.
  - 2. Telephone Land Lines: One line, minimum; one handset per line.
  - 3. Internet Connections: Minimum of one; DSL modem or faster.

4. Email: Account/address reserved for project use.
5. Facsimile Service: Minimum of one dedicated fax machine/printer, with dedicated phone line.
6. Facsimile Service: Fax-to-email software on personal computer.
7. Project web site.

**1.07 TEMPORARY SANITARY FACILITIES**

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.
- C. At end of construction, return facilities to same or better condition as originally found.

**1.08 BARRIERS**

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.
- E. Traffic Controls: as determined by site specific conditions.

**1.09 FENCING**

- A. Construction: Contractor's option.
- B. Construction: Commercial grade chain link fence.
- C. Provide 6 foot (1.8 m) high fence around construction site; equip with vehicular and pedestrian gates with locks.

**1.10 EXTERIOR ENCLOSURES**

- A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

**1.11 SECURITY - SEE SECTION 01 35 53**

- A. Provide security and facilities to protect Work, existing facilities, and NYCHA's operations from unauthorized entry, vandalism, or theft.

**1.12 VEHICULAR ACCESS AND PARKING - SEE SECTION 01 55 00**

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and NYCHA.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Designated existing on-site roads may be used for construction traffic.
- F. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.
- G. Do not allow vehicle parking on existing pavement.
- H. Provide one parking space for NYCHA use.
- I. Provide one parking space for Architect use.

- J. Designate one parking space for NYCHA and Architect use.

**1.13 WASTE REMOVAL**

- A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.
- B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- C. Provide containers with lids. Remove trash from site periodically.
- D. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

**1.14 PROJECT IDENTIFICATION**

- A. Provide project identification sign of design and construction indicated on Drawings.
- B. Erect on site at location indicated.
- C. No other signs are allowed without NYCHA permission except those required by law.

**1.15 FIELD OFFICES - SEE SECTION 01 52 13**

- A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack and drawing display table.
- B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.
- C. Provide separate private office similarly equipped and furnished, for use of NYCHA.
- D. Locate offices a minimum distance of 30 feet (10 m) from existing and new structures.

**1.16 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS**

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 2 feet (600 mm). Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition.
- E. Restore new permanent facilities used during construction to specified condition.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 51 13  
TEMPORARY POWER**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Requirements for Temporary Power

**1.02 RELATED REQUIREMENTS**

- A. Section 01 31 00 - Project Management and Coordination

**1.03 GENERAL REQUIREMENTS**

- A. The Contractor shall verify that sufficient existing power is available for the execution of the Work. For power requirements aside from temporary lighting (e.g. power for heavy duty equipment, electric welding, compressors, etc.), the Contractor shall at their own expense furnish, install, and maintain all power wiring and all equipment necessary to supply power for their Work, and upon completion of their Work, shall remove any temporary power lines installed by them.
- B. If required for the execution of the Work, the Contractor shall be responsible for maintaining temporary power to the site, conforming to the requirements listed herein.
  - 1. The Contractor shall provide weatherproof, grounded electrical power service and a distribution system of sufficient size, capacity, and power characteristics for the entire contract duration period to accommodate the needs of the project. Provide properly configured NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.
  - 2. For all non-heating, non-lighting and non-hand tool power requirements (i.e. power for heavy duty equipment, electric welding, compressors, etc.), the Contractor shall, at their own expense, furnish, install, and maintain all power wiring and all equipment necessary to connect to the temporary power system for their work, and upon completion of their work, shall remove any temporary power lines installed by them. The Contractor shall furnish the metering equipment, make the application, and obtain the permits necessary to supply temporary power. The Contractor shall be responsible to install and maintain temporary power and light in perfect working order at all times at no cost to the Authority.
  - 3. Power connections to the trailer where applicable with all required metering equipment, necessary permits and signoffs from appropriate public utility company and local authority having jurisdiction.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

**3.01 DISTRIBUTION OF TEMPORARY POWER**

- A. The distribution point of the temporary power shall be coordinated with Capital Projects and the Project Management
- B. Refer to the electrical specification section.

**END OF SECTION**

**SECTION 01 51 26  
TEMPORARY LIGHTING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Requirements for Temporary Lighting

**1.02 RELATED REQUIREMENTS**

- A. Section 01 31 00 - Project Management and Coordination
- B. Section 01 51 13 - Temporary Power

**1.03 GENERAL REQUIREMENTS**

- A. If required due to the temporary removal of any exterior or interior lighting fixtures, or due to the replacement of existing lighting fixtures, the Contractor shall furnish and install all temporary lighting including exterior security lighting of the site and make all electrical connections as required.
- B. Installation and Maintenance. The Contractor shall install the temporary lighting system and after installation shall keep it in good working order.
- C. Removal. The temporary lighting system shall be removed by the Contractor when authorized and directed by NYCHA's Designated Representative.
- D. The Contractor shall be responsible for the relocation and /or extension of the temporary lighting as required during the course of the contract work.
- E. Non-Lighting Purposes. The temporary electric lighting system shall not be used for power purposes.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 51 36  
TEMPORARY WATER**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Requirements for Temporary Water

**1.02 RELATED REQUIREMENTS**

- A. Section 01 31 00 - Project Management and Coordination
- B. Section 01 52 19 - Temporary Sanitary Facilities

**1.03 GENERAL REQUIREMENTS**

- A. Installation and Maintenance: If required for the execution of the Work, the Contractor shall provide, install, and maintain a temporary water system, including the necessary temporary water lines, valves, fittings, pumps, and other appurtenances, all of such size and capacity as to adequately supply the needs of the Contract. Any repairs required due to such use shall be made at the expense of the Contractor. If required, one 100-foot long hose and one water nozzle shall be supplied by the Contractor, for use in outside work areas throughout the job site.
- B. Responsibility for Damage: The Contractor shall be responsible for any damages caused for reason of leaky, defective or broken piping connections or other appurtenances installed under this Section.
- C. When temporary water is provided: If necessary, temporary water shall be provided by the Contractor from 8AM to 4PM every regular working day for all trades. Should it be necessary, subject to the approval of NYCHA, for the Contractor to perform work before or after the hours set forth above or on a day other than a regular working day, the Contractor shall secure NYCHA's approval and make arrangements for such additional temporary water and toilet facilities.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 52 13  
FIELD OFFICES AND SHEDS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Temporary field offices for use of Architect.
- B. Temporary field offices for use of Contractor.
- C. Maintenance and removal.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 10 00 - Summary: use of premises and responsibility for providing field offices.
- B. Section 01 50 00 - Temporary Facilities and Controls:
  - 1. Temporary telecommunications services for administrative purposes.
  - 2. Temporary sanitary facilities required by law.
- C. Section 01 55 00: Parking and access to field offices.

**1.03 USE OF EXISTING FACILITIES**

- A. Designated existing spaces may be used for field offices.

**1.04 USE OF PERMANENT FACILITIES**

- A. When permanent facilities are enclosed with operable utilities, relocate offices into building, with written agreement of NYCHA, and remove temporary buildings.

**PART 2 PRODUCTS**

**2.01 MATERIALS, EQUIPMENT, FURNISHINGS**

- A. Materials, Equipment, Furnishings: Serviceable, new or used, adequate for required purpose.

**2.02 CONSTRUCTION**

- A. Portable or mobile buildings, or buildings constructed with floors raised above ground, securely fixed to foundations, with steps and landings at entrance doors.
- B. Construction: Structurally sound, secure, weather tight enclosures for office. Maintain during progress of Work; remove when no longer needed.
- C. Temperature Transmission Resistance of Floors, Walls, and Ceilings: Compatible with occupancy requirements.
- D. Exterior Materials: Weather resistant, finished in one color.
- E. Interior Materials in Offices: Sheet type materials for walls and ceilings, prefinished or painted; resilient floors and bases.
- F. Lighting for Offices: 50 fc (538 lx) at desk top height, exterior lighting at entrance doors.
- G. Fire Extinguishers: Appropriate type fire extinguisher at each office.

**2.03 ENVIRONMENTAL CONTROL**

- A. Heating, Cooling, and Ventilating: Automatic equipment to maintain comfort conditions.

**2.04 CONTRACTOR OFFICE AND FACILITIES**

- A. Size: For Contractor's needs and to provide space for project meetings.
- B. Telephone: As specified in Section 01 50 00.
- C. Furnishings in Meeting Area: Conference table and chairs to seat at least eight persons; racks and files for Contract Documents, submittals, and project record documents.
- D. Other Furnishings: Contractor's option.

- E. Equipment: Six adjustable band protective helmets for visitors, one 10 inch (250 mm) outdoor weather thermometer and any other required equipment as requested by NYCHA representative.

**2.05 OWNER AND ARCHITECT/ENGINEER OFFICE**

- A. Separate space for sole use of NYCHA and Architect, with separate entrance door with new lock and two keys.
- B. Area: At least 150 sq. ft. (14 sq. m), with minimum dimension of 8 ft. (2.4 m).
- C. Windows: At least three, with minimum total area equivalent to 10 percent of floor area, with an operable sash and insect screen. Locate to provide views of construction area.
- D. Electrical Distribution Panel: Two circuits minimum, 110 volt, 60 hz. service.
- E. Minimum four 110 volt duplex convenience outlets, one on each wall.
- F. Telephone: As specified in Section 01 50 00.
- G. Sanitary Facilities: As specified in Section 01 50 00.
- H. Drinking Fountain: Convenient access by workers.
- I. Furnishings:
  - 1. One desk 54 by 30 inch (1372 by 762 mm), with three drawers.
  - 2. One drafting table 36 by 72 inch (914 by 1829 mm), with one equipment drawer and a 48 inch wide parallel straight edge.
  - 3. One computer workstation with 24 by 48 inch (609 by 1219 mm) work surface, CPU shelf, retractable keyboard tray, and space for computer monitor and 11 by 17 inch (279 by 432 mm) printer.
  - 4. One metal, double-door storage cabinet under table.
  - 5. Plan rack to hold working Drawings, shop drawings, and record documents.
  - 6. One standard four-drawer legal size metal filing cabinet with locks and two keys per lock.
  - 7. Six linear ft. (2 m) of metal bookshelves.
  - 8. Two swivel arm chairs.
  - 9. Two straight chairs.
  - 10. One drafting table stool.
  - 11. One tack board 36 by 30 inch (914 by 762 mm).
  - 12. One waste basket per desk and table.

**PART 3 EXECUTION**

**3.01 PREPARATION**

- A. Fill and grade sites for temporary structures to provide drainage away from buildings.

**3.02 INSTALLATION**

- A. Install office spaces ready for occupancy 15 days after date fixed in Notice to Proceed.
- B. Parking: Two hard surfaced parking spaces for use by NYCHA and Architect, connected to office by hard surfaced walk.
- C. Employee Residential Occupancy: Not allowed on NYCHA's property.

**3.03 MAINTENANCE AND CLEANING**

- A. Weekly janitorial services for offices; periodic cleaning and maintenance for offices.
- B. Maintain approach walks free of mud, water, and snow.

**3.04 REMOVAL**

- A. At completion of Work remove buildings, foundations, utility services, and debris. Restore areas.

**END OF SECTION**



**SECTION 01 52 19  
TEMPORARY SANITARY FACILITIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Requirements for Temporary Toilets

**1.02 RELATED REQUIREMENTS**

- A. Section 01 31 00 - Project Coordination
- B. Section 01 51 19 - Temporary Power
- C. Section 01 51 36 - Temporary Water

**1.03 DEFINITIONS**

- A. A **portable toilet** is a simple portable enclosure containing a chemical toilet (a toilet bowl filled with disinfectant instead of water), and is typically used as a temporary toilet for construction sites.

**1.04 GENERAL REQUIREMENTS**

- A. Temporary toilet facilities shall be provided for use.
- B. Temporary toilet facilities shall be kept in a clean and sanitary condition at all times And shall remain fully operational from the start of construction through the completion of the Project.
- C. Temporary toilet facilities shall be provided to have as required by Building and Plumbing Codes.
- D. Temporary toilets, in lieu of above, but shall be installed only if approved by NYCHA.
- E. This requirement may be waived by NYCHA if existing toilet facilities are available and approved for use.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 54 16  
TEMPORARY HOISTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Hoisting and Lifting

**1.02 RELATED REQUIREMENTS**

- A. Section 01 35 23 - NYCHA Safety Requirements
- B. Section 01 41 00 - Regulatory Requirements
- C. Section 01 31 00 - Project Management and Coordination

**1.03 GENERAL REQUIREMENTS**

- A. Hoisting and lifting of any materials shall be performed in the safest manner possible and shall conform to the requirements of all public agencies having jurisdiction thereof. Where required by law, the holder of a valid rigger's license shall perform all hoisting.
- B. At the pre-start meeting the Contractor shall meet with the Development Superintendent and NYCHA's Designated Representative to propose and get approval for Staging and Hoisting areas if the location is not detailed in the Contract Documents.
- C. Contractor shall comply with the requirements of the Site Specific Safety Program.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**DIVISION 01  
SECTION 01 54 23  
SCAFFOLDING, HOISTING AND LIFTING**

**A. SCAFFOLDING**

1. Furnish and erect adequate scaffolding, as and where required for the execution of all Work specified in this Contract. The Contractor shall make the necessary arrangements for, and obtain all permits required for his/her Work, paying the costs and expenses thereof.
2. Erect and operate all scaffolding by or under the supervision of a licensed rigger. Present original rigger's license to the Authority's Representative for verification prior to installation.
3. Scaffolding shall conform to the Building Code, OSHA regulations, and to all requirements of public agencies having jurisdiction thereof.
4. Scaffolding shall be erected in such a manner as not to disturb any parts of the building under construction, or in any way affect the guarantee of the roofing, exterior cladding, or any other material and/or equipment being installed as part of the Work.
5. The Contractor shall notify NYCHA's Field Representative and the Development Superintendent 48 hours prior to the erection of any scaffolding, and shall coordinate his/her efforts so as not to interfere with normal activities of the development staff and residents.
6. The Contractor shall be responsible to coordinate in advance with the other Sub-Contractors and the Contractor's Supervisor so as not to interfere with the overall progress of the Work.
7. Scaffolding shall be safe, secure, and properly maintained at all time. All necessary provisions shall be made to protect the Workers and the public against any hazard or injury, and all property from damage. The Contractor shall be held fully and solely liable for any harm, injury or damage resulting from faulty, damaged, or weak scaffolding.
8. Erect scaffolding so as not to disturb any parts of the existing buildings, including TV cables. Do not penetrate or damage building facades.
9. Upon completion of Work, dismantle and remove scaffolding immediately.
10. File necessary Forms with the Department of Buildings. Submit a copy to NYCHA's Field Representative.
11. The Workers on the scaffold must possess a certificate of fitness and completion of safety training courses as per N.Y.C. Building Rigging Rule 9-03. Their photo I.D. shall be presented to NYCHA field Representative for verification.

12. Electrical hook-up for electrical devices at scaffolding shall be performed only by a licensed electrician and at the location approved by the Development Superintendent. Install electrical cabling to the roof, a circuit breaker for scaffold in the basement, and two circuit breaker boxes at the roof for scaffold and power tools. All wiring shall comply with N.Y.C. Electrical Code.
13. Ensure that scaffolding is inaccessible to the public at all times and cannot be utilized to gain entry into the building.
14. Provide a copy of the monthly scaffold service report to the Authority's Representative.
15. Provide toe boards and safety netting on all exterior sides of the scaffolds. Safety netting shall include a structural mesh lined with a fine mesh of a size and strength sufficient to retain falling tools and materials. The Contractor is liable for any injuries or damages resulting from the materials or tools dropped to the ground.

## **B. PIPE SCAFFOLDING**

1. The Contractor shall build necessary pipe scaffolds to complete the work. Scaffold shall conform to the N.Y.C. Building Code Chapter 33.
2. Pipe Scaffold shall be heavy-duty pipe scaffold and is to be used for loads up to 75 psf. The members of the scaffold shall be adequately braced and connected to prevent displacement or distortion of the framework.
3. All exterior scaffolding shall be designed by a Professional Engineer hired by the Contractor. Submit design calculations for the Authority's approval. Design Drawings shall be prepared and approved by a Professional Engineer having valid license in State of New York.
  4. The Contractor shall obtain and maintain necessary permits for the pipe scaffold from the Building Department and submit copies of the permits and Design Drawing for the Authority's approval. In addition, copies of all permits shall be prominently posted at the job site and renewed as necessary at no cost to the Authority.
  5. No standard scaffold shall be loaded in excess of the maximum load. Loads shall not be concentrated so as to cause stresses in excess of allowable value. Provide load combinations which include dead, live, wind, and snow loading. Snow and ice loads must be included in design calculations during winter months. Tieback design must include wind factors created when netting and screen are used. Scaffold must meet code requirements for overturning and sliding. All scaffold members shall be designed to be capable of withstanding maximum loads without collapse. Provide cross horizontal. Diagonal braces as required or a combination thereof, which secure vertical members together laterally. Do not excessively concentrate load at any given time.
  6. The supports and anchorage for scaffold shall be sound and rigid,

capable of carrying maximum load without settlement or deformation, and secure against movement in any directions.

7. The minimum width of every plank shall be 18", 2" in thickness and permissive span shall be 5'-0" maximum. Planks shall overhang their end supports at least 6" or they shall be fastened to prevent dislodgment. In no case shall the overhang exceed 18".

8. Only workers with experience in erecting or removing scaffolds shall be employed. They shall work under the supervision of a designated superintendent or foreman who shall enforce such measures as necessary for the protection of public and property. Provide fence enclosure at bottom part of scaffold for preventing unauthorized access as directed by Authority's representative. Follow the limit per DOB for number of platforms that can be planked with two working platforms as any elevation at a given time.

9. All scaffolds shall be maintained in safe condition. No scaffold shall be altered, removed or partially dismantled while it is in active use. Every damaged or weakened scaffold shall be immediately repaired and shall not be used until such repairs have been completed. A grounding conductor shall be installed as required by DOB.

10. Except for scaffolds ten feet or less above the ground the open sides and ends of every scaffold platform shall be provided with a standard guard rail and toe board.

11. Provide toe boards and safety netting on all exterior sides of the scaffolds. Safety netting shall include a structural mesh lined with a fine mesh of a size and strength sufficient to retain falling tools and materials. The Contractor is liable for any injuries or damages resulting from the materials or tools dropped to the ground.

12. Erect scaffolding so as not to disturb any parts of the existing buildings; including TV cables, security and lighting system related conduits, cables, equipment, fixtures, etc. Protect roof areas including those under the scaffold frame by laying 1/2" thick plywood boards or as directed by the Authority's Representative.

### **C. HOISTING AND LIFTING**

1. The Contractor must meet with the Development Superintendent and the Authority's Representative to agree on for designated areas for staging and hoisting materials to and from the roof. The Contractor shall then prepare a site safety plan which shall indicate those areas and submit to the Authority's Representative for approval prior to beginning the Work. The approved copies shall be sent to NYCHA Program Unit for documentations.
2. Hoisting and lifting of any materials shall be performed in the safest manner possible and shall conform to the requirements of all public agencies having

jurisdiction thereof. Where required by law, the holder of a valid rigger's license shall perform all hoisting.

3. Areas designated for hoisting shall be pre-approved by the Development Superintendent and the Authority's Representative and shown on the sidewalk shed Shop Drawing.

**END OF SECTION**

**SECTION 01 55 00**  
**VEHICULAR ACCESS AND PARKING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Access roads.
- B. Parking.
- C. Existing pavements and parking areas.
- D. Permanent pavements and parking facilities.
- E. Construction parking controls.
- F. Flag persons.
- G. Flares and lights.
- H. Haul routes.
- I. Traffic signs and signals.
- J. Maintenance.
- K. Removal, repair.
- L. Mud from site vehicles.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 58 13 - Temporary Project Signage: Post Mounted and Wall Mounted Traffic Control and Informational Signs.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Temporary Construction: materials as required per site and project specific requirements.

**2.02 SIGNS, SIGNALS, AND DEVICES**

- A. Stock Post Mounted and Wall Mounted Traffic Control and Informational Signs:
  - 1. Products:
    - a. Brimar Industries, Inc.: [www.safetysign.com](http://www.safetysign.com).
- B. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.
- C. Flag Person Equipment: As required by local jurisdictions.

**PART 3 EXECUTION**

**3.01 PREPARATION**

- A. Clear areas, provide surface and storm drainage of road, parking, area premises, and adjacent areas.

**3.02 ACCESS ROADS**

- A. Use of existing on-site streets and driveways for construction traffic is not permitted.
- B. Use of designated existing on-site streets and driveways for construction traffic is permitted.
- C. Tracked vehicles not allowed on paved areas.
- D. Construct new temporary all-weather access roads from public thoroughfares to serve construction area, of a width and load bearing capacity to provide unimpeded traffic for construction purposes.
- E. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.
- F. Extend and relocate as Work progress requires, provide detours as necessary for unimpeded traffic flow.
- G. Location as indicated.

- H. Provide unimpeded access for emergency vehicles. Maintain 20 foot (6 m) width driveways with turning space between and around combustible materials.
- I. Provide and maintain access to fire hydrants free of obstructions.

### **3.03 PARKING**

- A. Use of existing parking facilities by construction personnel is not permitted.
- B. Use of new parking facilities by construction personnel is not permitted.
- C. Arrange for temporary parking areas to accommodate use of construction personnel.
- D. When site space is not adequate, provide additional off-site parking.
- E. Locate as indicated.

### **3.04 PERMANENT PAVEMENTS AND PARKING FACILITIES**

- A. Prior to Substantial Completion the base for permanent roads and parking areas may be used for construction traffic.
- B. Avoid traffic loading beyond paving design capacity. Tracked vehicles not allowed.

### **3.05 CONSTRUCTION PARKING CONTROL**

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and Owner's operations.
- B. Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.
- C. Prevent parking on or adjacent to access roads or in non-designated areas.

### **3.06 FLAG PERSONS**

- A. Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

### **3.07 FLARES AND LIGHTS**

- A. Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

### **3.08 HAUL ROUTES**

- A. Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.
- B. Confine construction traffic to designated haul routes.
- C. Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic.

### **3.09 TRAFFIC SIGNS AND SIGNALS**

- A. At approaches to site and on site, install at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
- B. Relocate as Work progresses, to maintain effective traffic control.

### **3.10 MAINTENANCE**

- A. Maintain traffic and parking areas in a sound condition free of excavated material, construction equipment, Products, mud, snow, and ice.
- B. Maintain existing paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

### **3.11 REMOVAL, REPAIR**

- A. Remove temporary roads when permanent paving is usable.
- B. Remove underground work and compacted materials to a depth of 2 feet (600 mm); fill and grade site as specified.
- C. Repair existing facilities damaged by use, to original condition.



- D. Remove equipment and devices when no longer required.
- E. Repair damage caused by installation.
- F. Remove post settings to a depth of 2 feet (600 mm).

**3.12 MUD FROM SITE VEHICLES**

- A. Provide means of removing mud from vehicle wheels before entering streets.

**END OF SECTION**

**DIVISION 01  
SECTION 01 56 00  
DUST CONTROL**

**PART 1 - GENERAL**

**1.01 GENERAL REQUIREMENTS**

- A. Coordinate the Work of this Section with other Sections/Divisions.
- B. All Work shall conform to the latest industry practices and standards as applicable. Install all materials as per manufacturer's instructions.
- C. All Work shall be performed by competent workmen trained and experienced in the particular type of work.

**1.02 WORK INCLUDED**

- A. These procedures shall be utilized in Work of all Divisions within and outside of building.
- B. These procedures shall be utilized by the Contractor in all locations as directed by the Authority's Representative.
- C. Dust Control procedures shall be performed by the Contractor to assure that dust and debris is limited to the Work areas and controlled to prevent exposure of residents and Workers to excessive dust and that proper clean-up is conducted in all areas to prevent present or future occupants or Workers from exposure to excess dust.
- D. The Scope of Work shall include, but shall not be limited to the following:
  - 1. Dust Control Procedures shall be performed during all operations that create dust as defined herein.
  - 2. Dust Control Procedures shall be performed during all exterior brick Work repair procedures.
  - 3. Set up, maintenance and removal of all dust control enclosures, related accessories, materials and equipment as specified.
  - 4. Cleanup of Work areas as specified.
  - 5. Legal disposal of all debris as specified.

**1.03 DEFINITIONS**

- A. Dust - any concentration of airborne solid particles or solid particles capable of remaining suspended in air for a period of time longer than 10 seconds and which exceed 0.3 microns in diameter.
- B. Dust Control - Means and methods employed by the Contractor to limit the spread of dust generated or disturbed by the Work to be performed under this Contract.
- C. Dust Control Level - Specific methods and means employed by Contractor, as

described herein, to limit the spread of dust generated by the Work. The Dust Control Level to be employed by the Contractor shall depend on the concentration of dust generated by the Work as determined by the Authority's Representative whose determination is final.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

#### A. Special Types

1. Polyethylene sheeting of a fire retardant type in a roll size to minimize the frequency of joints with a factory label indicating six-mil thickness.
2. Polyethylene disposable bags of six-mil thickness with plastic tie wraps a minimum of five (5) inches long pointed and looped to secure filled plastic bags.
3. Tape or adhesive spray capable of sealing joints in adjacent polyethylene sheets or for attachment of polyethylene sheets to finished or unfinished surfaces of dissimilar materials and capable of adhering under both wet and dry conditions.
4. Vacuum units of a suitable size and capacity of trapping and retaining 99.97% of all monodispersed particles of 0.3 micrometers in diameter or greater (HEPA Vacuums).
5. Dust collectors of a suitable size and capacity to exhaust and HEPA filter dust-containing air from apartments or public spaces, through temporary exhaust duct Work to building roofs during concrete cutting and grinding Work. Dust Collectors shall utilize HEPA multi stage filters with 99.97% efficiency for retaining particles of 0.3 microns in size or larger.
6. Flexible air duct of a suitable size and capacity to channel exhausted air from Work area to dust collectors on building roofs.
7. Power generator of suitable size and capacity to operate dust collectors.

#### B. Standard Types

1. String mops and buckets.
2. Five gallon plastic pails.
3. Cleaning solution (Ledizolv or equivalent) which does not contain trisodium phosphate (TSP).
4. Water mister or spray bottle.
5. Dust pan and soft broom.
6. Utility or razor knife to cut plastic and tape.

## **PART 3 - EXECUTION**

### **3.01 WORK PROCEDURE**

#### **A. Methods of Limiting Dust and Debris**

1. The Contractor shall employ any or all of the following methods to limit and control the creation and spreading of dust and debris during the Work. The means and methods of dust control employed by the Contractor are subject to the approval of the Authority's Representative. The dust control procedures employed by the Contractor shall be as specified herein.
  - a. Wetting the surface to be disturbed with a fine spray mist.
  - b. Utilizing power tools equipped with a HEPA vacuum collection system (i.e. power sanding and cutting tools, etc.).
  - c. Bagging and sealing all debris and cleaning all equipment before removing it from the Work area.
  - d. Sealing all areas adjacent to the Work with 6-mil polyethylene sheeting.
  - e. Containment of Work spaces with 6-mil polyethylene sheeting.
  - f. There shall be ABSOLUTELY NO DRY SWEEPING of dust or debris.
  - g. For cutting and grinding concrete surfaces - Negative air ventilation exhausted from apartments or public spaces to HEPA dust collectors on roof of building.

#### **B. Worker Protection**

1. The Contractor shall implement engineering controls whenever dust exposure exists to employees through inhalation, ingestion or skin absorption. To achieve full compliance, protective equipment or other protective measures shall be employed by the Contractor to keep the exposure of employees to air contaminants within limits prescribed by O.S.H.A. regulations. All equipment and technical means used for this purpose are subject to approval of the Authority's Representative.
2. The Contractor shall provide all Workers with dust filter respirators, properly fitted for short, intermittent or occasional dust exposure such as cleanup, dumping of dust collectors, when it is not feasible to control the dust by enclosure. Respirators shall contain eye protective observation windows with safety glass protected by screening where hard deep cutting abrasives are used.
3. The Contractor shall provide Workers with protective Work clothing, booties, hard hats, gloves, face shields and vented goggles appropriate for the Work being performed.

#### **C. Dust Control Level**

1. The extent and method of dust control required shall depend upon the particular Work being performed and is subject to the approval of the Authority's Representative. Dust Control procedures are required by all Contractors and Sub-Contractors Working on this project. The Authority Representative's determination of the Dust Control Level to be followed by

the Contractor shall be final. The cost of Dust Control shall be included in the Contractor's Bid Amount and shall not be subject to any additional payments.

a. Level 1 - Negligible Dust

All Contractors shall employ level 1 dust control procedures when Work is localized to one small area and no observable dust is generated. The Contractor shall place a 5' x 5' polyethylene drop cloth immediately below the Work area.

b. Level 2 - Moderate Amount of Dust

Level 2 dust control procedures shall be employed by all Contractors when the Work produces moderate amounts of dust which is clearly visible and may contain debris and paint chips which shall not spread beyond a small area drop cloth to any other surface in the room. The Contractor shall place an 8' x 8' polyethylene drop cloth immediately below the Work area and shall cover all adjacent horizontal surfaces with polyethylene sheets. (Examples of need for Level 2 Dust Controls are during hand tool cutting or punching a hole in a wall, removing surface mounted conduit, or moldings.)

c. Level 3 - Significant Amount of Dust

- 1) Level 3 dust control procedures shall be employed by all Contractors during cutting or chopping with mechanical tools in materials which do not contain lead-based paint, during grinding of reinforcement bars, during drilling holes with mechanical devices, and during scraping and painting operations.
- 2) Contractors shall utilize tools equipped with HEPA vacuum exhaust/dust collection systems during Level 3 Work. Filters shall be kept clean and operable at all times.
- 3) The entrance of the Work area shall be covered with one layer of six-mil polyethylene sheeting taped to the top and one side of the door frame and weighted at the bottom with short pieces of pipe or other suitable weights to keep it closed.
- 4) All vents, pipe sleeves, and light fixtures shall be covered with polyethylene sheeting.
- 5) Windows shall be covered with polyethylene sheeting to prevent dust from settling on the horizontal surfaces.
- 6) All tears, which occur in polyethylene sheeting during the Work, shall be repaired immediately.
- 7) Air Filtration: Air within the Work area shall be continuously filtered with HEPA vacuum machines of sufficient capacity and number to maintain clean air within the Workspace and to prevent the migration of dust outside the limits of the polyethylene

barriers. Vacuum filters shall be kept clean and operable at all times.

- d. Level 4 - Extreme amounts of dust and debris
- 1) Level 4 dust control procedures shall be employed by the Contractor during saw cutting and grinding of masonry and concrete surfaces and elements within and outside of buildings.
  - 2) Affected area shall be covered with two (2) layers of six-mil polyethylene sheeting. All seams shall be taped with waterproof tape (i.e. where the floor covering overlaps the furnishing covering and where two floor covering sheets overlap) and free edges of the polyethylene sheeting shall be taped to the bottom of the wall or baseboards so as to form a continuous barrier to the penetration of dust to the floor. Optional: Area of repair may be isolated from the remaining room by utilizing air tight chamber consisting of two (2) layers of six-mil polyethylene sheeting on floors and walls, held in place by a rigid framework of PVC piping or furring. Entrance to chamber shall be through three-flap curtained doorway.
  - 3) When Working in public spaces, an area of repair shall be isolated from the remaining space by utilizing air tight chamber consisting of two (2) layers of six-mil polyethylene sheeting on floors and walls held in place by a rigid framework of PVC piping or furring. Entrance to chamber shall be through three-flap curtained doorway.
  - 4) The entrance of all Work areas shall consist of a protective curtained doorway of three (3)-overlapping sheets of six-mil polyethylene sheeting over an existing or temporary framed doorway. The first sheet shall be secured with duct tape at the top and left side, the second sheet shall be secured at the top and right side and the third sheet shall be secured at the top and left side. All sheets shall be weighted at the bottom to keep them hanging straight and maintain a seal over the doorway.
  - 5) The Contractor shall shut down all HVAC and air moving systems affecting the Work area.
  - 6) Windows in the Work area of apartments shall be covered with a single layer of six-mil polyethylene sheeting to prevent dust from settling on the horizontal surfaces of the window and shall be removed at the end of each day.
  - 7) All tears, which occur in polyethylene sheeting during the Work, shall be repaired immediately.
  - 8) Dust collectors shall be of sufficient size and capacity to effectively exhaust the air and dust from the Work area. When working in public spaces, the exhaust shall be ducted through

stairhall windows to the roof. Dust collectors shall be positioned on the roof of the building in a secure manner, locked up so as to be inaccessible to the public. Dust collectors shall be self-cleaning type and shall be maintained operable at all times by the Contractor. The Contractor shall provide generators as necessary for operation of dust collectors.

**3.02 CLEAN-UP PROCEDURE**

- A. At the end of each day or at the end of the task at hand clean-up procedures shall be implemented as follows:
  - 1. All debris too large to be picked up by the HEPA Vacuum shall be picked up by hand and placed in a six-mil polyethylene bag, being careful not to puncture the bag with any pointed or sharp pieces of debris.
  - 2. Remaining debris shall be picked up with the HEPA Vacuum. HEPA Vacuum shall travel at a moderate speed to ensure complete pick-up of all dust and remaining debris.
  - 3. The polyethylene sheeting shall then be dampened with a fine mist, to keep the dust from becoming airborne, then folded inward, upon itself, so as to contain any dust and debris remaining and prevent the contamination of the Work area with dust during clean-up.
  - 4. Polyethylene sheeting may not be cleaned and re-used. It shall be disposed of in a six-mil polyethylene bag, which is secured with a 5" plastic tie.
  - 5. At the completion of all Work, in addition to the clean-up of gross debris described above, HEPA Vacuums shall be utilized to vacuum the floor(s) and any other surfaces bearing dust generated during the Work. The floor(s) shall be vacuumed starting at the far end of the room and Working toward the entrance of the room. Every inch of the window sills, window troughs and other window surfaces where dust can accumulate must be HEPA Vacuumed.
  - 6. After using the HEPA Vacuum the entire Work area shall be wet mopped with a cleaning solution to remove all visible dust and debris. Also, all window sills and wells are to be wiped down.

**3.03 DISPOSAL**

- A. All debris shall be removed from the Work area and legally disposed of at the end of each day by the Contractor, including all debris generated by the Sub-Contractors.
- B. No debris is to be left behind at all Work areas.

**END OF SECTION**

**SECTION 01 56 39  
PROTECTION AND TEMPORARY WOOD TREE GUARD**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Requirements for tree protection
- B. Tree replacement due to contractor negligence

**1.02 RELATED REQUIREMENTS**

- A. 01 14 00 - Work Restrictions

**1.03 DESCRIPTION OF WORK**

- A. This specification provides for furnishing all labor, materials and equipment, together with all work incidental thereto, required for the preservation and protection of existing trees, as per the Contract Documents. ALL TREE PRESERVATION WORK SHALL RUN CONCURRENTLY WITH THE REMOVAL AND INSTALLATION OF ALL MATERIAL FOR THE LENGTH OF THE CONTRACT.
- B. As part of this Contract, the Contractor shall provide and install 4'x4'x4' temporary chain link fence tree guard enclosure around trees within the Work areas, according to provisions and requirements listed in this Section.

**1.04 GENERAL PROVISIONS**

- A. All trees (unless otherwise noted) are to be preserved and will be marked by the Contractor (BEFORE THE GENERAL CONTRACTOR STARTS ANY DEMOLITION OR CONSTRUCTION WORK) with a ribbon which reads "CAUTION" in bold black letters which can be read from a distance of 100 feet.
- B. There shall be no stockpiling/storage of fill, removals or any construction materials within the Critical Root Zone (CRZ) (note: Critical Root Zone extends a minimum of 4' beyond the drip line of a tree) of any existing tree to be preserved at anytime before, during and after the construction period. This also includes parking any personal vehicles and equipment not directly associated with the days activities. If the Contractor violates this stipulation, he shall, at his own expense, remediate any and all soil compaction utilizing the methodology approved by NYCHA/Authority. (See General Conditions sections 24 and 54.)
- C. All protective chain link fence (see drawings and a portion of this specification) shall be in place before any excavation takes place.
- D. No roots greater than two (2) inches in diameter shall be cut without permission from NYCHA/Authority.
- E. In the event that a tree may be injured or the Contractor is unsure how to go about working around a tree or trees he shall contact NYCHA's Representative to get additional direction or permission to remove a tree or cut roots larger than two inches in diameter, store material and equipment within the CRZ, adjusting tree protection, or resolve other conflicts that arise as a result of the contract.
- F. Trees that are removed shall have the resultant stump(s) ground down to a distance between 6"-12" below final grade.
- G. Trees that are injured or damaged as the result of contractor negligence (by accident or lack of adherence to this specification) and can be saved, as determined by the NYCHA, shall be deep root fertilized and/or watered AT THE CONTRACTOR'S EXPENSE using the following formulations and specifications:

H. Tree Fertilization Specifications:

	<u>Material</u>	<u>Active Ingredients (%)</u>	<u>Form</u>	<u>Rate</u>
1.	Dogget XL310	30-10-10	Powder	1 lb./100 gal.
2.	Adams Earth Soil	0-2-4	Liquid	1 gal./100 gal.



- Amendment
- |    |                                  |        |                     |
|----|----------------------------------|--------|---------------------|
| 3. | Ectomycorrhizal Fungal Inoculant | Powder | 16 oz/100 gal.      |
| 4. | Bio-Pak                          | Powder | As Per Manufacturer |
- a. Depth of injection shall be 6"-8" deep and in a 2' x 2' on-center grid over the entire Critical Root Zone. The amount of fertilizer per injection site shall be 1 qt. Work shall be performed by an approved company with a current ISA Certified Arborist on staff.
- I. If a tree dies or certain death is imminent, as the result of contractor negligence and as determined by NYCHA/Authority, the Contractor will be back charged the value of the tree or trees, including the cost of complete removal of the tree and resultant stump, six (6) inches below finished grade. NYCHA/Authority will determine the value of the casualty by utilizing the formula below:
1. Trunk Formula - This method is used when the plant is too large to be replaced. This value uses the cost of replacing the largest locally available plant and adjusting it for the size difference, the condition and location of the appraised tree.
  2. Appraised Value = Basic Value x Condition x Location
  3. Basic Value = Replacement Cost + (Basic Price x [TA(A) - TA(R)] x Species)
  4. Condition = A rating of the tree's structure and health and based on 100 percent.
  5. Location = The average for the tree's Site, Contribution and Placement and based on 100 percent.
  6. Replacement Cost = The cost to purchase and install the largest locally available and transportable Tree in the area.
  7. Basic Price = The cost per square inch of trunk area of a replacement tree measured at the height prescribed by the American Nursery Standards.
  8. TA(A) = Trunk Area at 4.5 feet above the ground of the appraised tree.
  9. TA(R) = Trunk Area at 6 inches or 12 inches above the ground of the replacement tree.
  10. Species = The rating for a particular species and based on 100 percent.
- J. Soil Compaction Remediation - Spoke & Wheel trenching - (Utilizing an Airspade™) a 6"x 6" trench shall be excavated radially starting at the base of a tree and extending to the edge of the Critical Root Zone (CRZ). Each trench shall be connected by a 6"x6" trench that will demarcate the outer edge of the Critical Root Zone. The minimum amount of the CRZ trench shall be 40% of the total area of the CRZ. The trenches shall then be filled with either compost or dehydrated manure (to be determined by NYCHA/Authority). Work shall be performed by an approved company with a current ISA Certified Arborist on staff.
- K. No trench shall be dug within five (5) feet of a trunk without first notifying the NYCHA's Representative/Authority's Representative.
- L. When mulch (wood chips) is recommend to reduce soil compaction it shall be applied (over Geo-textile fabric) to a minimum depth of 4" (and maintained at 4") in areas where light vehicle and equipment traffic is expected, and to a minimum depth of six (6) inches (and maintained at 6") in areas where heavy vehicles (six wheels or more) are expected to traverse the Critical Root Zone. The area to be mulched shall be demarcated with 4 foot snow fence. If the fence is continually being damaged or knocked down then the Contractor shall use the NYCHA/Authority Tree Preservation Chain link specification at no additional cost to the Authority.
- M. Soil Compaction Remediation - (Spoke & Wheel Trenching) Utilizing an Airspade™, a 6" x 6" trench shall be excavated radially starting at the base of a tree and extending to the edge of the Critical Root Zone (CRZ). Each trench shall be connected by a 6" x 6" trench that will demarcate the outer edge of the Critical Root Zone. The minimum amount of the CRZ trench shall be 40% of the total area of the CRZ. The trenches shall then be filled with either compost or dehydrated manure (to be determined by NYCHA/Authority).
- N. Other Tree Maintenance and planting specifications that shall be followed include the following:

1. American Association of Nurserymen (ANA) **Z60.1-1996** (or most current version), American Standard for Nursery Stock. Available from the American Association of Nurserymen, 1250 I Street, N.W., Suite 500, Washington, DC, 20005, Fax: (202) 789-1893, Phone: (202) 789-2900.
  - a. American National Standards Institute, Inc., **ANSI A300-1995** (or most current version) Tree Care Operations - Tree, Shrub, and Other Woody Plant Maintenance - Standard Practices. Can be purchased at [www.ansi.org](http://www.ansi.org).
  - b. American National Standards Institute, Inc., **ANSI A300-(part 1)-2001** (or most current version) Tree Care Operations - Tree, Shrub, and Other Woody Plant Maintenance - Standard practices (Pruning). Can be purchased at [www.ansi.org](http://www.ansi.org).
  - c. American National Standards Institute, Inc., **ANSI A300-(part 2)-1998** (or most current version) Tree Care Operations - Tree, Shrub, and Other Woody Plant Maintenance - Standard practices-Part 2 Fertilization. Can be purchased at [www.ansi.org](http://www.ansi.org).
  - d. American National Standards Institute, Inc., **ANSI A300-2000** (or most current version) Tree Care Operations - Tree, Shrub, and Other Woody Plant Maintenance - Standard practices-Part 3-(support systems and cabling, bracing, and guying). Can be purchased at [www.ansi.org](http://www.ansi.org).
  - e. American National Standards Institute, Inc., **ANSI 60.1-1996** (or most current version) American Standard for Nursery Stock. Can be purchased at [www.global.ihs.com](http://www.global.ihs.com).
2. If a conflict does arise between one of the standards listed above and the NYCHA specifications listed here, it will be the Contractor's responsibility to CONTACT NYCHA/Authority before proceeding with any work, to get clarification.
3. All applications of pesticides and tree growth regulators shall be done as per the manufacturer's recommendation and the most current N.Y State Dept of Environment Conservation ([www.dec.state.ny.us/website/dshm/pesticid/pesticid](http://www.dec.state.ny.us/website/dshm/pesticid/pesticid)) regulations at the time of application.

## **PART 2 - PRODUCTS (NOT USED)**

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. Posts shall be set to the proper specified depths in the earth. They shall be set plumb, properly aligned. After posts have been set in place, rails shall be fastened with the ties to line and corner posts. Top rails shall be attached to corner and line posts. Sections of top rail shall be coupled with outside sleeve couplings that allow for expansion and contraction. Rails shall be parallel to the finished grades. Top rails shall be furnished for all panels for all fences.
- B. After the frame work is complete, new galvanized chain link mesh shall be installed. The galvanized fabric shall be stretched uniformly and tightly. The galvanized fabric shall then be attached to all line and corner posts with tie wires at intervals not to exceed 12 inches and to top, bottom and intermediate rails with tie wires at intervals not to exceed 18 inches. Galvanized fabric shall remain in tension after pulling force is released.
- C. The Contractor shall have sufficient covers and guards to protect the Work from rain, freezing, drying effects of sun and wind, traffic or other damaging causes. It is the Contractor's responsibility to protect and maintain the Work at all times until final acceptance of the Work by the Authority.

**END OF SECTION**

**SECTION 01 57 16  
TEMPORARY PEST CONTROL**

**PART 1 GENERAL**

**1.01 RELATED REQUIREMENTS**

- A. Section 01 74 19 – Construction Waste Management

**1.02 GENERAL REQUIREMENTS**

- A. Work of this specification as shown or specified should be in accordance with the requirements of the Contract Documents.

**1.03 WORK INCLUDED**

- A. Work of this Section includes all labor, materials, equipment and services necessary to provide Temporary Pest Control as specified herein.

**1.04 SPECIFIC REQUIREMENTS**

- A. Furnish and pay for the services of a licensed exterminating company approved by NYCHA, from the time the work is started until finally accepted by NYCHA for the purpose of control of all rodents and insects. The exterminating company shall provide all labor, material and equipment necessary to maintain complete exterminating services in the building under construction and the surrounding ground areas within the boundary lines of the site, including all temporary toilets, field office, and storage areas.
- B. Qualifications: The exterminating company must submit satisfactory evidence of at least ten (10) years' experience in this class of work, including names and addresses of at least five (5) business concerns for whom similar services have been performed by the company within the past five (5) years. The service operations must be fully uniform when making regular scheduled or emergency service visits to the job site.

**1.05 TEMPORARY PEST CONTROL**

- A. Use the least toxic treatments and materials throughout the duration of the project, for rodent control including, but not limited to, installation of physical controls. Any exterminating service engaged by the Contractor shall be approved by the Authority.
- B. Use only soil treatments that are not injurious to plants.
- C. Use pest/vector management for all areas involved in actual construction or demolition, staging areas for such work, and contiguous areas that are likely to be affected by such work.
- D. Provide pest/vector management services by individuals with knowledge of Integrated Pest Management (IPM) policies and procedures, and certified to apply pesticides (by the New York State Department of Environmental Conservation, Bureau of Pesticides and Radiation).
- E. Provide a detailed plan for site sanitation.
- F. At pre-construction stage, (before any excavation, demolition, construction, or placement of construction materials) perform the following:
  - 1. Thoroughly inspect construction site, staging areas and contiguous areas (hereafter referred to collectively as "site") for signs of rodent or other pest/vector presence. Tamper proof bait stations, specifically for rats or mice, shall be placed at 20 foot intervals or as required, around the perimeter of the construction site, and in the corners of the building basement or crawl space and any other problematic areas as determined by NYCHA Designated Representative(s). All bait stations shall be secured to a fence or stake in the ground. Bilingual warning signs shall be posted around the work area.
  - 2. Control any identified infestations of rodents (or other pest/vector) via IPM policies and procedures (allow minimum of 4 weeks for completion).

3. Harborage removal, trapping, and/or poisoning may be necessary for initial knockdown of pest/vector population(s) and to prevent re-distribution of pest/vectors once construction begins.
  4. Conduct all IPM interventions in a manner that will have minimal risk to people and other non-target species.
  5. Remove all refuse, garbage, and rubbish.
- G. Construction set-up/preparation:
1. Place construction trailers and other production outbuildings on concrete paved areas to prevent rodent burrowing, where possible.
  2. Situate construction trailers (normally elevated on wheels) without skirts (e.g., plywood, sheet metal) that could provide harborage for rodents or other pests.
  3. Establish clearly defined areas where workers will eat meals and snacks, and provide these areas with rodent proof waste containers and supply enough containers to hold all wastes generated without overflow.
  4. Strategically locate dumpsters in quantities to hold all refuse generated on site.
- H. During construction:
1. Empty dumpsters and waste containers as per the waste management plans.
  2. Thoroughly inspect entire site with NYCHA Designated Representative(s), indoors and outdoors, for signs of rodent or other pest presence. Inspect monthly, increased or decreased as deemed necessary by inspection results. Baiting should continue during the excavation and remain in force until all work is completed and for two weeks afterward.
  3. Promptly conduct IPM interventions as necessary.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Materials, chemicals and equipment used for exterminating purposes shall comply with all rules and regulations of all applicable City, State and Federal agencies, including, but not limited to, the New York State Department of Environmental Conservation, Bureau of Pesticides and Radiation.

## **PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 58 13  
TEMPORARY PROJECT SIGNAGE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Fence Project Informational Panel.
- B. Sidewalk Shed Parapet Panel.
- C. Owner Identification Panel

**1.02 RELATED REQUIREMENTS**

- A. Section 02 90 00 - Sidewalk Shed.
- B. Section 02 91 00 - Temporary Fencing.
- C. Section 01 33 00 - Submittal Procedure.

**1.03 REFERENCE STANDARDS**

- A. NYC Building Code Chapter 33

**1.04 QUALITY ASSURANCE**

- A. To comply with NYC municipal code and all other jurisdictions.

**1.05 SUBMITTALS**

- A. Shop Drawing: Show content, layout, lettering, color, foundation, structure, sizes and grades of members and location.

**PART 2 PRODUCTS**

**2.01 FENCE PROJECT INFORMATION PANEL**

- A. To comply with NYC Building Code and all other jurisdiction.

**2.02 SIDEWALK SHED PARAPET PANEL**

- A. To comply with NYC Building Code and all other jurisdiction.

**2.03 OWNER IDENTIFICATION PANEL**

- A. Owner Identification Panels shall be 8 feet (2438.4 mm) wide and 4 feet (1219.2 mm) high, with the content required by NYCHA and arranged in accordance with figure 1. NYCHA will provide the graphic artwork in a PDF format for printing and mounting of sign by the Contractor.
- B. Owner Identification Panels shall be constructed out of a durable and weatherproof material such as vinyl, plastic, or aluminum, and such material shall be flame retardant in accordance with NFPA 701 or listed under UL 214 and comply with municipal codes.
- C. The Owner Identification Panel shall be posted on the fence on each perimeter fronting a public thoroughfare. Where such perimeter is more than 150 feet in length, a project information panel shall be posted at each corner. Such panels shall be posted on the fence at a height of 4 feet (1219 mm) above the ground, with such distance measured from the ground to the bottom edge of the panel.



Figure 1: Owner Identification Sign Example

## PART 3 EXECUTION

### 3.01 INSTALLATION

- A. Install project identification sign as determined by the NYCHA Designated Representative(s).
- B. Erect at designated location as per NYC Building Code and the NYCHA Designated Representative(s).

### 3.02 MAINTENANCE

- A. Maintain signs and supports clean, repair deterioration and damage.

### 3.03 REMOVAL

- A. Remove signs, framing, supports, and foundations at completion of Project and restore the area.

**END OF SECTION**

**SECTION 01 60 00  
PRODUCT REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Administrative and procedural requirements, labor, materials, equipment and services for selection of products for use in Project product delivery, storage and protection, ; identifying markings; manufacturers' standard warranties on products; substitution requirements and comparable products.

**1.02 RELATED REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Section 01 25 00 - Substitution Procedures
- C. Section 01 33 00 - Submittal Procedures
- D. Section 01 42 16 - Definitions
- E. Section 01 74 00 - Cleaning and Waste Management
- F. Section 01 77 00 - Closeout Procedures

**1.03 TRANSPORTATION**

- A. Materials, products and equipment shall be properly containerized, packaged, boxed and protected to prevent damage during transportation and delivery. Transport materials in covered trucks to prevent contamination of product or littering of surrounding areas.
- B. Driveways and parking lots may be used by the Contractor only with expressed permission of the NYCHA Designated Representative(s) The CM in coordination with the Project Manager, in compliance with requirements of NYCHA and municipal regulations. Any and all damage as a result of the Contractor's use to driveways and parking lots must be repaired by the Contractor at the Contractor's expense to the satisfaction of the NYCHA Designated Representative(s).
- C. Do not drive any delivery vehicle over any unpaved or landscaped area of the site. Any damage to unpaved or landscaped areas as a result of incurred during delivery of materials or equipment shall be repaired by the Contractor at their own expense to the satisfaction of the NYCHA Designated Representative(s).

**1.04 PRODUCT DELIVERY, HANDLING AND STORAGE**

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
  - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
  - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
  - 5. Manufacturer's containers shall be delivered with unbroken seals and shall bear proper labels.
  - 6. Coordinate deliveries in order to avoid delay in, or the impeding of the progress of the Work. Deliveries shall be made during regular work hours, unless approved otherwise by NYCHA.

C. Storage and Protection

1. All manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, and cleaned in accordance with the manufacturer's directions unless otherwise specified.
2. Provide a secure location and enclosure at Project site for storage of materials and equipment by contractor's construction forces. Coordinate location with NYCHA.
3. Store and handle materials in a manner that prevents loss from weather, exposure to sunlight and other damage. Keep materials covered and off the ground, and store in a dry secure area.
4. Protect all materials and installations from damage by activities of other trades.
5. Store products to allow for inspection and measurement of quantity or counting of units.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Should it become necessary during the course of the Work to move materials or equipment stored on the Site, the Contractor, at the direction of NYCHA, shall move such material or equipment.
8. All materials shall be properly stacked adjacent to the Work, to allow for inspection and measurement of quantity or counting unit.
9. If approval is given to store materials in any part of the building area, they shall be stored so as to cause no damage or overloading of the existing structure.
10. If it becomes necessary to remove and restack materials to avoid impeding the progress of any part of the Work or interfering with the Work to be done by any other contractor, or interfering with the project's activities, the Contractor shall remove and restack such materials at no additional cost to NYCHA.

**1.05 IDENTIFYING MARKINGS**

- A. Name plates and other identifying markings shall be removed from exposed surfaces of manufactured items installed unless required by Code.

**1.06 REMOVAL OF PACKING MATERIAL**

- A. The Contractor shall be responsible for removal and legal disposal of all packing material as required under the Cleaning and Waste Management section.

**1.07 PRODUCT WARRANTIES**

- A. Manufacturer's warranties shall be supplied to NYCHA as required in the contract document as specified in the Closeout Procedures. Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of obligations under requirements of the Contract Documents.

**1.08 PRODUCT SELECTION REQUIREMENTS**

- A. General Product Requirements: Provide products that comply with the Contract Documents, specific specifications, Submittal Procedures and Mock-up and Sample Installations section.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
  4. The descriptive, performance, and referenced standard requirements in the Specifications establish salient characteristics of products to be used.

**1.09 APPROVED EQUALS**

- A. Conditions for Consideration: Designer of Record will consider Contractor's request for Approved Equal when the following conditions are satisfied. If the following conditions are not satisfied, Designer of Record may return requests without action, except to record noncompliance with these requirements:



1. Evidence that the proposed product does not require revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of Designer of Records and owners, if requested.
5. Samples, if requested.

#### **1.10 GENERAL REQUIREMENTS**

- A. Equipment, plant, and appliances, such as hoists, centering, concrete lifts, construction elevators, cranes, rigging, towers, derricks, walks, ramps, chutes, scaffolding, implements, transportation, cartage and other things necessary and required for the adequate execution of the work and as required by law and applicable Union rules shall be provided and shall be maintained in good and safe mechanical working order, be responsible for their safe use, and remove them when no longer required. Applicable requirements of OSHA shall become and form a part of this document.
- B. During handling and installation of work at project site clean and protect work in progress and adjoining work on a basis of perpetual maintenance. Apply suitable protective covering on newly installed work where reasonably required to ensure freedom from damage or deterioration at time of substantial completion; otherwise, clean and perform maintenance on newly installed work as frequently as necessary through remainder of construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- C. To extent possible through reasonable control and protection methods, supervise performance of work in a manner and by means which will ensure that none of the work whether completed or in progress, will be subjected to harmful, dangerous, damaging, or otherwise deleterious exposures during construction period. Such exposures include (where applicable, but not by way of limitation) static loading, dynamic loading, internal pressures, external pressure, high or low temperatures, thermal shock, high or low humidity, air contamination or pollution, water, ice, solvents, chemicals, light, radiation, puncture, abrasion, heavy traffic, soiling, bacteria, insect infestation, combustion, electrical current, high speed operation, improper lubrication, unusual wear, misuse, incompatible interface, destructive testing, misalignment, excessive weathering, unprotected storage, improper shipping/handling, theft and vandalism.
- D. Require installer of each major unit of work to inspect substrate to receive the work, and conditions under which the work will be performed, and to report (in writing to Contractor) unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.
- E. Where installations include manufactured products, comply with manufacturer's applicable instructions and recommendations for installation to whatever extent these are more explicit or more stringent than applicable requirements indicated in the Contract Documents.
- F. Inspect each item of materials or equipment immediately prior to installation and reject damaged and defective items.
- G. Provide attachment and connection devices and methods for securing work properly as it is installed; true to line and level, and within recognized industry tolerance if not otherwise indicated. Allow for expansions and building movements. Provide uniform joint widths in exposed work, organized for best possible visual effect. Refer questionable visual-effect choices to the Designer of Record for final decision.
- H. Recheck measurements and dimensions of the work as an integral step of starting each installation.
- I. Install work during conditions of temperature, humidity, exposure, forecasted weather, and status of project completion which will ensure best possible results for each unit of work in

coordination with entire work. Isolate each unit of work from non-compatible work, as required to prevent deterioration.

- J. Coordinate enclosure (closing-in) of work with required inspections and tests, so as to avoid necessity of uncovering work for that purpose.
- K. Mounting Heights: Except as otherwise indicated, mount individual units of work at industry-recognized standard mounting heights, for applications indicated. In CMU walls mount units at height closest to manufacturer's recommendations so as to minimize cutting of block coursings. Refer questionable mounting height choices to the Designer of Record for final decision.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 71 33  
PROTECTION OF ADJACENT PROPERTY**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Protection of Adjacent Property

**1.02 RELATED REQUIREMENTS**

- A. Section 01 74 16 - Site Maintenance

**1.03 GENERAL REQUIREMENTS**

- A. Contractor shall be responsible for taking all precautions necessary to protect all public and private property on or adjacent to the worksite from damage or loss arising out of execution of this contract. The Contractor shall assume responsibility for any such damage or loss caused by them and shall, at their own expense, repair or replace any property or structure above or below grade that becomes damaged or destroyed.
- B. Prior to commencing the Work, the Contractor shall tour the Project site with the NYCHA Designated Representative to examine and record damage to all existing public and private property on or adjacent to the worksite including miscellaneous structures, plantings, lawn, trees, etc. This record shall serve as a basis for determination of subsequent damage due to Contractor's operations and shall be signed by all parties attending the tour.
- C. Any damage to the adjacent buildings and property not noted in the original survey, but subsequently discovered, shall be reported to the NYCHA Representative. The NYCHA Designated Representative shall determine whether affected property has been damaged to an extent such that it cannot be restored to its original condition and must be replaced by the Contractor.
- D. The Contractor shall not, except after written consent from property owners, enter or occupy adjacent privately-owned land with personnel, tools, materials or equipment, except on lands and easements provided by NYCHA.
- E. The Contractor is responsible for the restoration of all property corners and control monuments damaged or destroyed by construction related activities. Any disturbed monuments must be replaced by a New York Professional Land Surveyor.
- F. The Contractor shall take immediate action to ensure the safety of persons and property should any structure on an adjacent property is damaged. Correct damage immediately. Contractor shall bear all costs of replacement, repair, restoration, including related damages additional testing, inspection, and any compensation for NYCHA Designated Representatives services and expenses related to the corrective work.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 74 16  
SITE MAINTENANCE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. General administrative and procedural requirements governing execution of the Work.

**1.02 RELATED REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Section 01 35 23 - NYCHA Safety Requirements
- C. Section 01 71 33 - Protection of Adjacent Property
- D. Section 01 74 00 - Cleaning and Waste Management

**1.03 MAINTENANCE OF THE SITE**

- A. The Contractor shall provide and keep in repair all work areas required to maintain vehicular and pedestrian traffic.
- B. The Contractor shall adequately enclose and protect areas against the weather where the installation is incomplete at the end of the working day. Such protection shall be done to the complete satisfaction of the NYCHA Designated Representative.
- C. The Contractor shall protect all apparatuses included in their Contract against dirt and damage until final acceptance. Any equipment furnished under the Contract and any property of NYCHA damaged or destroyed by the Contractor, their subcontractors, or their employees shall be restored to its original condition or replaced without cost to NYCHA.
- D. The Contractor shall protect and be responsible for all existing buildings, facilities, on-going construction within the areas of their operation under this contract. In the event of damage or disturbance due to the work of the Contract, the Contractor shall report the conditions and circumstances to the NYCHA Designated Representative and shall make all necessary repairs and replacements at their own expense to match the existing work, as approved by NYCHA's Designated Representative.
- E. Where existing site assets, public or private, are to be retained, they shall be protected before and during construction.
- F. The Contractor shall determine the existence and location of any surface or sub-surface structures and utilities within the project area. Should the Contractor encounter any utilities or services during the performance of the work, they shall notify the Municipal Agency or Company owning or controlling services, to disconnect these services if so required. Any services cut off or interrupted by the Contractor's operation shall be restored at the Contractor's expense. Existing Drainage: During the progress of the Contract work and prior to any final acceptance of the Work, the Contractor will be required to clean out satisfactorily all catch basins, manholes, inlets, pipes or other drainage structures installed under this Contract, or existing within the Contract Limits or adjacent to the project site. All debris so removed shall be properly disposed of off the site.
- G. Demolition and Removals shall be defined as the removal and disposal shown on the contract documents. All materials shall be legally disposed of off the site at no additional cost to NYCHA.
- H. The contractor shall remove all leaves, snow and ice as it accumulates within the contract work area to ensure safety of workers, residents, and pedestrians. This also includes grounds maintenance including, but not limited to, mowing the lawn and trimming bushes.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 74 19**  
**CONSTRUCTION WASTE MANAGEMENT**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Waste Management Goals
- B. Waste Management Plan
- C. Progress Reports
- D. Project Meetings
- E. Management Plan Implementation

**1.02 RELATED REQUIREMENTS**

- A. Contract Drawings, conditions of Contract (including General Conditions, Addendum to the General Conditions, Special Conditions, Division 01 Specification Sections and all other Contract Documents) apply to the Work of the Section.
- B. Division 00 "General Conditions" and "Addendum to the General Conditions"
- C. Section 01 35 23 - "NYCHA Site Safety Requirements".
- D. Section 01 60 00 - "Product Requirements".
- E. Section 01 77 00 - "Closeout Procedures".
- F. Section 02 41 19 - "Selective Demolition" for disposition of waste resulting from demolition of buildings, structures, and site improvements, and for disposition of hazardous waste.
- G. Section 04 01 20 - "Unit Masonry Restoration" for disposal requirements for masonry waste.

**1.03 WASTE MANAGEMENT PERFORMANCE REQUIREMENTS**

- A. The City of New York has established that this project shall: generate the least amount of waste possible; employ processes that ensure the generation of as little waste as possible in order to avoid the possibility of error inaccurate planning, breakage, mishandling and contamination
- B. The Contractor shall be responsible for implementing, monitoring, and reporting status of waste management work plan.
- C. The Contractor and its Subcontractors shall divert as much waste materials generated, as is economically feasible. Waste disposal in landfills shall be minimized to comply with performance requirements in this article.
- D. Diversion Requirements: A minimum of 75% of total Project demolition and construction waste (by weight), excluding excavation soil, land clearing debris and hazardous materials, shall be diverted from landfill. The following waste categories are likely candidates to be included in the diversion plan for this project:
  - 1. Concrete
  - 2. Bricks
  - 3. Concrete masonry units (CMU)
  - 4. Asphalt
  - 5. Metals (e.g. banding, stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized, stainless steel, aluminum, copper, zinc, brass, bronze)
  - 6. Cardboard
  - 7. Uncontaminated packaging materials, including:
    - a. Paper
    - b. Cardboard
    - c. Boxes
    - d. Plastic sheet and film
    - e. Polystyrene packaging
    - f. Wood crates and pallets

- g. Plastic pails
- 8. Waste generated by on-site workers, such as plastic and metal beverage containers
- 9. Reuse items indicated on the Drawings and/or elsewhere in the Specification
- E. Other categories are acceptable and might include:
  - 1. Clean dimensional wood
  - 2. Asphalt shingles or roofing
  - 3. Drywall
  - 4. Carpet and pad
  - 5. Ceiling tiles
  - 6. Glass

#### 1.04 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash debris and rubble resulting from construction, remodeling repair and demolition operations. Hazardous materials are not included.
- C. Diversion from Landfill: To remove, or have removed, from the site for recycling, reuse or salvage, material that might otherwise be sent to a landfill. Diversion from Landfill does not include using the material as alternative daily cover at a landfill site, nor does it include burning, incinerating or thermally destroying waste.
- D. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product.
- E. Recycle (recycling): To sort, separate, process, treat or reconstitute solid waste and other discarded materials for the purpose of redirecting such materials into the manufacture of useful products. Recycling does not include burning, incinerating or thermally destroying waste.
- F. Return: To give back reusable items or unused products to vendors.
- G. Segregation: To place like waste materials together for collection in a designated site area, trash bin or roll-off container.
- H. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable and reusable material.
- I. Waste Management Plan: A project-related plan for the collection, transportation and disposal of waste generated at the construction site. The purpose of the plan is to ultimately reduce the amount of material becoming landfill.

#### 1.05 REFERENCE STANDARDS

- A. NYCHA encourages its Contractors to seek information from websites and experts in salvage or recycling in order to minimize disposal costs. There are numerous opportunities to sell salvage, or to donate salvage and accrue tax benefits (which would accrue to the Contractor); also there are outlets that will pick up, and in some cases buy recyclable materials. Examples of information resources are as follows:
- B. Outlets. For assistance in finding outlets for specific materials on specific projects, one possible source is New York Waste Match. Email: [wastematch@itac.org](mailto:wastematch@itac.org) [mailto:](mailto:wastematch@itac.org) <https://www1.nyc.gov/assets/donate/giveandfind/exchange.shtml>, Telephone: 212- 442-5219
- C. DDC's Sustainable Design web site: <http://www.nyc.gov/html/ddc/html/ddcgreen> This includes a manual on Construction and Demolition Waste Reduction and Recycling, a Sample Waste Management Plan and a list of internet resources.
- D. Web Resources (Information only; no warranty or endorsement is implied.)
  - 1. [www.wastematch.org](http://www.wastematch.org) <http://www.wastematch.org> Site of New York Waste Match, a materials exchange database and service

2. <http://www.epa.gov/epaoswer/non-hw/debris-new> Site of the U.S. Environmental Protection Agency that discusses construction and demolition waste issues, and links to other resources.

## 1.06 SUBMITTALS

### A. Action Submittals

1. Waste Management Plan: The Contractor shall be responsible for the development and implementation of a Construction Waste Management Plan for the Project. The Contractor will prepare and submit to the NYCHA Designated Representative(s) a Waste Management Plan describing how they will collect, sort and deposit their waste and recyclable materials in accordance with the approved Plan.
  - a. Draft Waste Management Plan: Within 21 days after receipt of Letter of Award the Contractor shall submit to the NYCHA Designated Representative(s) a Draft Construction Waste Management Plan. The Draft Plan shall contain the following:
    - 1) Estimate of the total proposed jobsite waste to be generated, including types and quantities.
    - 2) Proposed alternatives to Landfilling: A list of each materials proposed to recycled during the course of the Project, the proposed destination for each material, and the projected amount (by weight/tons is preferred to volume cubic yards)
2. Final Construction Waste Management Plan: Within thirty days of the NYCHA Designated Representative(s) approval of the Draft Plan, the Contractor shall submit a Final Construction Waste Management Plan. It shall contain the following:
  - a. Estimate of the total proposed jobsite waste to be generated, including types and quantities.
  - b. Proposed alternatives to Landfilling: A list of each material proposed to be recycled during the course of the Project, the proposed destination for each material, and the projected amount (by weight/ tons is preferred to volume/ cubic yards).
  - c. Materials Handling Procedures: A description of the means by which any waste materials will be segregated (commingled on-site and sorted off-site) and protected from contamination and the means to be employed in recycling the materials which will be consistent with the requirements of the recycling processors.
  - d. List of monthly documentation to be attached to the monthly Construction Waste Management Report, to be submitted along with the Monthly Progress Reports/ Payment Requisition.
3. Submittals:
  - a. Tabulation of total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the goals have been met.
  - b. Written Construction Waste Management Plan, as referenced in this Section, describing the project-specific approach and plan for waste diversion.
  - c. The monthly Construction Waste Management Report shall be completed and signed by the Contractor.

### B. Informational Submittals

1. Waste Reduction Progress Reports: Submit a monthly Construction Waste Management Progress Report concurrent with each Application for Payment, containing the following information:
  - a. Project title, name of company completing report, and dates of period covered by the report
  - b. Report on the disposal of all jobsite waste, including:
    - 1) Recycled materials. For each material, provide the following:
      - 2) Amount ( in tons or cubic yards)
      - 3) Dates removed from the jobsite
      - 4) Receiving Party
  - c. Landfilled materials. Provide the following:

- 1) Amount (tons)
- 2) Dates removed from the jobsite
- d. Records: Identity of the transfer station or landfill
  - 1) Legible copies of on-site logs, weight tickets and receipts. Receipts shall be from recycling, processing and/or disposal site operators who can legally accept the materials for the purpose of reuse, recycling or disposal.
  - 2) If mixed construction and demolition waste is sorted off-site, provide a letter from the processor stating the average percentage of mixed C&D waste they recycle.
- 2. Waste Reduction Calculations: Prior to Substantial Completion, submit calculated end-of-Project rates for waste diversion and disposal as a percentage of total waste generated by the Work, to demonstrate compliance with required overall Diversion Rate percentage set forth in this Section
  - a. Exclude excavation soil, land clearing debris and hazardous material.
  - b. Calculations may be performed using either weight or volume, but shall be done consistently throughout the duration of the Project. Where exact materials weights or volumes are not available, use the following suggested Conversion Factors, which are acceptable for Leadership in Energy and Environmental Design (LEED) projects:
    - 1) Cardboard 100 lbs./cu.yd.
    - 2) Gypsum wallboard 500 lbs./cu.yd.
    - 3) Mixed waste 350 lbs./cu.yd.
    - 4) Rubble 1,400 lbs./cu.yd.
    - 5) Steel 1,000 lbs./cu.yd.
    - 6) Wood 300 lbs./cu.yd.
  - c. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept these specific items. Include manifests, weight tickets, receipts, and invoices.
  - d. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept these specific items. Include manifests, weight tickets, receipts, and invoices.

**1.07 QUALITY ASSURANCE**

- A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Get Start Meeting: Conduct meeting at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
  - 1. Review and discuss waste management plan including responsibilities of the Contractor's waste management coordinator.
  - 2. Review requirements for documenting quantities of each type of waste and its disposition.
  - 3. Review and finalize procedures for materials segregation and verify availability of containers and bins needed to avoid delays.
  - 4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
  - 5. Review waste management requirements for each trade.
  - 6. Review requirements for material handling as described in the Waste Management Plan.

**1.08 PROJECT MEETINGS**

- A. Waste management plans and implementation shall be discussed at the following meetings:
  - 1. Pre-demolition meeting
  - 2. Pre-construction meeting
  - 3. Regular job-site meetings
  - 4. Subcontractor toolbox meetings



**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

**3.01 CONSTRUCTION WASTE MANAGEMENT PLAN EXECUTION**

- A. General: Follow the Construction Waste Management Plan.
- B. The Contractor shall be responsible for the provision of containers and the removal of all waste, non-returned surplus materials, and rubbish from the site in accordance with the Construction Waste Management Plan. The Contractor shall oversee and document the results of the Plan. Contractors shall be responsible for collecting, segregating, and depositing in designated areas, their waste, non-returned surplus materials, and rubbish, in accordance with the Construction Waste Management Plan.
- C. Preparation and Distribution. The Contractor shall distribute copies of the Construction Waste Management Plan to each Subcontractor, the Designer of Record and NYCHA Designated Representative(s).
- D. Instruction. The Contractor shall provide on-site instruction of appropriate segregation, handling and recycling, salvage, reuse and return methods to be used by all parties in appropriate stages of the Project.
- E. Segregation Areas: The Contractor shall lay out a specific areas for placement of waste materials in segregated trash bins and roll-offs. Recycling and waste bin areas shall be kept neat, clean, orderly and clearly marked.
- F. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  - 1. Designate and label specific areas on Project site where waste shall be deposited by various Subcontractors in a segregated manner.
  - 2. Comply with Division 01 Section 01 35 23 - "NYCHA Site Safety Requirements" as well as the Project's Erosion & Sedimentation Control Plan, for controlling dust and dirt, environmental protection, and noise control.

**3.02 GENERAL HOUSEKEEPING FOR DEMOLITION AND CONSTRUCTION WASTE, AREAS**

- A. General: Recycle paper and beverage containers used by on-site workers. Separate paper, beverage containers, packing materials on site.
- B. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
- C. Procedures: Segregate recyclable waste from other waste materials, trash, and debris. Segregate recyclable waste by type to the maximum extent practical according to approved Construction Waste Management Plan.
  - 1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
  - 2. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
  - 3. Store components off the ground and protect from the weather.
  - 4. Remove recyclable waste from the project site and transport to recycling receiver or processor.

**3.03 RECYCLING CONSTRUCTION WASTE**

- A. Packaging:
  - 1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
  - 2. Polystyrene Packaging: Separate and bag materials.

3. Pallets: Break down pallets into component wood pieces and comply with requirements for recycling wood.
  4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- B. Site-Clearing Wastes: Comply with requirements in Division 32 Section "Plants" for handling tree and plant wastes. [Only applicable to contracts with landscape or grounds improvement component]
- C. Wood Materials:
1. Clean Cut-Offs of Lumber.
  2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
- D. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

#### **3.04 DISPOSAL OF WASTE**

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
  2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Remove waste materials from the Project site for legal disposal at a transfer waste facility, recycling facility, and/ or landfill, permitted to accept such wastes.

**END OF SECTION**

**SECTION 01 77 00  
CLOSEOUT REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SUMMARY**

- A. This Section specifies administrative and procedural requirements for project closeout, including, but not limited to:
  - 1. Inspection procedures.
  - 2. Record document submittal.
  - 3. Submittal of warranties.
  - 4. Closeout requirements for specific construction activities are included in the appropriate Sections in other Divisions.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 31 00 - Project Management and Coordination
- B. Section 01 33 00 - Submittal Procedures
- C. Section 01 78 13 - Punch List
- D. Section 01 78 39 - Project Records Documents

**1.03 SUBSTANTIAL COMPLETION**

- A. Prior to issuance of the certificate of Substantial Completion, the Contractor shall complete the following:
  - 1. The Contractor shall notify the NYCHA Designated Representative(s) in writing when all work in an entire building or phase is completed. The notification shall include a statement that the Contractor has closely inspected the work and all interior and exterior areas have been completed and/or restored in accordance with the contract requirements and the entire building and grounds are ready for Punch List review by the NYCHA Designated Representative(s). The NYCHA Designated Representative(s) will then review the condition of the building and grounds at that time to determine acceptability of the work and will develop a punch list of items requiring correction.
  - 2. The NYCHA Designated Representative(s) will deliver the Punch List to the Contractor consisting of incomplete and/or unsatisfactory work. The Contractor shall work expeditiously to complete all Punch List items within the agreed upon timeframe after receiving the Punch List from the NYCHA Designated Representative(s).
  - 3. Complete cleaning operations before requesting inspection for certification of substantial completion.
  - 4. Submit warranties, guarantee bonds, final certificates and record drawings, as required.
  - 5. In the application for Payment, which coincides with or immediately follows the date of Substantial Completion, the Payment shall indicate 100 percent completion for all Work substantially completed. The Payment shall include supporting documentation for the work completed as indicated in the Contract Documents, and a statement showing an accounting of changes to the contract Sum.
  - 6. Submit evidence of continuing insurance coverage complying with insurance requirements.

**1.04 FINAL ACCEPTANCE**

- A. Prior to the issuance of the certificate of final acceptance, and final payment, the Contractor shall complete the following:
  - 1. Submit the final payment request as required with all supporting documentation.
  - 2. Submit an updated final statement of the Contract sum.
  - 3. Submit evidence of continuing insurance coverage complying with insurance requirements.
  - 4. The record set shall be submitted to the Designer of Record for creation of Record Drawings, as required.

5. Submit evidence of continuing insurance coverage complying with insurance requirements.

#### **1.05 RECORD DOCUMENT SUBMITTALS**

- A. As-Built and Record Drawings: Maintain a clean, undamaged set of blue or black and white prints of Contract Drawings and Shop Drawings at the site. Mark a set to the actual installation and where the installation varies substantially from the Work as originally shown, including relocations of work, changes in dimensions, location of all access doors, structural changes, substitutions, and revisions. Mark up a clean set of drawings, which is most capable of showing conditions fully and accurately. Give particular attention to concealed elements that would be difficult to measure and record at a later date. All changes from Contract Drawings shall be conspicuously encircled. The encircled areas shall show the Work as actually performed.
  1. Mark record sets with red pen; use other colors to distinguish between variations in separate categories of the Work.
  2. Mark new information that is important to the NYCHA Designated Representative(s) or the Authority but was not shown on Contract Drawings or Shop Drawings.
  3. Note related Change Order numbers on As-Built where applicable.
  4. Each drawing of the entire set of contract drawings shall be submitted with the As-Built drawing set, even if no changes are noted on some or all of the drawings.
  5. Organize As-Built drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set. Provide two sets of hard copy As-Built drawings and a set of As-Built drawings in PDF format to the NYCHA Designated Representative(s) for review.
  6. When RECORD DRAWINGS are required, each drawing shall bear the legend "PROJECT RECORD DRAWING" in heavy block lettering, 1/2" high and shall contain the following data: Contract Number, Development Name, Contract Title, Contract Name, Contractor Address, printed name and dated signature of contractors' Project Manager.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 78 13**

**PUNCH LIST**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Punch List requirements

**1.02 GENERAL REQUIREMENTS**

- A. The Contractor shall notify NYCHA's Designated Representative in writing when all work in an entire building or phase is completed. The notification shall include a statement that the Contractor has closely inspected the work and all interior and exterior areas have been completed and/or restored in accordance with the Contract and is ready for Punch List review by NYCHA. NYCHA's Designated Representative(s), Designer of Record's Representative and the Contractor shall then review the condition of the work to determine acceptability of the work and develop a Punch List of items requiring correction.
- B. NYCHA's Designated Representative shall deliver the Punch List to the Contractor. The Contractor shall work expeditiously to complete all Punch List items within an agreed upon timeframe. If the Contractor fails to correct all Punch List work within the agreed upon timeframe, NYCHA will have the right to order the work to be completed and shall withhold payment to the Contractor in the amount to be determined by NYCHA.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 78 39  
PROJECT RECORD DOCUMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Administrative and procedural requirements for project record documents including but not limited to:
  - 1. Record Drawings.
  - 2. Record Specifications.
  - 3. Record Product Data.
  - 4. Miscellaneous record submittals.

**1.02 RELATED REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Section 01 77 00 - Closeout Procedures: For general Closeout Procedures
- C. Divisions 02 through 32 Sections for specific requirements for project record documents of the Work in those Sections.

**1.03 CONTRACTOR PROJECT RECORD DOCUMENTS**

- A. The purpose of the Contractor Project Record Documents is to record the actual location of the Work in place, as per the contract drawings.
- B. In addition to the sets of Contract Documents that are required by the Contractor on the Site to perform the Work, the Contractor shall maintain at the Site one copy of all Drawings, Specifications, and Addenda, that are part of the Contract as awarded, and also Change Orders, Modifications, approved Shop Drawings, field directives, and other approved changes. These are collectively referred to as "Project Record Documents." Each of these documents shall be clearly marked "Project Record Copy" as indicated below, maintained in a clean and neat condition available at all times for inspection by NYCHA and shall not be used for any other purpose during the progress of the Work.
  - 1. Each record copy shall bear the legend "PROJECT RECORD COPY" in heavy block lettering, 1/2" high and contain the following data:

**PROJECT RECORD COPY**

Contractor's Name \_\_\_\_\_

Contractor's Address \_\_\_\_\_

Made By \_\_\_\_\_

Checked By \_\_\_\_\_ (Contractor's Agent) Date: \_\_\_\_\_

- a. Where possible, changes from the Contract as awarded Documents shall be conspicuously encircled.
- C. **Contractor Project Record Documents Requirements**
  - 1. The Contractor shall mark up the "Project Record Documents" to show:
    - a. Approved changes in the Work, either by Change Order or field directive.
    - b. Location of underground Work and concealed Work.
    - c. Details not shown in the original Contract Documents.
    - d. All relocations of Work.
    - e. All changes in dimensions.
  - 2. As applicable for the project, such information shall include, but shall not be limited to:
    - a. All structural changes.
    - b. All substitutions.
    - c. Elevations.

- d. The location of all utilities, services and appurtenances concealed in building structures that have been installed differently from that required by the Contract.
- D. The Contractor shall keep the "Project Record Documents" up-to-date from day to day as the Work progresses. Appropriate documents shall be updated promptly and accurately; no Work shall be permanently concealed until all required information has been recorded.
- E. Each month, copies of these Project Record Documents will be examined by the NYCHA Designated Representative(s) prior to recommending the approval of the partial payment request to ascertain that the record prints reflect the changes to date.
- F. **Final Record Document**
  - 1. Final Record Shop Drawings: If installed equipment is at variance with the respective approved Shop Drawings, the Contractor shall furnish to the NYCHA Designated Representative(s) revised Shop Drawings indicating the actual completed installation one month prior to Substantial Completion.
- G. **Final Record Drawings**
  - 1. On a monthly basis, the Contractor shall submit copies of the progress of the as-builts with their payment requisition. Progress prints shall be in digital PDF format.
  - 2. Thirty days after substantial completion or DOB approval, the Contractor shall submit a set of Final Record Drawings, incorporating all changes appearing on the Contractor "Project Record Documents" onto the original set of bid documents. The changes to the Contract Documents shall be clearly indicated.
  - 3. The Contractor shall submit one set of print, and one electronic CAD file and PDF file or other electronic media format acceptable to NYCHA as the "Final Record Drawings".
  - 4. Project Record Drawings
- H. Shop Drawings for Permanent Records: Where specified in the individual technical sections of Divisions 02 through 07, provide a CD-ROM of required shop drawings in a format acceptable to NYCHA or as specified.
- I. The Bureau of Electric Controls job number for the Contract shall appear on all electrical drawings or other materials submitted, together with the Contract Number and name of the project, as required by the contract.
- J. The originals of the Contractor "Project Record Documents" shall be submitted by the Contractor to NYCHA when all the Work is completed and shall be approved by NYCHA before the Contractor requests final payment. Refer to Section 01 77 00, "Closeout Procedures," for other requirements associated with final acceptance of the Work.

#### 1.04 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit one set of marked-up record prints.
  - 2. Number of Copies: Submit copies of record Drawings as follows:
    - a. Initial Submittal:
      - 1) Submit PDF electronic files of scanned record prints and one of file prints.
    - b. Final Submittal:
      - 1) Submit three (3) paper-copy sets of marked-up record prints.
      - 2) Submit PDF electronic files of scanned record prints and one set of prints.
      - 3) Print each drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit one paper copy of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one paper copy of each submittal.
  - 1. Where record Product Data is required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

- D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit one paper copy of each submittal.
- E. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

**1.05 RECORD DRAWINGS**

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
  - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Accurately record information in an acceptable drawing technique.
    - c. Record data as soon as possible after obtaining it.
    - d. Record and check the markup before enclosing concealed installations.
    - e. Cross-reference record prints to corresponding archive photographic documentation.
    - f. Content: Types of items requiring marking include, but are not limited to, the following:
      - g. Dimensional changes to Drawings.
      - h. Revisions to details shown on Drawings.
      - i. Locations and depths of underground utilities.
      - j. Revision to duct size and routing.
      - k. Changes made by Change Order or Change Directive.
      - l. Details not on the original Contract Drawings.
      - m. Record information on the Work that is shown only schematically.
  - 2. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
  - 3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  - 4. Mark important additional information that was either shown schematically or omitted from original Drawings.
  - 5. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. The Contractor shall submit one set of prints, one electronic CAD file and PDF file or other electronic media format acceptable to NYCHA as the "Final record Drawings".

**1.06 RECORD PRODUCT DATA**

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
  - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
  - 3. Note related Change Orders, record Specifications, and record Drawings where applicable.
- B. Format: Submit record Product Data as annotated PDF electronic file, paper copy, scanned PDF electronic file(s) of marked-up paper copy of Product Data.
  - 1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.



**1.07 MISCELLANEOUS RECORD SUBMITTALS**

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as PDF electronic file, paper copy scanned PDF electronic file(s) of marked-up miscellaneous record submittals.
  - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

**3.01 RECORDING AND MAINTENANCE**

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Designer of Record and the NYCHA Designated Representative(s) reference during normal working hours.

**END OF SECTION**

**SECTION 01 79 00  
DEMONSTRATION AND TRAINING**

**PART 1 GENERAL**

**1.01 SUMMARY**

- A. Training of NYCHA personnel in operation and maintenance of the installed systems.
- B. Preparing demonstration and training DVD.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 30 00 – Administrative Requirements
- B. Section 01 78 39 – Project Records Documents: Operation and maintenance manuals.

**1.03 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures; except:
  - 1. Make all submittals specified in this section.
  - 2. Submit one copy to the NYCHA Designated Representative(s).
  - 3. Submit in editable electronic format, where the determined format is approved by the NYCHA designated Representative(s).
- B. Training Plans: NYCHA will designate personnel to be trained as required.
  - 1. Submit to the NYCHA Designated Representative(s) for review as it pertains to the scope of work.
  - 2. Submit training plan no less than four weeks prior to start of training.
  - 3. Revise and resubmit until acceptable by the NYCHA Designated Representative(s).
  - 4. Provide an overall schedule showing all training sessions.
  - 5. Include at least the following for each training session (See section 1.06 B training module for further instruction)
    - a. Identification, date, time, and duration.
    - b. Description of products and/or systems to be covered.
    - c. Name of firm and person conducting training; include qualifications.
    - d. Methods to be used, such as live demonstrations, hands-on, etc.
    - e. Media to be used, such as slides, hand-outs, etc.
    - f. Training equipment required, to be provided by Contractor.
- C. Training Manuals: Provide a training manual for each attendee.
  - 1. Include where applicable, the: O&M manuals, approved submittals, sequence of operations, riser diagrams, etc.
  - 2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
  - 3. Format of the training manual shall be hard copy and/or electronic, at NYCHA's discretion.
- D. Training Reports:
  - 1. Identification of each training session, date, time, and duration.
  - 2. Sign-in sheet showing names and job titles of attendees.
  - 3. List of attendee questions and written answers given, including copies of and references to supporting documentation required for clarification; include answers to questions that could not be answered in original training session.
  - 4. Include NYCHA's formal acceptance of the training session.
- E. Demonstration and Training DVDs: Submit two copies of each within seven days of end of each training module.
  - 1. Identification: On each copy, provide an applied label with the following information:
    - a. Name of Project.
    - b. Name and address of photographer.
    - c. Name of Contractor.
    - d. Date of video stamped.

- e. Description of vantage point, indicating location of the module.
- 2. Supporting Documentation: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video. Include name of Project and date of video on each page.

#### 1.04 QUALITY ASSURANCE

- A. Provide instruction by manufacturer or manufacturer's representative, as per NYCHA's approval. The individual must be experienced in operational and maintenance procedures and training for that equipment.
- B. Videographer Qualifications: A professional videographer who is experienced video graphing construction projects.

#### 1.05 COORDINATION

- A. Coordinate instruction schedule with NYCHA's operations. Adjust schedule as required to minimize disrupting NYCHA's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of demonstration and training modules with content of approved emergency, operation, and maintenance manuals.

#### 1.06 DEMONSTRATION AND TRAINING PROGRAM

- A. Program Structure: Develop a demonstration and instruction program that includes individual training modules for all installed equipment as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
  - 1. Basis of System, Operational Requirements, and Criteria:
    - a. System and equipment.
    - b. Operating standards.
    - c. Regulatory requirements.
    - d. Equipment function.
    - e. Operating characteristics.
    - f. Limiting conditions.
    - g. Performance curves.
  - 2. Documentation: Review the following items in detail:
    - a. Emergency manuals.
    - b. Operations manuals.
    - c. Maintenance manuals.
    - d. Project Record Documents.
    - e. Identification systems.
    - f. Warranties and bonds.
    - g. Maintenance service agreements and similar continuing commitments.
  - 3. Emergencies: Include the following, as applicable:
    - a. Instructions on meaning of warnings, trouble indications, and error messages.
    - b. Instructions on stopping.
    - c. Shutdown instructions for each type of emergency.
    - d. Operating instructions for conditions outside of normal operating limits.
    - e. Sequences for electric or electronic systems.
    - f. Special operating instructions and procedures.
  - 4. Operations: Include the following, as applicable:
    - a. Startup procedures.
    - b. Equipment or system break-in procedures.
    - c. Routine and normal operating instructions.

- d. Regulation and control procedures.
  - e. Control sequences.
  - f. Safety procedures.
  - g. Instructions on stopping.
  - h. Normal shutdown instructions.
  - i. Operating procedures for emergencies.
  - j. Operating procedures for system, subsystem, or equipment failure.
  - k. Seasonal and weekend operating instructions.
  - l. Required sequences for electric or electronic systems.
  - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
    - a. Alignments.
    - b. Checking adjustments.
    - c. Noise and vibration adjustments.
    - d. Economy and efficiency adjustments.
  6. Troubleshooting: Include the following:
    - a. Diagnostic instructions.
    - b. Test and inspection procedures.
  7. Maintenance: Include the following:
    - a. Inspection procedures.
    - b. Types of cleaning agents to be used and methods of cleaning.
    - c. List of cleaning agents and methods of cleaning detrimental to product.
    - d. Procedures for routine cleaning
    - e. Procedures for preventive maintenance.
    - f. Procedures for routine maintenance.
    - g. Instruction on use of special tools.
  8. Repairs: Include the following:
    - a. Diagnosis instructions.
    - b. Repair instructions.
    - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
    - d. Instructions for identifying parts and components.
    - e. Review of spare parts needed for operation and maintenance.

## **PART 2 PRODUCTS (NOT USED)**

## **PART 3 EXECUTION**

### **3.01 DEMONSTRATION - GENERAL**

- A. Operations conducted during system start-up and Functional Testing do not qualify as NYCHA approved demonstration.. Contractor must provide a letter to the NYCHA Designated Representative(s) certifying that start-up and Functional Testing is complete and the system is ready for use and demonstration.
- B. Demonstration may be combined with NYCHA personnel training, at NYCHA's discretion.
- C. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
  1. Perform demonstrations after Functional Testing have been done and approved.

### **3.02 TRAINING - GENERAL**

- A. The Contractor will prepare the Training Plan based on the equipment installed.
- B. Conduct training on-site unless otherwise indicated.
- C. Do not start training until Functional Testing is complete, unless otherwise specified or approved by the NYCHA Designated Representative(s).

- D. The NYCHA Designated Representative(s) is responsible for determining that the training was satisfactorily completed and will indicate so by providing a written approval.
- E. Training schedule will be subject to availability of NYCHA's personnel to be trained.
- F. Product- and System-Specific Training shall include but not limited to:
  - 1. Review the applicable O&M manuals.
  - 2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
  - 3. Review of Project Specific Operations and Maintenance Data
  - 4. Where applicable, review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
  - 5. Provide hands-on training and associated diagnostic equipment for all operational modes possible and preventive maintenance.
  - 6. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
  - 7. Discuss common troubleshooting problems and solutions.
  - 8. Discuss any peculiarities of equipment installation or operation.
  - 9. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
  - 10. Review recommended tools and spare parts inventory suggestions of manufacturers.
  - 11. Review spare parts and tools required to be furnished by Contractor.
  - 12. Review spare parts suppliers and sources and procurement procedures.
- G. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a written and/or demonstration performance based test.
- H. Cleanup: Collect used and leftover educational materials and give to NYCHA Representative. Remove instructional equipment. Restore systems and equipment to condition existing before initial training.
- I. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

**END OF SECTION**

**DIVISION 2 – EXISTING CONDITIONS**  
**SECTION 02 41 19**  
**SELECTIVE DEMOLITION AND REMOVAL**

**PART 1 - GENERAL**

**1.01 GENERAL REQUIREMENTS**

- A. All work shall conform to the latest industry practices and standards as applicable.
- B. All work shall be performed by competent workmen trained and experienced in the particular type of work.
- C. This Contractor shall employ a full time competent person with a 30-hour OSHA to implement this Contractor's safety program.
- D. The Contractor will provide at its own cost a daily inspection of all demolition operations by a license professional engineer to insure that they comply with approved demolition methods, that structural stability is maintained, that the fire standpipe and sprinklers on floors not being demolished and remain operational, and that there is an elevator in readiness for emergency use, all of which is in accordance with applicable governmental regulations.
- E. All workers operating torches must have proper certification from local, state and federal jurisdictions. The Contractor shall provide Fire Guards as required and certified by local, state and federal jurisdictions. All costs associated with Fire Guards are included in the Contract Price.
- F. Inspection reports will be provided to the NYCHA on a daily basis.
- G. The Contractor shall maintain two (2) unobstructed means of egress all times ESPECIALLY FOR ANY WORK PERFORMED ON THE MAIN ROOFS.
- H. This Contractor will develop a written Respiratory Protection Program in accordance with local, state and federal regulations to be submitted to the NYCHA a minimum of 4 weeks prior to mobilization on Site. All costs associated with the Respiratory Protection program are included in the Contract Price.
- I. This Contractor will develop a written Project specific Dust Control Program in accordance with local, state and federal regulations to be submitted to the NYCHA a minimum of 4 weeks prior to mobilization on Site. All costs associated with the Dust Control Program and its maintenance is included in the Contract Price.
- J. This Contractor shall perform all demolition and removal work required for the installation of the new specified work

**1.02 SCOPE OF WORK**

- A. **Prior to start of demolition and removal of any item, Contractor shall first perform asbestos abatement and follow lead-safe work practices of affected items as indicated in sections 02 82 14 and 02 83 19 respectively of Division 2.**
- B. This section includes demolition and removal of selected portions of a building or structure. **Existing items to be removed and disposed of include but are not limited to:**

1. Existing roofs at all indicated locations down to structural deck including but not limited to:
    - a. Initial membrane
    - b. Insulation
    - c. Protection board
    - d. Built up roofing membrane
    - e. Stone ballast
  2. Perimeter and penetration flashings at all indicated locations.
  3. Existing door saddles.
  4. Existing metal edge flashing, scupper, and leaders (U.O.N).
  5. Salvage of existing items to be placed in storage and/or reinstalled.
  6. Saw cut and remove without damaging existing brickwork, the deteriorated mortar joints of existing brickwork to be re-pointed at scattered locations at roof bulkheads, and compactor stacks as shown on contract drawings and as directed by Authority's Representative.
- C. Protection of existing structure, windows, fixtures, electrical, mechanical and plumbing items to remain, finishes, and any other equipment or objects scheduled to remain.
- D. Remove demolished materials from the site as works progresses and maintain the site unencumbered of materials and equipment. Provide dumpsters and closed chutes as required to dispose of all debris and demolished materials.
- E. All other labor and materials and work described in the contract drawings and / or specifications herein or required to make the work complete.
- F. **It must be noted that demolition and removal of certain items will require the abatement of lead and asbestos. Demolition and removal of these materials will require the use of qualified licensed technicians. All abatement must be as per abatement procedures described in the abatement sections of Division 02, in accordance with the latest rules and regulations of all agencies having jurisdiction.**
- G. Dust control: Follow Dust Control specifications as described in Section 01 56 00.

### 1.03 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Items indicated on Drawings for removal and salvage. Detach items from existing construction in a manner to prevent damage, and deliver as indicated in this Section.
- C. Remove and Reinstall: Items indicated on Drawings for removal and reinstallation (e.g., fixtures, equipment, building elements, etc.). Detach items from existing construction in a manner to prevent damage, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

### 1.04 QUALITY ASSURANCE

- A. Comply with the following:
1. ANSI/ASSE A10.6 "Safety Requirements for Demolition Operations."
  2. NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."

**1.05 MATERIAL OWNERSHIP**

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Authority's property, demolished materials shall become Contractor's property and shall be removed from Development site.

**1.06 SUBMITTALS**

- A. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- B. Schedule of Selective Demolition Activities: Indicate the following:
  - 1. Ensure Authority's on-site operations are uninterrupted.
  - 2. Coordination for shutoff, capping, and continuation of utility services.
- C. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.

**1.07 QUALITY ASSURANCE**

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Contractor's hired Professional Engineer Qualifications: A Professional Engineer who is legally qualified to practice in the State of New York and who is experienced in providing engineering services of the kind of Work indicated.
- C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- D. Standards of compliance: Conform to the requirements of the Building Code of the City of New York, DEP rules and regulations, and the requirements of governing codes such as which affect the conduct of the Work, except where a stricter requirement is specified herein, such stricter requirement shall apply. Comply with applicable regulatory and jurisdictional requirements governing the work, materials, or project, even though such requirements are not listed.
- E. Pre-demolition Conference: Conduct conference at Project site to comply with requirements of this Contract. Review methods and procedures related to selective demolition including, but not limited to, the following:
  - 1. Inspect and discuss condition of construction to be selectively demolished.
  - 2. Review structural load limitations of existing structure.
  - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
- F. Preparation: Before cutting and removing any existing work or cutting any new work, Contractor shall coordinate that work with other work to avoid interference and over cutting of the work. Obtain necessary permits without additional compensation.
- G. Structural Work: Do not cut Structural Work in a manner that would result in a reduction of load-carrying capacity or of load-deflection ratio.



- H. Visual Requirements: Do not cut or remove work in a manner that would, in the Authority's Representative's opinion, result in lessening the building's aesthetic qualities. Do not remove or cut work in a manner that would result in substantial visual evidence judged by the Authority's Representative to be visually unsatisfactory.

**1.08 MAINTENANCE AND PROTECTION**

- A. Maintain and protect, (where necessary), both temporarily and permanently, the structural integrity, continuous operation and use of the existing buildings. Safety and stability shall be maintained at all times. Maintenance and protection operations shall comply with applicable requirements of governing authorities.
- B. Protection: Provide adequate and effective, suitable means of protecting Authority employees, residents, or other persons from operations included in this section. Provide adequate and effective temporary supports, and bracing, etc., to prevent movement of work in place that might be affected by selective demolition.
- C. Maintenance: Assume responsibility for the maintenance of safety and protection of the existing buildings, building appurtenances, equipment including and all persons therein and their property as more particularly provided in the General and Supplementary General Conditions.
- D. Lighting: The Electrical Sub-Contractor will maintain existing electrical lighting, power and power facilities where work is being performed. Provide and maintain suitable temporary electrical lighting which will be equivalent to the existing lighting levels or as directed by the Authority's Representative.

**1.09 PROJECT CONDITIONS**

- A. Provide not less than [72] hours notice to Authority's Representative of activities that will affect Authority's operations.
- B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
  - 1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.
- C. Authority assumes no responsibility for condition of areas to be selectively demolished.
  - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Authority as far as practical.
- D. Hazardous Materials: Hazardous materials present in building to be demolished and legally disposed of as indicated in the related sections elsewhere in the Contract Documents. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
- E. Storage or sale of removed items or materials on-site will not be permitted.
- F. The Contractor shall be responsible for protection of the building, existing roof accessories and equipment, which are to remain or be reinstalled in complete accordance with Contract requirements.
- G. If the Contractor damages or fails to protect or salvage any items noted to be repaired or replaced under this Contract, then such damaged items shall be repaired or replaced by the Contractor to the complete satisfaction of the Authority's Representative at no additional cost to the Authority.
- H. Contractor shall conduct work in such manner and at such times and with such precautions and safeguards as may be required for the purpose of avoiding interference with the safe and

continuous operations at each of the buildings and of avoiding interference with or injury to Authority personnel, residents, Contractor's personnel and other persons.

- I. Contractor shall comply with the requirements of the Authority's Representative, as to the use of the building with regard to the use of construction equipment, storing of materials, etc., to the end that interference with the safe and continuous operation of existing facilities and interference with or injury to Authority personnel, residents, Contractor's personnel, and other persons, and damage to their property or that of the Authority may be avoided.

## **PART 2 - PRODUCTS**

### **2.01 REPAIR MATERIALS**

- A. Use repair materials identical to existing materials.
  1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible. But the materials must be approved by NYCHA before using that material. Use materials whose installed performance equal or surpass that of existing materials.
- B. Comply with material and installation requirements specified in individual Specification Sections.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. EXAMINATION:
  1. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
  2. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
  3. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Authority's Representative.
  4. Contractor's hired Safety Engineer shall supervise selective demolition of structural items in order to avoid structural deficiency or unplanned collapse of any portion of structure or adjacent structures during demolition operations
- B. Shoring, Bracing and Structural Support:
  1. Provide shoring, bracing, and structural supports to preserve stability and prevent movement, settlement or collapse of construction and finishes to be selectively demolished and adjacent facilities to remain.
  2. Retain a qualified professional engineer to design temporary shoring, bracing, and structural support as needed.
  3. Strengthen or add new supports when required during progress of selective demolition.
  4. If safety of structure appears to be endangered, cease operations immediately, notify Owner and Architect, and take precautions to support structure until determination is made for continuing operations.
- C. Demolish and remove existing construction only to the extent required by new construction and as indicated.
  1. At any one time, remove only that portion of the existing construction that can be immediately protected so that building interior remains watertight and weathertight.
  2. Where selective demolition converges with existing construction to remain:

- a. Comply with Section 017329 (Cutting and Patching).
  - b. Conduct operations in a manner to protect adjacent and surrounding surfaces and material to remain from damage. Do not damage substrates to remain.
  - c. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces.
  - d. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  - e. Remove residual mortar, adhesives, or other matter, from material to remain, in preparation for tie-in of new Work. (For example, where deficient brick has been removed, remove mortar around perimeter of area in preparation for new brick and mortar.)
3. Where whole units are being removed for replacement (e.g., masonry units, sills, lintels, wall panels, etc.), cut out whole units from joint to joint in a manner to permit replacement of full size units, and carefully remove without damaging surrounding construction.
  4. Do not use cutting torches until Work area is cleared of flammable materials. At concealed spaces (e.g., duct and pipe chases, etc.), verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations. Maintain adequate ventilation when using cutting torches.

### 3.02 PREPARATION

- A. Dangerous Materials: Remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  1. Erect temporary protection, such as walks, fences, railings, canopies, and sidewalk sheds, where required by authorities having jurisdiction.
  2. Protect existing site improvements, appurtenances, and landscaping to remain.
  3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
- C. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  4. Contractor shall protect all windows and window sills during all repairs. All damaged windows and sills shall be replaced by the Contractor to the complete satisfaction of the Authority's Representative at no additional cost to the Authority.
  5. Contractor shall protect buildings from damage from trash, debris, and trash chutes.
- D. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction

operations, and similar activities. Provide temporary weather tight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
- E. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
- F. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

### **3.03 PERFORMANCE**

- A. Dust Control: See Section 01 56 00 for detailed information. Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
  2. Wet mop floors to eliminate traceable dirt and wipe down walls and doors of demolition enclosure.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.
- D. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically; from higher to lower level.
  2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
  5. Maintain adequate ventilation when using cutting torches.
  6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

7. Remove members / units and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  9. Dispose of demolished items and materials promptly.
  10. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.
  11. At the end of each work day exterior openings shall be secured and the building kept weather tight.
  12. Licensed electricians shall perform all electrical work.
  13. All work shall be performed by competent workmen, experienced in this kind of work and shall be carried through the completion with due regard to the safety and with as little nuisance as possible to residents.
- E. Existing Facilities: Comply with Authority's Representative's requirements for using and protecting stairs, walkways, building entries, and other building facilities during selective demolition operations.
- F. Existing items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Authority's Representative, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.
- G. Masonry: Demolish in small sections. Saw cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.

### **3.04 PATCHING AND REPAIRS**

- A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.
- B. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
1. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to manufacturer's written recommendations.
- C. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

### **3.05 REMOVED AND REINSTALLED ITEMS**

- A. Items to be removed and reinstalled to facilitate work, may include but are not limited to:
1. Signs,
  2. Lighting,
  3. Antennas
- B. Carefully remove items, which will be reinstalled in the Work, from existing construction in a manner to prevent damage.
- C. Clean removed items.
- D. Label items to include the following information:
1. Date removed.
  2. Item number, if applicable.

3. Description.
  4. Location (where removed).
- E. Pack or crate items. Identify contents of containers.
- F. Protect items from damage in handling, transport and storage.
- G. Reinstall items in locations indicated. Comply with installation requirements for new products and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

### **3.06 DISPOSAL OF DEMOLISHED MATERIALS**

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Authority's property and legally dispose of them.

### **3.07 CONCRETE DEMOLITION**

- A. Where required, perform concrete demolition as follows:
1. Concrete Spall Demolition:
  2. Do not impact reinforcing steel to remain with any tools. Use only hand tools at locations immediately surrounding embedded reinforcing steel.
  3. Remove loose or deteriorated concrete to achieve sound condition. Acceptable tools include power "chipping" hammer (15 lbs max. weight) or hand tools.
  4. Cut rectilinear perimeter at minimum depth, as indicated on Drawings. Acceptable tools include power driven grinder with diamond blade and vacuum attachment for dust collection.

### **3.08 MASONRY DEMOLITION**

- A. Where required, perform masonry unit and wall demolition as follows:
1. Cut perimeter of area to be removed in a manner to protect adjacent material to remain from damage.
  2. At head joints, short bed joints or end of long cuts, acceptable tools include power oscillating mortar removal tools or hand tools.
  3. At long cuts, acceptable tools include power driven grinder with diamond blade and vacuum attachment for dust collection, or hand tools.
  4. Remove mass of masonry in small sections. Acceptable tools include electric demolition "chipping" hammer (15 lbs max. weight), power driven grinder with diamond blade and vacuum attachment for dust collection, or hand tools.

### **3.09 MORTAR JOINT DEMOLITION**

- A. Where required, rake mortar joint (minimum depth  $\frac{3}{4}$ " ) in a manner to protect masonry units from damage. Acceptable tools include:
1. At head joints, short bed joints or end of long cuts, acceptable tools include power oscillating mortar removal tools or hand tools.
  2. At long cuts, acceptable tools include power driven grinder with diamond blade and vacuum attachment for dust collection, or hand tools.
- B. Where mortar embedded units (e.g., masonry units, precast architectural concrete units, CMU units, stone units, etc.) have been removed, remove mortar, loose particles and debris from existing surrounding units, in preparation for replacement units.

**3.10 ROOFING DEMOLITION**

- A. Where required, remove all existing overlay material, roof membrane or shingles, and accessories (nails, etc.) to expose substrate.

**3.11 JOINT SEALANT REMOVAL**

- A. Where existing sealant is indicated to be replaced, perform selective demolition as follows:
  - 1. Remove sealant (and backings as applicable), sealant and primer residue, and other contaminants capable of interfering with adhesion of new sealant to joint substrates.
  - 2. Remove only that portion of existing sealant (and backing, as applicable) that can be installed the same working day.

**END OF SECTION**

**DIVISION 02 – EXISTING CONDITIONS**  
**SECTION 02 82 13**  
**ASBESTOS ABATEMENT**

**PART 1 - GENERAL**

**1.01 GENERAL**

- A. The Contractor for this work is referred to the "Bid Booklet" the "Contract Drawings"; the "Specifications"; Special Notice to Contractors Summary Form" latest edition; the "Form of Proposal", "Amendments to General Conditions", and all amendments and addenda, all of which govern the work of this Contract.
- B. The Contractor is also directed to Division 01, General Requirements and Division 07, Section 07 52 16 Roofing replacement and related work of this specification. Divisions 01 and 07 include a description of additional work and procedures for roofing replacement which apply to this Section for Asbestos Abatement.
- C. Verifying all measurements required for proper execution of the work is the Contractors responsibility. Before submitting bid examine all existing conditions which may impact on the work and include them in the bid price.
- D. Schedule and Coordinate Asbestos removal/abatement with roof protection: Coordinate abatement removals with roofing and masonry contractors who will provide post abatement temporary flashing and protect of the roof and building. **(NOTE: No asbestos-containing materials shall be permitted for any use, as either a temporary or permanent part of construction).**
- E. **Destruction of Masonry substrate during asbestos removal/ abatement**  
The abatement contractor must use the least destructive methods and tools which are approved by the DEP, to remove asbestos contaminated materials and residue so as to leave the substrate whole, structurally sound and not requiring excessive patching or brick replacement prior to temporary roofing, re-roofing and new construction. **Excessive damage will be the responsibility of the Asbestos Abatement Contractor to all repair, patch or replace, as deemed necessary by the CM and NYCHA field inspector.**

Therefore to prevent excessive damage to substrate the Asbestos contractor must:

- 1. In lieu of the contract specified requirement or perform the asbestos removal manually, only use the lowest weight and power of DEP approved tools like hand held low power chipping guns. All power tools must be manufacturer-equipped with HEPA filtered local exhaust ventilation.
- 2. When using removal tools, including for removing asbestos residue, aim tools so that they take off the minimal amount of surface from the substrate. For brick that means attempt to leave the brick fire skin intact.
- 3. On each building perform a sample test for asbestos removal (abatement) of 25 sq ft. and then allow inspection and approval by the NYCHA field inspector before proceeding. **The approved sample will become the standard for all remaining removals on that building and the asbestos Contractor will be held responsible for damage which exceeds the approved sample."**

**1.02 SCOPE OF WORK**

- A. The work of this Division consists of abating and legally disposing of all existing asbestos-containing or contaminated materials (ACM's) and related work.
- B. Contractor shall provide all labor and materials necessary and required for this work.
- C. The work is to be performed at various NYCHA buildings/developments:



D. The following elements are asbestos contaminated and require removal as per this section 02 82 13 ASBESTOS ABATEMENT:

<b>RAD ID</b>	<b>Description</b>	<b>Unit</b>
ACM 01	<b>ACM Removal of Main Roof Assembly</b> Remove asbestos containing field membrane down to the roof concrete slab as ACM work per contract drawings.	SF
ACM 02	<b>ACM Removal of Canopy / Bulkhead / Water Tower Roof Assembly</b> Remove asbestos containing field membrane at canopy / bulkhead / water tower roof including all components down to concrete slab as ACM work per contract drawings.	SF
ACM 03	<b>ACM Removal at Roof Drain</b> Remove asbestos containing drain flashing as ACP work per contract drawings.	SF
ACM 04	<b>ACM Removal at Roof Perimeter Flashing – Parapet</b> Remove asbestos containing base flashing at parapet as ACM work per contract drawings.	SF
ACM 05	<b>ACM Removal at Roof Perimeter Flashing - Railing / Concrete Curb</b> Remove asbestos containing fence pitch pockets, post sleeve sealant, patching cement, base flashing and felt paper fence base metal coping as ACM work per contract drawings.	SF
ACM 06	<b>ACM Removal at Railing Pitch Pockets</b> Provide ACM removal at railing pitch pockets per contract drawings.	EA
ACM 07	<b>ACM Removal at Parapet Wall Waterproofing</b> Provide ACM removal at parapet wall waterproofing per contract drawings.	SF
ACM 08	<b>ACM Removal at Edge Metal Flashing</b> Provide ACM removal at edge metal flashing per contract drawings.	SF
ACM 09	<b>ACM Removal at Roof Bulkhead Base Flashing</b> Remove asbestos containing roof bulkhead base flashing as ACM work per contract drawings.	SF
ACM 10	<b>ACM Removal at Chimney Base Flashing</b> Remove asbestos containing chimney base flashing assembly as ACM work per contract drawings.	SF
ACM 11	<b>ACM Removal at Door Saddle Flashing</b> Provide ACM removal at door saddle flashing per contract drawings.	SF
ACM 12	<b>ACM Removal at Fan Curb</b> Remove asbestos containing fan curb penetration flashing assembly as ACM work per contract drawings.	SF
ACM 13	<b>ACM Removal at Vent Pipe Penetration</b> Remove asbestos containing vent pipe penetration flashing assembly as ACM work per contract drawings.	SF

ACM 14	<b>ACM Removal at Ladder Pitch Pockets</b> Provide ACM removal at ladder pitch pockets per contract drawings.	EA
ACM 15	<b>ACM Removal at Roof Hatch at Bulkhead Roof</b> Provide ACM removal at roof hatch at bulkhead roof per contract drawings.	SF
ACM 16	<b>Parapet Removal as ACM - 3 wythe</b> Provide parapet removal as ACM - 3 wythe per contract drawings.	SF
ACM 17	<b>Parapet Removal as ACM - 2 wythe</b> Provide parapet removal as ACM - 2 wythe per contract drawings.	SF
ACM 18	<b>ACM Removal at Coping Stone Joints</b> Provide ACM removal at coping stone joints per contract drawings.	SF
ACM 19	<b>ACM Removal at Bulkhead Door/Window/Louver Perimeter Sealant</b> Remove asbestos containing sealant and filler material around door frame/window/louver perimeter joint as ACM work per contract drawings.	LF
ACM 20	<b>ACM Removal of Caulking Around Incinerator Room Access Door</b> Remove all caulking materials around the access metal door as ACM work per contract drawings.	LF
ACM 21	<b>ACM Removal of Existing Flooring at Incinerator Room</b> Remove fire brick, refractory mortar and magnesium block insulation down to the roof concrete slab as ACM work per contract drawings.	SF
ACM 22	<b>ACM Removal of Expansion Joint Between Incinerator Stack and Bulkhead Wall</b> Remove expansion joint between incinerator stack and bulkhead wall as ACM work per contract drawings.	LF
ACM 23	<b>ACM Removal of Coping Stone, Flashing and One Top Course of Brickwork at Parapet Wall</b> Remove coping stone, flashing and one top course of brickwork at parapet wall as ACM per contract drawings.	LF

E. All work shall be in accordance with the latest Rules and Regulations of all municipal and other public agencies having jurisdiction. Any requirements specified herein which conflict with such rules or regulations shall be referred to the Authority for decision. All asbestos removal and disposal to be performed under this Contract shall be in accordance with all applicable Federal, State and City Regulations. If there are variances involved, the contractor is responsible to obtaining approval for these.

**1.03 GENERAL REQUIREMENTS**

**A. GENERAL CONDITIONS**

1. Furnish labor, materials, services, insurance and equipment necessary for the proper removal of asbestos-containing roof materials required by the general contract.
2. Violations to asbestos regulations governing this abatement will not be tolerated. At the Authority’s discretion, the Asbestos Handler Supervisor of this project will be replaced.
3. The Contractor shall post on the job site the following regulations: NY State Industrial Code Rule 56, NY City DEP Title 15 Chapter 1, US EPA Regulations for Asbestos, 40 CFR 61 Subparts A and M, and OSHA 29 CFR 1926.1101.

4. The Contractor shall carry asbestos insurance when removing asbestos and throughout the entire process, and assume full liability for failure to comply with Federal, State and City regulations.
5. The Contractor shall furnish and post approved signage indicating that asbestos work is to be conducted within the building. Signs shall be posted in areas that are accessible to the roof level work areas. Signs shall address the dates in which abatement is to take place. This notification is to be approved by the Development Management.
6. Asbestos abatement activities are to be monitored by an Authority Inspector and/or a representative on behalf of the Authority acting as an Asbestos Project Monitor. The Asbestos Handler Supervisor shall adhere to the direction of NYCHA's field representative.
7. Non-certified persons can not enter the asbestos abatement regulated work area to apply the temporary seal on abated sections of the roof.
8. The Contractor shall be required to keep a daily log to be inspected by the Authority.
9. If at any time the Authority's representative or any agency having jurisdiction decides that work practices are violating pertinent regulations, or endangering workers, he will immediately notify the Contractor's Asbestos Handler Supervisor that operations will cease until all corrective action is taken.
10. Asbestos abatement shall not be scheduled or performed on days where the ambient temperatures are below 40° F.

#### B. SPECIAL CONDITIONS

1. Prepare a schedule of work in consultation with the Manager/ Superintendent, the DPM and CPM the contract administering department, and the Environmental Inspection Unit of the Technical Services Department. The schedule is to be followed as closely as possible.
2. Special filing requirements will require that the Contractor apply for and obtain approval for specific variances from NYC DEP. All coordination of the special conditions must go through the NYCHA's Field representative.
3. The Asbestos Handler Supervisor shall adhere to the direction of the NYCHA's field Representative / Project Monitor.
4. Asbestos abatement activities shall be between the hours of (8:00 AM and 5:00 PM).
5. Equipment and materials are prohibited from being left loose on the roof between shifts. All equipment and materials are to be properly secured or removed so that materials and equipment can not be vandalized and thrown from the roof.
6. Materials, equipment, and waste are to be transported on to and off of the roof by a hoist. Use of the elevator for materials, equipment, and/or waste is prohibited.
7. Workers are not to work on the hoist within six feet of the edge of the roof without proper safety harnesses.
8. Particular attention is to be paid to fall protection of roof debris during abatement of coping stone materials, gravel stops, flashing, fascia, wood nailer, etc.
9. Hand tools used along the edge of the roof are to be properly tied off so that they can not be accidentally dropped from the roof.
10. Workers are not to work on the outside of the roof fence without proper safety harnesses.
11. Workers are not to work along the edge of a roof without proper safety harnesses.

#### C. PROTECTION OF PROPERTY

1. Where work is performed, the Contractor shall be held fully responsible for all damage to Housing Authority property. Any equipment furnished under this Contract and any property of

- the Authority damaged by this Contractor or his employees shall be restored to its original condition or replaced without cost of the Authority.
2. When there is the possibility that debris could fall from the roof, poly sheeting protection of the ground is required. In addition, caution tape shall cordon off an area up to 20' from the building. **Periodic inspection and cleaning of the poly is required.**
  3. **Destruction of masonry/concrete substrate during asbestos removal/abatement**

The abatement contractor must use the least destructive methods and tools which are approved by the DEP, to remove asbestos contaminated materials and residue so as to leave the substrate whole, structurally sound and not requiring excessive patching or brick replacement prior to temporary roofing, re-roofing and new construction. **Excessive damage will be the responsibility of the Asbestos Abatement Contractor to all repair, patch or replace, as deemed necessary by the NYCHA field inspector.** Therefore to prevent excessive damage to substrate the Asbestos contractor must:

    - a. Perform the asbestos removal manually, use the lowest weight and power of DEP approved tools like hand held low power chipping guns.
    - b. ALL asbestos residue must be removed upon initial abatement, so that upon inspection by NYCHA Technical Services a 2<sup>nd</sup> pass at abatement is not required.
    - c. When using removal tools, including for removing asbestos residue, aim tools so that they take off the minimal amount of surface (at an angle instead of perpendicular to the surface) from the substrate. For brick that means attempt to leave the brick fire skin intact.
    - d. On each building perform a sample test for asbestos removal (abatement) of 25sq ft. and then allow inspection and approval by the NYCHA Technical Services and The Field inspector before proceeding. **The approved sample will become the standard for all remaining removals on that building and the asbestos Contractor will be held responsible for damage which exceeds the approved sample.**
- D. A protection plan to prevent falling debris from the removal of coping stone materials, gravel stops, flashing, fascia, wood nailers, etc. shall be submitted to the Environmental Inspector when filing the Abatement Project.

#### 1.04 ASBESTOS WORK PLAN

- A. **All asbestos abatement contractors shall always produce and submit a Detail Asbestos Work Plan** to NYCHA Representative together with copy of asbestos filings and notification for review. It should consist of, but not limited to, the following guideline items:
  1. LOCATION – Name of Development and Address as per filing (ACP-7, DOL & EPA notification)
  2. GENERAL INFORMATION – Owner, CM Firm Name, Prime Contractor Company Name, Asbestos contractor company name, and Air-monitoring Contractor Company Name.
  3. SCHEDULE – Tentative Start and tentative completion date
  4. DEVELOPMENT LOG BOOK – Location of NYCHA sign in/out development log book for contractors (construction trailer, development superintendent office or manager, etc.) and who will sign-in and out.
  5. WORK DESCRIPTION AND PROCEDURE – Provide work area location (roof, façade, etc.) & quantities. List abatement procedure being used.
  6. POSTING – List and identify locations of all necessary and required postings by law.
  7. DECONTAMINATION UNITS – How many, location (roof, ground, etc.) type, (pop-up, wood structure, trailer, etc.) and when they will be broken down and demobilized, etc.

8. WASTE – Description of waste route after it is bagged, container on site (waste condition daily log document), pickup information and waste receipt acknowledge or manifest.
9. UTILITIES – Brief description from where electric power and water will be collected and GFCI location. Name of electrical contractor and license number.
10. CERTIFICATES – List licenses and certificates hold by workers, such as NYCDEP, NYSDOL, Federal EPA, NYCDOB (Scaffold), OSHA, etc. needed to perform work.
11. PERMITS AND AUTHORIZATIONS – List all permits, notifications, and authorizations needed to properly execute asbestos abatement work including NYCDEP, NYSDOL, Federal EPA, NYCDOB (CD5), OSHA, etc.
12. SAFETY – List and describe PPE for workers and visitors. Brief description of scaffold and safety line procedures including Safety Engineering stamp and daily report authorization where applicable as per NYCDOB codes and regulations.
13. RESPIRATORY PROTECTION PROGRAM – List name of company respiratory protection program administrator.
14. OTHERS – List or briefly explain any additional relevant information, document or procedure necessary to maintain asbestos abatement work within the asbestos regulations and contract specification compliance (NYCDEP conditions, 2 phase abatement work, etc).

**B. DOCUMENTS:**

1. Asbestos building occupant notification to be posted (10 day occupant notification)
2. ACP-7s
3. NYSDOL Notification
4. EPA Notification
5. Permits, licenses and insurance for asbestos company, waste hauler and disposal site.
6. Written respiratory protection program (include title page and List Program Administrator Only)
7. Detailed emergency fire exit plan with diagram showing evacuation route for workers
8. Sample of original waste hauler shipment record/manifest with all general applicable information typed.

- C. If at any time the Authority representative or any agency having jurisdiction decides that work practices are violating pertinent regulations, or endangering workers, he will immediately notify the Contractor's Asbestos Handler Supervisor that operations will cease until all corrective action is taken.

**1.05 APPLICABLE REGULATIONS, CODES AND STANDARDS**

- A. **All asbestos removal and disposal to be performed under this Contract shall be in accordance with applicable regulations, guidelines and standards and are to include, but are not limited to:**

1. New York City D.E.P Title 15, Chapter 1.
2. N.Y. State Industrial Code Rule 56.
3. US EPA Regulations for Asbestos 40 CFR 61 Subparts A & M.
4. OSHA 29 CFR 1926 and 1910.
5. N.Y. State DEC- Article 27, Title 3 and 15.

**1.06 FILING & CERTIFICATION**

- A. Submit all filings with NYCHA for review and signature, as the Owner, prior to submittal to the required regulatory agencies.
- B. Contractor shall submit the following documents when requesting approval and signing of NYC DEP filing with the Environmental Inspector.
  - 1. Contractor's Asbestos Handler License from NYS Dept. of Labor.
  - 2. Sub-Contractor approval letter from the Capital Project Division - Procurement Unit.
  - 3. Filing notifications to the NYS Dept of Labor.
  - 4. Filing notifications to the E.P.A.
  - 5. Asbestos waste transporter permit from NYS DEC.
  - 6. Designated disposal site landfill permit.
- C. The Contractor shall pay the filing fees for notification of asbestos work as required by the New York State Department of Labor, Division of Safety and Health and Federal Environmental Protection Agency. This cost shall be incorporated into the Contractor's bid.
- D. Work shall not begin until there is an approved schedule and the NYCDEP V-2 form has been received by Construction Manager's Environmental Consultant.
- E. Roof materials are to be filed and abated by the NYC DEP Attachments for DECON usage and roof abatement.
- F. Caulking materials are to be abated following the NYC DEP § 1-109 Attachment from Vertical Exterior Surfaces.
- G. A protection plan to prevent falling debris from the removal of coping stone materials, gravel stops, flashing, fascia, wood nailers, etc. shall be submitted to the Environmental Inspector when filing the Abatement Project.
- H. The Contractor is required to submit procedures addressing special protection and access for the abatement of canopy roofs when filing the Project.

## 1.07 SUBMISSIONS

**SEE GENERAL CONDITIONS: DIVISION 01, SECTION 01 33 00-  
SUBMISSIONS, FOR SPECIFIC REQUIREMENTS.**

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Materials (chemical solutions) shall be delivered in their original containers, sealed by the Manufacturer. Don't use previously opened containers on this Project. **Clearly label containers with Manufacturer's name, product identification and lot numbers, and store out of the weather in their original, tightly sealed containers.** Mix materials according to Manufacturer's directions and Specifications.
- B. The material used to blanket or wet the asbestos-containing roofing materials shall be an acceptable foam or viscous liquid approved by DEP, EPA and:

The following is a list of approved materials for use on this project. Approval of an equivalent product must be obtained prior to use of the product on this project. Approval must be requested prior to the filing of this project.

- 1. IDC Hydro-foam by IDC Corporation (800) 327-8482 or Asbestos Removal foam - BioFoam by Peter Staikos, 307-7th Ave., New York N.Y. 10001, (212) 627-1533 or Pronto Extra-Foam by Twin - Chem. Inc., 5010 Hickory Hills Dr., Woodstock, GA 30188, (800) 442-4958, or equal.

2. Encapsulant shall be Serpiflex Shield Formula #5 by International Protective Coatings Corp. (732) 531-3667, Chem - Safe 500 by ARAMSCO 1655 Imperial Way, Thorofare, NJ, 08086 (800) 767-6933 or equal.

### **PART 3 - EXECUTION**

#### **3.01 ASBESTOS REMOVAL PROCESS**

##### **A. PREPARATION ACTIVITIES**

1. Construct a fully functional remote decontamination enclosure system (DECON) prior to any work area preparation. The water and electrical sources for the DECON shall be those sources closest to the DECON. **Coordinate with the Development Management for water and electrical services.**
2. If the DECON is to remain in place overnight, the DECON shall be contained within a plywood shell.
3. The Authority's Inspector and/or the Development Monitor is required to approve the DECON following the inspection by the Asbestos Handler Supervisor and prior to work area preparation.
4. When there is the possibility that debris could fall from the roof, poly sheeting protection of the ground is required. In addition, caution tape is to cordon off an area up to 20' from the building. Periodic inspection and cleaning of the poly is required.
5. Prior to any removal of parapet coping tiles, scupper and leader work, **fall protection must be in place.** This protection must be approved by the Environmental Inspector, prior to abatement of such materials.
6. Extend waste vent pipes to the height required by the NYC DEP Attachment. Covering of vent pipes is prohibited.
7. The Authority's Inspector and/or the Project Monitor are required to approve the pre-abatement work area preparation following the inspection by the Asbestos Handler Supervisor and prior to asbestos removal.

##### **B. ASBESTOS REMOVAL**

1. The use of hand held power tools must be approved by the Environmental Inspector. Only power tools that have a factory installed HEPA filtration attachment shall be considered for approval.
2. Power saws, of any type, are prohibited from use on asbestos-containing roofing materials.
3. Asbestos removal is prohibited until air monitoring equipment is in place and operating.
4. Prior to the temporary sealing of an abated section of a roof, the Contractor's Asbestos Handler Supervisor must inspect and approve the work area and document such inspection and approval on a Supervisor Inspection Report. The Supervisor must then coordinate and request an inspection by the Inspector from the Environmental Inspector.
5. Remove only as much roofing per day that can be replaced within that given day. Do not install roofing materials during inclement weather, except for temporary work necessary to protect materials that are already installed. Remove all temporary work before installing permanent materials. Lay tarp in accordance to NRCA Regulations down on the concrete deck where the roofing materials were removed.
6. Under adverse working conditions such as rain, cover the roof as in "5" above.

##### **C. RE-CLEANING REQUIREMENTS**

1. Abated sections of roofs that have been covered with a temporary seal, prior to an Inspection by the Authority, may require that the temporary seal be removed and further abatement/cleaning be performed.

**D. PACKAGING AND DISPOSAL OF ASBESTOS AND RELATED DEBRIS**

1. Remove all asbestos and non-asbestos debris from the premises prior to the end of the work shift. **At no time shall asbestos debris be allowed to be stored on site once the Contractor has left the site.**
2. Both the initial and the doubled waste bag must be sealed with duct tape. **Sealing the outer bag only is prohibited.**
3. Site specific generator labels shall include the building location address, City and State, the date of abatement, the abatement Contractor's name, and the words "New York City Housing Authority.
4. Affix generator labels to the waste bags prior to removing the bags from the roof. **Do not affix labels to the bags at the waste hauling truck.**
5. Transport all asbestos waste directly to a transfer station or the landfill. Don't store or transfer asbestos waste to another location prior to transport to a transfer station or the landfill.
6. Do not remove asbestos waste from the site without a properly documented Waste Shipment Record/Manifest.
7. All asbestos waste shall also be required to comply with U.S. Environmental Protection Agency Regulations, Title 40, Part 61, Sub-part A & B (40 CFR A & B) and OSHA Regulations (29 CFR 1910) for Collecting, Packaging, Transporting and Disposing of Asbestos.

**E. INDEPENDENT AIR MONITORING AND AIR CLEARANCE**

1. An independent Contractor selected and paid for by the Authority shall conduct air monitoring during asbestos removal.
2. Air sample results reported above 0.009 f/cc shall require that abatement practices be altered on the following shift so as to reduce the airborne fiber levels. The altered procedures must be documented by the asbestos handler supervisor and submitted to the Environmental Inspector, for approval.
3. **Clearance air monitoring is not required.**

**3.02 WASTE MANIFEST**

- A.** All asbestos waste shall be properly manifested prior to removal from the Authority's property.
- B.** Waste transporting shall follow all provisions of the Environmental Conservation Law, Title 3, of Article 27.
- C.** Copies of the waste shipment record/manifest, after all asbestos has been removed from specifying the location, and indicated where the waste will be transported, shall be given to the Authority's Inspector and/or the Project Monitor.
- D.** A final copy signed by the landfill is to be submitted to the Manhattan Program Unit Project Administrator.

NOTE: All components which have tested POSITIVE for asbestos (ACM) and may be disturbed/impacted by the proposed work must be abated by a licensed asbestos abatement contractor in accordance with New York City Department of Environmental Protection rules and regulations. The survey results used in defining the scope of asbestos work are based upon sampling of suspect asbestos-containing materials in a representative number of locations.



**END OF SECTION**

**DIVISION 2 – EXISTING CONDITIONS**  
**SECTION 02 83 19**  
**LEAD SAFE WORK PRACTICES**

**PART 1 - GENERAL**

**1.01 CONTRACT DOCUMENTS**

- A. The Contractor for this work is referred to the "Bid Booklet" the "Contract Drawings"; the "Specifications"; Special Notice to Contractors Summary Form" latest edition; the "Form of Proposal", "Form of Bid Bonds", "Amendments to General Conditions", and all amendments and addenda, all of which govern the work of this Contract.

**1.02 GENERAL PROVISIONS**

- A. The work for this Contract shall be under the direction and supervision of NYCHA Construction Project Manager and The NYCHA Capital Projects, Project Management Team 1, 90 Church Street, New York, NY 10007, 10th Floor.

**B. COORDINATION OF ABATEMENT OF THIS SECTION WITH OTHER WORK OF THIS CONTRACT:**

The Contractor is also directed to Division 02, Section 02 82 13 – Asbestos Abatement and Division 07, Sections 07 52 00 and 07 56 00 – Roofing Replacement of this specification.

- C. **All measurements required for proper execution of the work is the Contractor's responsibility. Before submitting bid, the Contractor shall examine all existing conditions which may impact on the work and include them in the bid price.**

- D. All work shall conform to the latest industry practices and standards.

E. Contractor Qualifications

1. License/Certification Requirements

- (a) The Contractor shall provide qualified employees to perform work in accordance with this contract. Contractor's on-site employees shall be trained in a program formally accredited either by EPA or by an EPA-approved state Program for lead-based paint abatement workers and supervisors. The training shall be in accordance with 40CFR 745.225. On-site employees must possess current EPA worker and/or supervisor licenses for the State of New York. The Contractor must also maintain a current EPA firm license for the State of New York. The Contractor licenses in any other certification/licenses required by Federal, State and Local Law or those deemed necessary by NYCHA.

2. Demonstrated Ability of Workers

- (a) The Contractor shall provide a list of qualified employees who will perform tasks in accordance with this contract. The Contractor shall provide the following material to NYCHA.
- (b) Copies of current certifications/licenses.
- (c) A synopsis of each employee's experience in the field of Lead-Based Paint Abatement.

3. Contractor's Past Experience

- (a) Contractor shall have successfully completed at least three lead-based paint abatement jobs.
- (b) Contractor shall provide summaries of past job experience including references that may be contacted.

4. Information requested above shall be subject to review and acceptance by NYCHA.

- F. The work for this Contract shall be under the direction and supervision of Capital Projects Program Unit, 90 Church Street, New York, NY10007, 10<sup>th</sup> Floor and contract support for the Lead Safe Work Practice portion of this contract is the Technical Services Department of NYCHA, 23-02 49<sup>th</sup> Avenue, Long Island City, NY 11101.
- G. Questions regarding these specifications shall be addressed to the NYCHA Representative.
- H. The site of this work may be accessed by tenants and Development staff and maintenance workers while work is being done. Perform the abatement work with the least inconvenience to the occupants.
- I. Take all necessary precautions to protect the property of the Authority. Damaged property shall be repaired and restored to its original condition. If the damage is beyond repair, the Contractor shall replace it with new materials to match existing, at the Contractor's expense.
- J. Hazardous waste generated during the abatement process (including lead-based paint) when carted away from the development shall not be transferred from one vehicle to another except at a licensed transfer station certified by NYCDEP.
- K. Develop an Occupant Protection Plan (OPP). An OPP shall include sequencing of abatement work in a manner that will be least disruptive to the residents. The OPP must state in detail how work will be performed, provisions to notify and protect occupants, emergency procedures, and all other components required in accordance with 40 CFR 745.227(e)(5)(ii). Either a certified Lead Supervisor or Designer must prepare the OPP.
- L. Workmanship required in the execution of the work herein specified shall be of good quality and subject to the approval of the Authority.
- M. Make in a timely fashion all applicable and necessary notifications to relevant Federal, State and Local authorities. The Contractor, shall indemnify the Authority's representative from, and pay all claims resulting from failure to adhere to these provisions.
- N. NYCHA will retain an independent Monitoring Contractor to monitor the Abatement Contractor.
- O. Contractor performing lead-based paint abatement or renovation activities involving lead-based paint shall be a Certified Lead Abatement Contractor and shall ensure that supervisors and workers are trained and certified, by U.S. EPA approved state program or equivalent to perform lead paint removal operations.
- P. Establish and implement a Chemical Hazard Communication Program as required by OSHA regulations 29 CFR 1926.59.
- Q. Provide workers with a comprehensive medical examination as required by OSHA regulation 29 CFR 1926.62 before exposure to lead contaminated dust. The medical examination shall be conducted to approve use of appropriate respirators and shall include biological monitoring. NIOSH/MSHA approved respirators shall be utilized.

- R. For employees required to wear a negative pressure respirator, conduct a respirator fit test at the time of initial fitting and at least once every twelve (12) months thereafter as required by OSHA regulations 29 CFR 1926.62.
- S. Determine if any worker will be exposed to lead at or above the action level in accordance with OSHA regulation 29 CFR 1926.62 and CFR 1910.1025. Conduct an exposure assessment to identify the level of exposure a worker would be subjected to without respiratory protection. Assess the exposure level by obtaining personal monitoring samples representative of a full shift of at least an 8 hour TWA.
- T. Furnish appropriate respirators approved by NIOSH/MSHA for use in atmospheres containing lead aerosols. Instruct workers in all aspects of respiratory protection. Maintain an adequate supply of HEPA filter elements spare parts on site for all types of respirators in use.
- U. For manual demolition, scraping, use of heat gun or power tool paint removal with HEPA collection systems, workers shall minimally use the half-mask negative pressure respirator with high efficiency filters (for airborne concentrations not in excess of 500/g/m<sup>3</sup>).
- V. Ensure that work area preparations, work practices, and clean-up procedures comply with these procedures and applicable Federal, State, and Local regulations.
- W. Notify all applicable agencies such as the City Department of Health, Department of Environmental Conservation, five days prior to the date de-leading will begin and provide evidence of notifications to the Authority at the Pre-start meeting.
- X. Equipment and materials are prohibited from being left loose on the roof between shifts. All equipment and materials are to be properly secured or removed so that materials and equipment can not be vandalized and thrown from the roof.
- Y. Materials, equipment, and waste are to be transported on to and off of the roof by a hoist at areas designated by the approved Site Safety Plan. See Section 07 50 00, sub number 1.01 – I for more information. Use of the elevator for materials, equipment, and/or waste is prohibited.

### 1.03 SCOPE OF WORK

- A. The work shall be done at roofs as indicated in Division 01 of the specifications and the contract drawing on the following metal components:
  - 1. Roof Railing System
  - 2. Bulkhead Doors
  - 3. Vent / Pipe Roof Penetrations
  - 4. Roof Access Hatch Covers
  - 5. Window Components in Bulkheads
  - 6. Rooftop Mechanical Units
  - 7. Roof Ladders and/or Stairs
- B. The work shall consist of the following:
  - 1. Paint Removal (abatement) of existing lead based paint from sections of designated metal elements (see Division I).
  - 2. Component Removal (abatement) of entire component.
  - 3. Proper Clean-up of work area and adjacent surfaces/areas.

4. Replacement of all removed metal elements with new lead-free metal elements shall be done per Division 01 of this Contract.
5. Legal disposal of all waste generated.
6. Without limiting the generality of the foregoing, this work shall also include all supplementary miscellaneous items not specified but implied or required in order to complete the work described by the Specifications.

#### **1.04 ENVIRONMENTAL SAMPLING**

- A. Personal Air Monitoring as required by OSHA shall be the requirement of the contractor. Results of daily sampling and/or negative exposure assessment shall be supplied to the Monitoring Contractor and/or NYCHA's onsite representative within 24 hours of initial collection.
- B. Daily site monitoring, containment inspections, preliminary and final visual inspections, etc., will be performed by an abatement Monitoring Contractor engaged by the Authority under a separate contract. Therefore the cost for such items shall not be included in this Contract.
- C. All work shall be performed in accordance with the requirements of 40 CFR 745, 24 CFR 35 and the HUD document, "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing", except as such guidelines are later modified by HUD and/or amended by NYCHA in writing pursuant to this contract, and all applicable Federal, State and Local regulations.
- D. The Abatement Contractor shall coordinate his work with the Monitoring Contractor retained by NYCHA and/or NYCHA's onsite representative.

#### **1.05 DEFINITIONS**

Unless otherwise specified the following definitions shall apply:

- A. "Abatement" means any measure designed to permanently eliminate lead-based paint hazards in accordance with standards established by the EPA Administrator pursuant to Title IV of the Toxic Substance Control Act (TSCA). Abatement strategies include: removal of lead-based paint; enclosure of lead-based paint; encapsulation of lead-based paint (with a product that has been shown to meet standards established or recognized pursuant to Title IV of TSCA); replacement of building components coated by lead-based paint; removal of lead-contaminated dust; removal or covering of lead-contaminated soil with a durable covering (not grass or sod, which are considered interim control measures); as well as all preparation, cleanup, disposal, post-abatement clearance testing, record-keeping, and monitoring (if applicable).
- B. The "Abatement Contractor" shall mean the contractor responsible for lead abatement and cleaning of lead dust, as directed by the Authority, until the clearance levels are achieved, as defined in the "HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing", June 1995 or latest edition published by the United States Department of Housing and Urban Development (HUD).
- C. "Approved" shall mean approved by all public agencies having jurisdiction, and the Authority or its Representative.
- D. The "Authority "or" NYCHA" shall mean the New York City Housing Authority, and its designated authorized representatives.
- E. "Cleaning" shall mean the process of using a HEPA vacuum and wet cleaning agents to remove leaded dust. The process includes the removal of bulk debris from the work area.

- F. "Containment" means a process for protecting other workers, residents, and the environment by isolating areas from exposures to lead dust and debris created during abatement in a work area.
- G. The "Contractor" shall mean the Contractor that is awarded a contract to perform the work described in the Contract documents.
- H. "Development" shall mean a group of buildings, in one or more designated geographical locations, owned or operated by the Authority and referred to by a common name by the Authority.
- I. "Equal or Approved Equal" shall mean equal in the opinion of the Authority or it's Representative.
- J. "High Efficiency Particulate Air" (HEPA) means a type of filtering system capable of filtering out particles of 0.3 microns or greater diameter from a body of air at 99.97% efficiency or greater.
- K. "HUD" shall mean the United States Department of Housing and Urban Development.
- L. "HUD GUIDELINES" shall mean Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing issued by HUD's Office of Lead-Based Paint Abatement and Poisoning Prevention in June, 1995 except as such guidelines are later modified by HUD and/or modified by NYCHA in writing pursuant to this contract.
- M. The "Monitoring Contractor" shall mean the contractor responsible for inspection monitoring to ensure compliance with the lead-based paint abatement contract and all applicable Federal, State and local regulations.
- N. "Provide" shall mean furnish and install.
- O. "Toxicity Characteristic Leachate Procedure" (TCLP) means a laboratory test to determine if excessive levels of lead or other hazardous materials could leach from a sample into groundwater; usually used to determine if waste is hazardous based on its toxicity characteristics.

#### 1.06 SUBMISSIONS

- A. Within thirty (30) consecutive calendar days calculated from the date of Authority's Letter of Award, the Contractor shall tender all required submissions. Six (6) sets of each submission is required. Where physical samples are required, two (2) samples shall be submitted for each item. In general, items shall include but not be restricted to the following.
  1. Paint remover – Peel-Away 7 by Dumond Chemicals, Inc. Telephone (212) 869-6350, or approved equal – Manufacturer's literature.
  2. Safety Data Sheets for applicable products to be used must be submitted, and another copy retained on site.
  3. Description of removal method to be used, including manufacturer's operating instructions and recommendation for equipment usage.
  4. Copies of current Certification of Staff to be assigned to the Contract.
  5. List of three previous similar jobs performed successfully the Contractor, and name, address and telephone number of contact person for verification.
  6. Hazardous Communication Program.
  7. Name of the firm conducting the exposure monitoring and the laboratory providing analytical

- services. Such laboratory must be ELAP certified by NYS Dept. of Health and by U.S. EPA through its NLLAP.
8. Written Respiratory Program.
  9. Chain-of-Command and responsibility at work site, including supervisors, foreman, and competent person, their names, resumes and certificates of training.
  10. Power/Mechanical Equipment. Submittals must be accompanied by product information sheets (cut sheets), proof from the manufacturer that workers assigned to the job have been trained in the equipment (if applicable), and proposed uses for equipment.
  11. Occupancy Protection Plan (OPP). The detailed plan shall include set up and sequencing of abatement work, emergency procedures and any other components required in accordance with 40 CFR 745.227(e)(5)(ii). The OPP shall at a minimum describe in detail the following:
    - (a) Safety and Health Procedures to be implemented to protect residents and employees. Contractor shall provide site specific engineering controls and procedures as well as standard company programs (e.g. respiratory and fall protection programs) that will be followed and maintained on site. Section shall also identify emergency contact numbers and phone number of the nearest local hospital/emergency response unit.
    - (b) Materials and Equipment (previously approved by NYCHA) that will be used in conjunction with abatement work.
    - (c) Work Site Preparation/Pre-commencement Procedures. This must identify the specific sequencing of work site preparation up to the point of commencing active abatement. This shall include specifics as to such items as: Regulatory notifications/signage; Demarcation of work area; Preparation of work area; and, pre-commencement inspections by NYCHA's representative.
    - (d) Abatement Methodology. Describe the specific abatement Method(s), sequence of abatement work, and gross cleaning activities.
    - (e) Final Clean-up. Describe the specific procedures and materials to be used to perform final cleaning after abatement work.
    - (f) Waste Disposal. Provide specific information as to storage, disposal and/or recycling of debris generated during abatement.
  12. Copies of manifests and receipts acknowledging disposal of all hazardous and non-hazardous waste material from the project showing delivery date, quantity, and appropriate signature of landfill's authorized representative.
  13. In the event that all or any portion of the submitted material is rejected by the Authority, the Contractor shall tender new submissions. All submissions returned for corrections shall be resubmitted with the required corrections within ten (10) consecutive calendar days calculated from the date of rejection, until final submissions are obtained that require no further corrections. In no event shall the Contractor be permitted to tender submissions hereunder beyond forty-five (45) days from the Authority's Letter of Award, unless duly extended in writing by the Authority.

- B. No work shall begin, nor shall the materials be ordered or delivered to the site until final approval of all submissions. Send all submissions to:

**NYC Housing Authority  
Project Management Team 1 and Authority Representative  
90 Church Street, 10<sup>th</sup> Floor  
New York, NY 10007**

Upon approval or disapproval of submissions they shall be picked up at the Authority's office as many times as necessary.

## **PART 2 - PRODUCT**

### **2.01 MATERIALS AND EQUIPMENT**

The following materials are required to complete the Project as described in this scope of work:

- A. HEPA vacuum with attachments.
- B. Fire resistant polyethylene sheeting: 6-mil conforming to ASTM E-154, KC-156, D- 24B, D-2103 and D-4379.
- C. Polyethylene bagging: 6 mil sealable bags designed for and, if applicable, labeled as container for hazardous waste.
- D. Lead-specific detergent (Must not contain tri-sodium phosphate).
- E. Garden sprayer or mister.
- F. Duct tape or adhesive spray capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finish or unfinished materials and capable of adhering under both dry and wet conditions, including use of amended water.
- G. Signage as required by applicable regulation.
- H. Temporary fencing or barrier tape.
- I. Eye wash station.
- J. First aid kit.
- K. Hand wash facility.

### **2.02 APPLICABLE REGULATIONS**

- A. HUD Guidelines.
- B. Abatement work shall also be in accordance with applicable regulations of the Environmental Protection Agency (EPA), Occupational Safety & Health Agency (OSHA) and any State or Local LBP standards. Where there is a conflict between Federal, State, State or Local regulations, the more stringent requirement shall prevail.



C. Standards

24 CFR Part 35,36,37 Guidelines for the Evaluation and Control of Lead-Based Paint in Housing (HUD Guidelines June 1995)	
Local Law 1 of 2004	New York City Lead –Based Paint Regulations
29 CFR 1910.....	General Industry Standard
29 CFR 1910.1025...	Lead Standard for General Industry
29 CFR 1910.1200.....	Hazard Communication
29 CFR 1910.245	Specification for Accident Prevention
29 CFR 1926.20.....	General safety and health provisions
29 CFR 1926.21.....	Safety training and education
29 CFR 1926.25.....	Housekeeping
29 CFR 1926.28.....	Personal protective equipment
29 CFR 1926.51 (f).....	Washing facilities
29 CFR 1926.55.....	Gases, vapors, fumes, dusts, and mists
29 CFR 1926.57.....	Ventilations
29 CFR 1926.59.....	Hazardous Communication Standards
29 CFR 1926.103.....	Respiratory protection
29 CFR 1926.62.....	Lead in Construction
40 CFR 241.....	Guidelines for the Land Disposal of Solid Waste
40 CFR 257.....	Criteria for the Land Disposal of Solid Waste
40 CFR 261 / 262.....	Waste Disposal Facilities & Practices
American National Standard Institute (ANSI) Z87.1...	Eye Protection
ANSI Z88.2-80.....	Practice for Respiratory Protection

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- D. The contractor shall ensure that any programs, certifications, licenses or other documentation in accordance with the above and/or any other applicable Federal, State, and Local Regulations/Guidelines are provided.
- E. The Contractor must comply with all applicable requirements of the Resource Conservation & Recovery Act (RCRA) of 1976 as amended in 1980 and 1984 by Hazardous & Solid Waste Amendments (HSWA).

- F. The Specifications refer to many requirements found in the HUD guidelines and the preceding references, but in no way is it intended to cite or reiterate all provisions therein or elsewhere. It is the Contractor's responsibility to obtain a copy of, know, understand and abide by, all such regulations, guidelines and common practices.

### 2.03 Safety and Health (General)

When performing tasks, the Contractor shall:

1. Observe safety precautions in contained work areas.
  - (a) Do not smoke in the work area.
  - (b) Do not eat or drink in the work area.
  - (c) Keeps polyethylene sheeting away from open flame, e.g., blow torches.
  - (d) Exercise caution when spraying water in the vicinity of electrical outlets.
2. Immediately repair torn sheeting using duct tape for minor tears; total sheet may be necessary for major tears. Prior to entering the work area the contractor shall don tyvek suit (or equivalent), ½ face negative pressure respirator, head/eye/foot/hand and ear protection, as well as any other protective covering/measure required or deemed appropriate. These work practices shall be in place until such time that the Contractors exposure assessment dictates an increase or decrease in work practices.
3. Remove Tyvek suit prior to exiting work area. Utilize hand/face wash, and respirator rinse station immediately after exiting work area. Prevent children from entering the work area.

## PART 3 - EXECUTION

### 3.01 WORKSITE PREPARATION AND SET-UP

- A. Residents in the immediate vicinity where work activity will occur, shall be informed of the nature of the work activity and asked to refrain from entering the work area, to keep all windows within 20 feet of working surfaces closed during work hours (including windows of adjacent structures), and to remove all belongings (i.e. potted plants) from exterior window sills and fire escape.
- B. Provide a clean area outside the work area to put on respirators and disposable suits. This area shall at a minimum contain a hand/face washing facility (wash and rinse); respirator washing facility (wash and rinse) for decontamination of workers/respirators upon leaving the work area. This area shall be directly adjacent to the work area and be separated from the work area by means of low physical barriers. The floor of the decontamination area shall be protected by two layers of 6-mil polyethylene sheeting.
- C. Place proper warning signs required by OSHA regulations at all entrances to the work. Signage shall be a minimum of 12" x 20" and shall state the following:

WARNING  
LEAD WORK AREA  
POISON  
NO SMOKING OR EATING

- D. Remove all movable items a 20 foot distance from working surfaces. Items that cannot be readily moved (e.g. playground equipment), shall be sealed with a layer of six mil fire retardant polyethylene sheeting.

- E. Limit access to work area. Provide orange cones; saw horses, tape, etc. to demarcate an area a minimum of 20 feet in all directions beyond the subject component(s).
- F. Place a sheet(s) of 6 mil polyethylene on the ground, extending at least 10 feet beyond all areas of the subject component(s); use (6 mil) fire retardant polyethylene sheeting (sheeting). Sheeting shall cover all ground cover within the work area including but not limited to concrete, asphalt, grass and shrubs. Raise edges of sheeting to create a basin in the event of unexpected precipitation. Sheeting shall be attached to building foundation with duct tape or other approved anchoring system. No gaps should exist between sheeting and wall. Weigh down remaining three sides of sheeting with enough heavy objects (e.g. rocks, 2"x4" boards) to eliminate being blown by the wind. Do not anchor ladder feet on top of plastic (puncture the plastic to anchor the ladders securely to ground).
- G. Cover entrances to the work area with single-layer 6 mil polyethylene sheets taped to the top and weighted at bottom. These entrances shall be off limits to residents during abatement work.
- H. Starting at the lowest point of the building, cover all vents, diffusers, windows, etc., (within 5 feet in all directions of work area), with single layer 6-mil polyethylene sheets secured with duct tape. This practice shall continue in an upward motion to the highest point of the work area.
- I. When working on Window/Door Lintels Only:
  - 1. Rig a containment of non-flammable polyethylene sheet underneath the work area (e.g. scaffold). This containment method should catch all stripped paint for proper disposal.
  - 2. Starting at the highest point of the work area the contractor shall affix 6 mil polyethylene bag(s) directly underneath the lintel to be abated of LBP or removed. Duct tape shall be placed securely around the masonry directly adjacent to the lintel to form a smooth seal. The 6 mil polyethylene bag(s) shall then be secured to the duct tape and sealed airtight on side facing the building. The 6 mil polyethylene bag(s) shall be affixed in a manner that allows gross material to fall into and be placed within during active removal, without disturbing the integrity of the airtight seal when removing LBP or lintel. If the surface adjacent to the lintel is damaged, or if it terminates, is jointed or contains an irregularity, the surface shall be covered with six mil fire retardant polyethylene sheeting and sealed airtight with duct tape.
- J. Contractor shall request a pre-commencement visual assessment from NYCHA's Monitoring Contractor. Paint removal shall begin only after Monitoring Contractor has approved all aspects of work area.
- K. Avoid spreading dust and debris outside the work area.

### 3.02 ABATEMENT

Abatement shall be performed using one of two methods (Paint Removal and Component Removal). The designated work area on any given day may include a combination of both methods.

#### A. Option 1: Paint Removal

- 1. The following removal methods are prohibited: dry scraping, dry sanding, use of heat gun over 1100° F, open flame paint removal, abrasive blasting without HEPA collection system, and the use of chemical strippers containing methylene chloride.

2. Contractor may use the following methods to remove lead-based paint from components/surfaces, and or other methodologies/techniques approved by NYCHA:
  - (a) Manual wet scraping
  - (b) Chemical strippers
  - (c) Self-contained mechanical systems (attached to HEPA filtration)
3. Removal of paint shall commence using approved methods as detailed in Contractors OPP.
4. Contractor shall remove all accumulations of gross debris (i.e. paint chips, masonry etc.), from all surfaces within the work area.
5. The 6 mil polyethylene bag(s) directly underneath the building component shall be removed from work area with minimal disturbance to other engineering controls in place. The 6 mil polyethylene bag(s) shall be closed with an airtight *gooseneck* seal (e.g., twist the bag, fold it over on itself, and wrap with duct tape and/or plastic tie).
6. All paint chips, and waste sludge/liquids shall be placed and sealed in drums. Drums shall be placarded with the proper hazardous waste labeling. Date of initial receipt of material shall be identified on hazardous waste label.
7. As identified above, Contractor shall provide more detailed procedures in the OPP. This shall identify specific products, job sequencing, safety guidelines, specialized cleaning/neutralizing procedures, etc., to NYCHA for approval and/or comment prior to performing paint removal activities.

**B. Option 2: Component Removal**

1. Any component that requires disassembling by torch burning in order to be removed shall first be stripped of lead based paint around the area to be cut or unfastened. Stripping shall be at least one (1) foot on either side of the cut or joint for a total stripped length of 2 feet.
2. Any metal component that requires disassembling by being mechanically cut must be first wrapped in duct tape. Surface shall be cut in the most expeditious manner possible, while being wet misted at all times.
3. With a fine spray of water, lightly spray the surfaces that will be disturbed to limit the creation and dispersal of dust, also lightly misted the plastic sheeting in the work area. Periodically rewet the area while working.
4. Remove the component. The work area should be misted during this process to minimize airborne dust. A major effort shall be undertaken to ensure that the dust generated in the removal process is confined within the work zone.
5. Immediately repair torn sheeting damaged during removal, including but not limited to window coverings and ground cover. Using duct tape for minor tears; total sheet replacement may be necessary for major tears.
6. The component shall be wrapped in 6 mil polyethylene sheeting and sealed with duct tape.
7. Immediately repair torn sheeting damaged during removal, including but not limited to window coverings and ground cover. Using duct tape for minor tears; total sheet replacement may be necessary for major tears.
8. Contractor shall remove all accumulations of gross debris (i.e. paint chips, masonry etc.),

from all surfaces within the work area.

9. When Removing Window/Door Lintels Only:
  - (a) The 6 mil polyethylene bag(s) directly underneath the lintel shall be removed from work area with minimal disturbance to other engineering controls in place. The 6 mil polyethylene bag(s) shall be closed with an airtight *gooseneck* seal (e.g., twist the bag, fold it over on itself, and wrap with duct tape and/or plastic tie).
  - (b) Seal duct tape to the exposed lintel surface. The lintel should be completely covered.
10. All paint chips, and waste sludge/liquids shall be placed and sealed in drums. Drums shall be placarded with the proper hazardous waste labeling. Date of initial receipt of material shall be identified on hazardous waste label.
11. Contractor shall provide more detailed procedures in the OPP. This shall identify any specific products/tools, job sequencing, safety guidelines, specialized cleaning procedures, etc., to NYCHA for approval and/or comment prior to performing component removal activities.

### 3.03 FINAL CLEAN-UP PROCEDURES

- A. Contractor shall don new coveralls prior to performing clean-up activities.
- B. Begin clean-up at the highest point of any exterior work on the building, working down.
  1. **Prepare Cleaning Solution (Two Bucket Method)**
    - (a) Fill a bucket (bucket #1) with a MIXTURE of water and the lead specific cleaning solution, and label it cleaning solution.
    - (b) Fill another bucket (bucket #2) with clean cold water, and label it clean rinse; place it with the bucket labeled cleaning solution.
  2. HEPA vacuum all surfaces around work area that might accumulate dust.
  3. Using the two-bucket method, use two rags designating one as the solution rag (rag #1) and the other as the rinse rag (rag #2).
  4. Always, start with the highest horizontal surface and work down. Clean entire work area (every inch of the window sills, window troughs, 6 mil polyethylene barriers and other window surfaces where dust can accumulate). When practical, clean dirty areas last to avoid spreading dust.
    - (a) Dip rag #1 into bucket #1, wring the excess solution into the same bucket and begin to wipe.
    - (b) Continue wiping until the rag is dry.
    - (c) Dip rag #2 into bucket #2 and wipe only the area you just cleaned with rag #1.
    - (d) Repeat steps a through until designated areas are completely wiped.
      - (i) ***Periodically change the water in bucket #2 (clean rinse).***
    - (e) Remove 6 mil polyethylene barriers from the work area and any areas horizontally adjacent to work area(s) and place in 6 mil polyethylene bag.

- (f) Perform a final HEPA vacuuming of all surfaces around work area that might accumulate dust.
5. Move down to the next work area and repeat the steps identified above. This practice shall continue in a downward motion to the lowest point of the work area.
  6. Upon completion of cleaning all areas on the face of the building, thoroughly clean scaffolding and remove catch basin erected underneath.
  7. Remove any gross material from 6 mil polyethylene sheeting and place in 6 mil polyethylene bags.
  8. With a spray bottle, moisten the 6 mil polyethylene sheeting used as ground cover and fold it inward upon itself, thereby trapping any residual dust. Place the 6 mil polyethylene sheeting into 6 mil polyethylene bags. Close all bags with an airtight *gooseneck* seal (e.g., twist the bag, fold it over on itself, and wrap with duct tape and/or plastic tie).
  9. Contractor shall visually inspect and remove any accumulations of debris, paint chips etc, from the drip line of the building and where any breaches in ground cover occurred during abatement.
  10. No materials used for cleanup shall be disposed of in the resident's trash containers. All debris shall be removed from the building area. The Contractor shall legally dispose of waste in his own refuse containers in accordance with Federal, State, and City regulations.
  11. Remove bags of plastic material from apartment and place in lockable receptacle designated for this project (e.g. roll-off dumpster).

### 3.04 VISUAL ASSESSMENT

NYCHA's Monitoring Contractor will perform a visual assessment of the work area following removal of debris/final cleaning. The area will be deemed visually cleared when NYCHA's representative finds the work area(s) clear of visual accumulations of dust, debris, paint chips, etc. The Contractor shall re-clean all areas identified by NYCHA's representative until they are deemed visually clean.

### 3.05 WASTE DISPOSAL

Disposal Requirements: Contact the regional EPA, state, local and all other pertinent authorities to determine lead-based paint debris disposal requirements. Comply with requirements of the Resource Conservation and Recovery Act (RCRA) and with applicable federal, state, county, or local waste requirements.

#### A. Concentrated paint chips, sludge's/liquids

1. Concentrated waste that has been generated and drummed shall be representatively sampled through TCLP. The Contractor shall hire an independent consultant and laboratory (certified to collect/analyze TCLP samples) to collect and analyze TCLP samples.
2. Samples shall be analyzed for and compared to the following standards
  - (a) TOXICITY
    - (i) Lead 5.0 ppm
    - (ii) Arsenic 5.0 ppm

- (iii) Barium 100.0 ppm
- (iv) Cadmium 1.0 ppm
- (v) Chromium 5.0 ppm
- (vi) Mercury 0.2 ppm
- (vii) Selenium 1.0 ppm
- (viii) Silver 5.0 ppm

(b) CORROSIVITY

- (i) PH <2 or >12.5

(c) IGNITABILITY

- (i) Liquids that have a flash point less than 140° F

(d) REACTIVITY

In accordance with 40 CFR 261.23. Typically wastes that are unstable react violently or form explosive mixtures when mixed with water, generate toxic gases when mixed with water, or are capable of detonation or explosive reaction when heated or subject to shock.

3. If TCLP sample results of waste are elevated for any of the above criteria, then all waste represented by the sample shall be transported/disposed of as hazardous. If all sample results are below the thresholds for the above criteria, than all waste represented by the sample shall transported / disposed of as regular C&D debris.

A certified hazardous waste hauler must transport hazardous waste to a landfill and/or reclamation facility certified to receive and/or treat hazardous waste. Waste haulers and treatment/disposal facilities must be previously approved by NYCHA.

**B. Metal Components**

1. The Contractor shall recycle all metal waste in a certified recycling center.
2. The Contractor shall submit to the Authority proof that the material was recycled. This shall consist of a bill of lading and weight receipt, and shall be forwarded to:

**Authority Representative  
Design Department and Project Manager – PMT-1  
90 Church Street  
New York, NY 10007**

**C. All Other Waste**

1. The Contractor shall dispose of all other waste as C&D debris.

**3.06 BIDDERS QUALIFICATIONS**

- A. Each firm submitting a bid on the work of this Contract will be required to present evidence that the firm has the required experience. In order to be considered for award, a firm should have completed at least three (3) jobs similar to this Contract in size and scope.
- B. Evidence of experience shall consist of the following information concerning each job as identified above the bidder has completed: location and owner, size and description of job, dated started, and date completed. Also submit written references from owners, Project Manager, etc., for all listed jobs, indicating quality of work, satisfactory and timely completion, and any other pertinent information. The Authority reserves the right to verify the experience information.
- C. The Authority may reject any firm’s bid if the submitted evidence does not demonstrate acceptable experience as specified herein.

<b>Attributes</b>	<b>HEPA - Vacuum Needle Gun</b>	<b>Heat Gun</b>	<b>HEPA Vacuum Blast</b>	<b>HEPA Sand</b>	<b>Caustic Paste</b>	<b>Offsite Stripping</b>	<b>Remove and Replace</b>
Worker Skill Level/Training	High	Moderate	High	Moderate	Moderate	Moderate	High
Effect on Substrate	May erode Surface	May gouge Surface	May erode surface	May gouge /roughen	May gouge or Change color of surface	May gouge or Change color of surface	None
Applicability	Metal and Masonry	Operation at Over 1100°F is prohibited	Metal and Masonry	Limited by Surface Contour	Can damage Some components	Component that cannot be stripped onsite	All components Except

**END OF SECTION**



**DIVISION 2 – EXISTING CONDITIONS**  
**SECTION 02 90 00**  
**SIDEWALK SHED**

**PART 1 GENERAL**

**1.01 GENERAL**

- A. All work must be performed as per rules and regulations of NYC BUILDING CODE, NYC DEPARTMENT OF TRANSPORTATION (DOT), OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), NYC HOUSING AUTHORITY, and all other governmental agencies having jurisdiction.
- B. Work shall meet NYCHA's higher standards where applicable.

**1.02 SCOPE OF WORK**

- A. The work of this Contract shall include insurances, bonds, materials, labor, tools, equipment, and other incidental items for the following:
  - 1. Provide sidewalk sheds in accordance with New York City Building Code (Chapter 33, Section BC3307) and as per approved Site Safety Plan in Division I including all required lighting, grounding and wire mesh fencing. Include double high sheds (16 feet high by 12 feet wide minimum) at emergency vehicle access points (at sidewalk with vehicle access or roads) for fire trucks and other emergency vehicles entering and exiting the site. Coordinate access locations and shed width with FDNY and Development Management.
  - 2. File the application for sidewalk sheds which includes design drawings signed and sealed by a Licensed Professional Engineer retained by the Contractor with the New York City Department of Buildings.
  - 3. Where practical and based on the site conditions, the sidewalk shedding may be limited to 5ft / 20ft beyond the furthest area of work for buildings less than 100ft / greater than 100ft in height respectively. However, the contractors engineer shall file a CCD1 for any such case where the proposed sidewalk shed layout does not cover an entire building elevation. At the time that the sidewalk shed documents are filed; the CCD-1 shall also be filed with the Construction Safety Division of the Building Department ([ccd1const-safety@buildings.nyc.gov](mailto:ccd1const-safety@buildings.nyc.gov)).
  - 4. Perform inspections of the sidewalk sheds as per Department of Building (DOB) requirements. Repair and replace damaged sidewalk shed components as required as part of an ongoing maintenance program.
  - 5. Record, maintain and submit maintenance logs with payment requisitions for all sites.
  - 6. After completion of the building envelope and roofing work and DOB sign-offs, remove the sheds as directed by NYCHA's Representative.

**1.03 GENERAL PROVISIONS**

- A. In case of discrepancies between contract specifications, drawings, and code requirements, the contractor shall base the bid on the most stringent standard.
- B. The quantities for different items of work specified in this Contract are part of the base bid and any increase or decrease in the specified quantities shall be adjusted by the unit prices specified in the Form of Proposal.

- C. The installation for various heights and widths of sidewalk shed shall be structurally capable to resist live loads as specified in the current NYC Building Code.
- D. Submit the shop drawings for the sidewalk shed layout and framing as well as design calculations for review by the Designer of Record (DOR) and NYCHA. The shop drawings shall be signed and sealed by a Professional Engineer licensed in NY State and hired by the Contractor. The shop drawings shall comply with the requirements of Chapter 33 of the NYC Building Code. The Contractor must receive written confirmation that the review by the Designer of Record and NYCHA has been completed prior to filing with DOB. The Contractor shall await approval of the drawings by DOB and shall forward a copy of the approved drawings to NYCHA before commencing shed installation. The contractor shall also provide an "EIU" (Electrical Inspection Unit) permit for shed lighting at the same time. When a submission is returned with comments by DOR and / or NYCHA's Representative, Contractor shall resubmit the submission incorporating comments. A Maximum of three reviews shall be performed by the DOR and / or NYCHA's Representative for any given submission. There will be \$250 charge to contractor for each review required after first three reviews.
- E. The Contractor and their PE are fully responsible for the accuracy and correctness of the shed's structural design and DOB permit. Comments and concerns raised by the DOR and/or NYCHA shall be considered and addressed. The contractor is fully responsible for any construction delays resulting from unresolved technical inadequacies of the sidewalk shed design.
- F. All sidewalk shed assembly and disassembly must be supervised and witnessed by a competent person with a minimum of 5 years of experience in the carpentry trade.
- G. The Contractor shall protect the buildings, landscaping, trees, shrubs, facilities, video cameras etc. from any damage due to the installation of the sidewalk sheds. Should any such items be damaged or disturbed or otherwise affected due to sidewalk shed installation, the Contractor shall report the damage and circumstances to NYCHA's representative and the Superintendent and shall make all necessary repairs and replacements to such damaged work at their own expense. New materials to match the existing work in every respect as approved by NYCHA's representative shall be used for repairs and or replacement.
- H. Signage:
  - 1. The contractor must post and maintain signage on each shed elevation as per DOB requirements.
  - 2. Where building entrance addresses are concealed by sidewalk sheds the Contractor shall install and maintain Building Address Signs immediately per NYC BC Sections 3301.9 & 3301.10.
  - 3. Siamese hose connections shall be marked by a metal sign reading, "Standpipe Siamese Connection" and by a red light over the sign.
- I. All electrical work must be carried out by a NYC Licensed Electrician.
- J. Each day the Contractor shall remove and legally dispose of all materials and debris resulting from their work during installation and removal. At the end of the day the worksite shall be left in a clean condition satisfactory to NYCHA.
- K. The Contractor must submit all required certificates (certificate from NYC DOB Electrical Inspection Unit (EIU), etc.) and request an EIU shed electrical inspection with first payment requisitions to the NYCHA.
- L. **The Contractor shall be paid for installing, maintaining, and cleaning sheds for the specified period based on unit prices as indicated in the FOP. The unit prices shall be prorated for the duration of partial months.**
- M. **The Contractor shall be paid monthly rental for sheds after completion of the specified period as indicated in the FOP.**

**N. Contractor shall be paid separately for dismantling and removal of sheds**

**1.04 NYCHA GENERAL REQUIREMENTS**

- A. Sidewalk Sheds shall be inspected regularly. A daily maintenance log as required by DOB must be maintained onsite at all times (a sample checklist is attached at the end of this section)
- B. The underside of Sidewalk Sheds shall be maintained lit at all times, either by natural or artificial lights. Minimum lighting shall be 4 foot candle or as required per DOB, whichever requirement is more stringent, at the walking surface. Light fixtures shall be vandal and tamper resistant.
- C. Any broken lights, missing cages or any other repairs to defective parts are to be addressed immediately, and included in the Unit Price bid for Sidewalk Shed.
- D. Have all loosened clamps shall be tightened as a regular maintenance item.
- E. All nuts and bolts shall be padded and taped up to a minimum height of six feet (6') above ground at all sheds to avoid injuries to pedestrians.
- F. Do not store work materials or debris on top of any part of the Sidewalk Shed.
- G. The contractor's Professional Engineer (PE) must confirm by letter that the sidewalk sheds have been installed as per Designer of Record and NYCHA reviewed shop drawings and design calculations. Sidewalk sheds that provide a base for pipe scaffolding shall be designed by a Professional Engineer (PE) hired by the contractor. The ground where the sheds are to be constructed shall be examined by the Contractor's Engineer to determine the capacity to support the cumulative load.
- H. Anytime a sidewalk shed has been damaged or displaced, the Site Safety Manager / Representative hired by the Contractor is to re-inspect and re-certify the repaired section(s). The Contractor shall supply documentation with photographs to NYCHA's Representative for review and record.
- I. The top of sheds should be broom swept each day to remove debris when the jobsite is active.
- J. The sidewalk shed shall not block or impede the use of any doors at occupied buildings.
- K. Provide protection to the public during installation and removal of the sidewalk sheds (barriers, flag persons, signs, caution tape, etc.).
- L. The space between sheds and building faces and any other side shall be closed (sealed) as required by NYCHA's Representative such that no pedestrian is able to gain access.
- M. Provide complete details for securing a vertical parapet at least 3'-6" high, as measured from the deck of the sidewalk shed along all edges of the sidewalk shed in the shop drawings. No parapet is required along the edge of the sidewalk that abuts a building or structure. In lieu of a vertical parapet, angled protection of identical construction to a parapet that inclines outward at an angle of 45 degrees may be utilized provided such protection is securely attached to the deck, and provided the angled protection extends to a point that intersects a line drawn 3'-6" above the level of the deck.
- N. When the top deck of the sidewalk shed is not installed against the face of the structure/building the side of the shed nearest the structure/building shall be sealed with full height fire retardant construction netting (net opening size 1/2" maximum and 1/4" minimum) as well as minimum 6 foot high, 11 gauge, 2"x2" chain link fence. The netting color shall be either orange or black where it might adversely affect visibility for CCTV cameras otherwise the color shall be white. Solid sliding or inward swinging gates may be provided as necessary to allow for proper execution of the work. Additionally, both sides of the sheds shall be sealed off with

the same materials and in the similar manner within a distance of 30 feet of the building entrances.

- O. Any gaps between the parapet boards and sidewalk shed decks are to be sealed as to prevent materials from falling through the openings.
- P. At building entrance ramps, stoops, and at CCTV Camera locations, 10 foot to 16 foot high sidewalk sheds may be required. Shed drawings shall reflect these locations. Install additional sidewalk sheds at these locations as directed by NYCHA's Representative.
- Q. Sidewalk sheds at inclined surfaces and ramps shall be either installed leveled or stepped. Do not install Sidewalk sheds with sloped surface at these locations..

#### 1.05 SPECIAL REQUIREMENTS

A. **Responsibility for Obtaining Permits:**

**The Contractor will be responsible for securing all required Permits.**

**Note:** As a governmental agency, NYCHA is exempt from paying Governmental permit fees. The contractor should secure all necessary supporting documentation from NYCHA before filing permits.

- B. All hazardous conditions must be responded to immediately.
- C. When required, the Contractor must attend emergency meetings within two hours of notice at the job site with NYCHA's representatives.
- D. The Contractor must provide the telephone number of a responsible representative of their company to NYCHA who will be available 24 hours, 7 days a week.
- E. The NYCHA will initiate default proceedings if the Contractor fails to comply with any of these Special Requirements.

#### 1.06 SAFETY:

- A. The Contractor shall conduct their work in such a manner as to provide complete safety to their workers, NYCHA residents, the public and to provide access to buildings at all times.
- B. All sidewalks, ramps, stairs, means of egress and other areas of access must be kept unobstructed.
- C. **Obstruction of Streets and Sidewalks:** The requirements of the Department of Transportation shall apply with regard to the closing of streets or sidewalks, or to the obstruction of any part thereof.

**Directing Removal:** The DOB commissioner is authorized to consider a failure to display a valid Department of Transportation permit for any street or sidewalk closure or obstruction as a violation of this section and shall direct removal of any such closure or obstruction.

**Exceptions:** The failure to display a valid Department of Transportation (DOT) permit for closures or obstructions relating to the installation, adjustment, maintenance, repair, or removal of sidewalk sheds is not a violation of this section.

- D. **Pedestrian Protection.** Where a sidewalk shed is being installed, adjusted, maintained, repaired, or removed the area under such shed shall be temporarily closed during such work by means of barriers, cones, or caution tape, and flag persons shall be provided to direct pedestrian traffic.
- E. During erection, maintenance and dismantling of the sidewalk sheds the Contractor must provide alternate pedestrian access which might include obtaining a permit from the NYC DOT and temporarily re-routing pedestrians into a protected corridor of the street or closing the

sidewalk entirely. A Flag Person / Safety Monitor shall be present to direct pedestrians to the temporary pedestrian route.

## 1.07 FILINGS WITH GOVERNMENTAL AGENCIES & PERMITS

### A. General:

1. **Shed filing and permits:** The Contractor/ sub-contractors shall file for, obtain and maintain all governmental agency permits for sidewalk sheds and its lighting for the duration of which the sidewalk sheds are erected until the time they are dismantled. **All Permits must be closed and evidence of their closure given to NYCHA representatives prior to final payment for work at each location.** Such Permits include but are not limited to:

- a. Sidewalk shed permits from the New York City Department of Buildings (DOB) and Department of Transportation (DOT) prior to installation of a sidewalk shed. A DOT sidewalk shed permit is not required if the shed is to be erected within a NYCHA property line.
- b. **The Licensed Electrician** shall file the electrical/lighting work associated with the required provision of lighting under the sheds with the Electrical Inspection Unit of DOB ("EIU") and NYCHA's acceptance in order to obtain permits and sign-off upon completion of the electrical installation.
- c. **NYCHA's Representative** will provide a **NYCHA Letter of Authorization for Installation of Sidewalk Sheds** to the Contractor to file with the NYC Department of Buildings and if required with DOT to obtain all Permits.

### B. Permits and Shed Erection:

No sidewalk shed shall be erected until all required permits have been issued, and copies given to NYCHA's representative.

### C. Maintaining Permits:

1. The Department of Buildings will issue a permit for a period of one (1) year or until the expiration date of the Contractor's insurance if such time period is less than one year.
2. It shall be the Contractor(s) responsibility to renew all permits before the expiration date, as required, until the shed is removed. All necessary information for renewal of the permit shall be obtained from NYCHA.
3. The Contractor shall pay any fine caused by their failure to renew the sidewalk shed and all other permits before they expire.

D. Closing DOB and EIU Permits: Evidence of closing DOB and EIU permits must be submitted to NYCHA's Representative before final payment will be made for sidewalk sheds.

## 1.08 TIME FOR COMMENCEMENT AND COMPLETION OF INDIVIDUAL WORK AUTHORIZATIONS

- A. The Contractor shall begin authorized work at the development site after the location for the installation of the sheds is inspected and all field conditions are verified and approved by the Site Safety Manager / Representative hired by the Contractor and NYCHA's Representative. No work shall begin prior to issuance of all required permits. The Contractor is required to supply sufficient workforce to complete the work under each authorization in a timely manner
- B. The Contractor shall start duly authorized work within twenty four (24) hours of the authorization and continue on regular time until completed.

## **1.09 MAINTENANCE**

1. Every day, for the duration of the work at a specific site, as part of the contract maintenance requirements, the Contractor shall perform inspections and make all necessary repairs to the shed and lighting as required per DOB. The monthly payment requisition must be submitted along with a daily maintenance log along with pictures which have a date and time stamp to NYCHA's Representative. The completed and signed sidewalk shed maintenance log shall be emailed to the NYCHA representative on a daily basis.
2. The Contractor shall be responsible for maintenance of the sidewalk sheds and required lighting at all times including making necessary repairs due to high wind and accidents as part of their base bid (at no additional cost to NYCHA). If the sheds are not maintained as per contract requirements and the Contractor does not respond to notices by NYCHA's Representative in a timely manner, then NYCHA's Representative reserves the right to perform or have the repairs / replacements made by others and to back charge the Contractor. No payment will be made without reviewing the inspection reports provided by the Contractor for each month.
3. The Contractor shall be responsible for all cleaning on top of all sheds for the removal of garbage and debris on a weekly basis when the job site is not active.
4. To verify maintenance completion, the Contractor shall submit a maintenance schedule to NYCHA's Representative.
5. Contractor shall make provisions in their cost for sidewalk shed extended maintenance to allow for DOB inspection and sign-off.

## **PART 2 MATERIALS**

### **2.01 SIDEWALK SHED**

- A. All structural members, i.e., posts, primary and secondary beams, braces, etc. to be carbon steel.
- B. All timber products used in erecting the sidewalk sheds shall be in good condition and without holes or delamination.
- C. All corrugated metal deck must be in good condition. Do not use corroded, flattened and otherwise defective metal deck.
- D. Fasteners: All fasteners and connections used in the construction of sheds shall be used in such manner as to prevent unauthorized removal or loosening of any part of the shed.
- E. All Metal Parts shall be Electrically Grounded as well as the use of lighting grounding rods.

### **2.02 SUBMIT FOLLOWING ITEMS FOR REVIEW BY DESIGNER OF RECORD AND NYCHA**

- A. Sidewalk shed drawings (layout, details, and calculations stamped and signed by Contractor's Licensed Engineer) including all fencing. The drawings must clearly show that entries through windows are prohibited.
- B. Sidewalk shed design, details, and calculations when pipe scaffold is provided on top of shed.
- C. Beam clamps

### **PART 3 EXECUTION**

#### **3.01 PREPARATION**

- A. The Contractor shall have sufficient covers and guards to protect their work from rain, freezing, drying effects of sun and wind, traffic or other damaging causes. It is the Contractor's responsibility to protect and maintain their work at all time until final acceptance of the work by NYCHA.
- B. COORDINATION OF PLACEMENT OF SIDEWALK SHED & FENCING
  - 1. Prior to installation, meet at project site to review areas of shed and fencing placement and determine areas of potential interference and conflict.
  - 2. Coordinate and document temporary fencing layout for review by the Development's Superintendent and NYCHA's Representative (prior to installation).
  - 3. Sheds must be erected so as to not block required means of egress from the building. This includes having sufficient cut outs which allow lowering of fire escape drop ladders and permit access from those ladders down to the ground.
  - 4. Sheds must be erected so as to not obstruct any windows on any floor, street traffic, signage, CCTV camera, garbage and recycling receptacles, etc. Shed installation shall be adjusted based on field conditions.

#### **3.02 SIDEWALK SHED CONSTRUCTION**

- A. Sidewalk sheds shall be constructed in accordance with all applicable laws and regulations of the City of New York. Construction of sheds shall comply with Local Law 33/91 and Local Law 51. In case of discrepancy between NYCHA requirements and City & State code requirements, the Contractor shall follow the most stringent / HIGHER STANDARD required by NYCHA within the specification.
- B. All entrances and exits, as well as open spaces from the building line to a perpendicular distance of half the building height shall be protected and access restricted during any repair work on the vertical exterior envelope surfaces. Refer to drawings showing a diagram outlining the zones adjacent to buildings where walkways require protection by sheds.
- C. Sidewalk Sheds shall have a clear interior width of 8 feet minimum and a minimum clear ceiling height of 8 feet unless shown otherwise on the contract drawings.
- D. The members of the sidewalk sheds shall be adequately braced and connected to prevent displacement or distortion of the framework. Steel framing shall be clamped at all connections between members (i.e. between post and beam, main beam and perimeter secondary beam at diagonally braced bays, etc.). Posts located on sidewalk surface shall be protected from vehicle impact. Where posts supporting the shed deck are placed beyond the curb, such posts shall be protected against vehicle impact. A special permit approved by DOT is required for such posts.
- E. Sloping end protections shall be securely attached to the deck, and shall extend at 45 degrees angle upward and outward for a horizontal distance of at least 5 feet.
- F. Regardless of whether extensions of sidewalk sheds are in front of the property or in front of adjacent properties they shall comply with the foregoing and be constructed so as not to unreasonably obstruct, either visually or physically; entrances, egress, driveways, and windows of adjacent properties as directed by NYCHA.
- G. All parapet and end protection plywood shall be painted with two coats high gloss exterior latex paint. **The color of paint shall be as required per DOB.**
- H. When bays are shorter than 8 feet, cross braces shall be installed at each bay with adjustable collar clamps.

- I. The Contractor shall be responsible to insure that the sidewalk sheds cannot be utilized for entry into the building through the windows.
- J. Do not block 1st and 2nd floor windows at any building. Do not block fire hydrants and cross walks.
- K. Some areas of sidewalk shed might require ½", 16 gage minimum, galvanized wire mesh instead of plywood at the parapet wall to clear the CCTV view. The Contractor shall account for this condition at no extra cost to NYCHA.
- L. No bolts ends shall be left exposed at the pedestrian level. Bolt end shall be covered with rounded plastic nuts or padded and wrapped with duct tape to prevent injury.
- M. The bottom of all support columns shall firmly rest on plank and wood plates. The support columns shall not rest directly on dirt/lawn. Whenever more than one plank or wood plate is used they shall be securely connected with nails. See drawing for detail.
- N. All metal parts shall be electrically grounded.

**3.03 SIDEWALK SHED LIGHTING REQUIREMENTS**

- A. The underside of the sidewalk shed shall be lighted at all times. The lighting fixtures shall be vandal/impact resistant, with a wire guard where applicable. Contractor shall provide manufacturer’s literature that demonstrates the vandal/impact resistance of the fixture.
- B. Contractor shall provide the minimum foot-candle (FC) described in this Section. NYCHA requires a consistent minimum lighting level of 4 FC on the walking surface and 4 FC shall be maintained for the duration of the shed lighting and as per local laws of the City of New York, No. 51 Section 3307.2.1 Paragraph 2. Minimum Lighting Levels for four (4) FC for shed configurations are described in the table below:

**Minimum Lighting Schedule**

Shed Height	Spacing	Lamps	lumens per lamp (min.)
8 ft	10 ft	42 CFL	2700 each
10 ft	10 ft	2-42 CFL	2700 each
12 ft	10 ft	2-42 CFL	2700 each
16 ft	10 ft	2-42 CFL	2700 each

For other configurations or 'or equal' consideration:

1. Submit lamp manufacturer’s literature and data
  2. Literature shall demonstrate vandal/ impact resistance
  3. Provide photometric report
  4. Provide mock-up of 24 linear feet of shed lighting as required
  5. Perform FC readings during night-time and demonstrate compliance to the minimum lighting, witnessed by NYCHA Representative as required
  6. Meet NYCHA requirements as written in this Specification and Drawings.
  7. Maximum light fixture elevation not to exceed 10' when fixture is installed to underside of decking.
- C. Light fixtures shall be located ten (10) feet apart. For areas of 16 feet high shed, the lighting fixtures must be mounted on side pole of the sidewalk shed at a maximum of 12 feet height as per detail sketch on Contract Drawings. The maximum number of fixtures per circuit is twelve (12) with alternate circuits on consecutive fixtures in a line. GFCI type 15 amp circuit breakers shall be provided in an additional new panel board. All circuits shall be labeled at panel in the meter room or just outside of that room.
  - D. Lighting fixtures and wiring shall be provided by the Contractor and shall be connected to the new panel installed. Electrical wire for lighting shall be pulled through rigid aluminum /



galvanized vapor retardant conduit installed on the underside of the shed fastened a minimum of every 5 feet. Fixtures shall be mounted to flush to the underside of the decking. Provide expansion coupling where needed by structural conditions.

E. Filing, Permits, Codes and other Requirements

1. File the lighting detail with the NYC DOB-Electrical Inspection Unit. The control number from the DOB-Electrical Inspection Unit will be required before a permit can be issued.
2. All electrical work shall be done by the licensed electrician and shall comply with the New York City Electrical Code.
3. The Contractor shall provide a schematic layout of the sidewalk shed lighting for review by DOR and NYCHA's Representative.

F. Electrical Ground Wiring Policy for Sidewalk Sheds

Install 15 amp GFCI breakers for each lighting circuit [maximum 12 fixtures] at the source of power in an independent contractor panel box located in or just outside the Meter Room. A separate "ground wire" shall be pulled from the source of power through all conduits and bounded to each electrical box and fixture for the entire lighting circuit. At point of bonding, provide sufficient ground wire slack to allow for movement of the structure. Wiring of sidewalk sheds shall be considered "permanent" and installed according to all Code requirements:

1. Only ¾ inch minimum rigid aluminum or galvanized threaded conduit shall be used if above the ground.
2. Weatherproof boxes shall be used for all fixtures and junction boxes.
3. Three wire circuits that include separate ground wire shall be used.
4. Department of Building Electrical Inspection Unit filing, permits and sign-off (immediately after installation) shall be obtained by licensed electrician for each installation.
5. All metal parts shall be electrically grounded
6. All conduits to run under the shed ceiling directly to the building through the wall. Where this condition is not possible, conduit will be placed 12" minimum below ground (as per Code), **NO GROUND SURFACED CONDUIT WILL BE PERMITTED.**

G. Lighting Maintenance

1. Inoperative lighting fixtures, bulbs, conduit wiring or circuits shall be replaced or repaired by the Contractor immediately.
2. As per DOB requirements and / or this specification, the contractor must survey the operating condition of the lighting, make repairs or replacement of the system, including bulbs and submit a log of that survey and repairs / replacement to NYCHA.
3. Compact Fluorescent Light Bulbs (CFL) and fluorescent bulbs shall be disposed of as hazardous waste in accordance with New York State Department of Environmental Conservation (NYSDEC), New York State Hazardous Waste regulations and the Universal Waste Rule. Contractor shall submit receipt of disposed bulbs as part of Construction Waste Management practices.

H. Sidewalk sheds shall be grounded in accordance with the following:

1. All wiring shall be installed in accordance with the requirements of DOB - EIU, National Electrical Code (NEC) and NYC Building Code, latest version.
2. Conduits shall be permanently grounded to the permanent building ground system. In addition to the permanent ground, a temporary grounding system is to be provided

and consists of 10 feet copper rod electrodes driven in to ground with a resistance to ground not to exceed 25 ohms. Where the resistance is above 25 ohms, additional [10 feet copper] rod electrodes connected in parallel shall be used, but not less than one 10 foot rod for every 50 linear feet of shed. Where a stretch of sidewalk shed is less than 50 linear feet, provide at least one temporary grounding system. Conduct test under the presence of a NYCHA representative. Provide Test Report for NYCHA approval.

3. The path from circuits, equipment, structures and conduit or enclosures to ground shall be permanent and continuous, have ample carrying capacity to conduct safely the currents liable to be imposed on it and have the impedance sufficiently low to limit the potential above ground and to result in the operation of the over-current devices in the circuit. All metal components shall be grounded.
  4. Grounding circuits shall be checked to ensure that the circuit between the ground and the grounded power conductor has a resistance, which is low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current.
  5. Grounding wire bonding: provide sufficient slack where metal component is bonded to allow anticipated movement of the structure.
- I. Provide and maintain temporary lighting at all times, including making repairs due to vandalism. Temporary lighting wiring shall be run in rigid aluminum or galvanized conduit (RGC). The conduit shall be run exposed and secured, in an approved manner, below the shed. The Contractor shall provide branch circuit wiring from a panel in the building and run three THWN conductors (Black-White-Green) per circuit. Core drill (2 inches) the conduit entrance into the building and insert a 1½ inch threaded sleeve. The Contractor shall remove the LB conduit and wires and place a threaded cap on the sleeve through the building after temporary lighting is removed. The Contractor shall provide a schematic layout of sidewalk shed lighting. Provide expansion coupling where needed by structural conditions.
- J. The Licensed Electrician responsible for initial installation and repair of the installation shall be on site to perform or directly oversee those installing and or repairing same temporary electrical service and shall provide a certificate of inspection from NYC DOB-Electrical Inspection Unit that the temporary service has been installed in accordance with all applicable codes and that it meets the following minimum requirements:
1. All power to the electrical shed installation is ground fault interruption (GFCI) protected as per NYC Electrical Code 2011 amended Section 590.8.
  2. The installation is properly grounded and bonded as per NEC Article 250.
  3. All raceways are terminated and supported properly as per NEC Article 300.
  4. The installation does not pose a safety hazard to the public.
  5. The installation complies with Local Law No. 51.
  6. Where NYCHA requirements within this specification are more stringent they must be followed.
  7. Check and verify sidewalk shed daily based on DOB "Maintenance Log Requirements" and as per list below:

**Sidewalk Shed Inspection Checklist**

<b>Development Name:</b>		<b>Contract #:</b>			
<b>Building # and address:</b>		<b>Time:</b>			
<b>Date of Maintenance Visit:</b>		<b>Permit #</b>			
<b>Contractor Name:</b>					
	<b>Item Description</b>	<b>Acceptable</b>	<b>Not Acceptable</b>	<b>Not Applicable</b>	<b>Remarks &amp;/or Authorization for repairs</b>
1.	Tops of sheds are broom clean and free of materials and debris				
2.	Electrical conduits are intact, secured and show no separation at joints.				
3.	Decking is free of gaps and open spaces.				
4.	No parapet panels are missing				
5.	Parapet or wire screens secured in place				
6.	Debris netting secured and intact				
7.	Chain Link Fence at the sheds are secured and intact				
8.	All bolts and nuts have been installed				
9.	All sharp edges and bolts within up to 6 feet high from the ground are padded or covered with rounded plastic nuts				
10.	All wood blocking under posts are secured with nails.				
11.	All sidewalk shed lights are fully functional and providing lighting levels as per project specifications.				
13.	No missing or damaged vandal proof light fixture cages				
14.	All horizontal and diagonal bracing is secured and straight				
15.	All structural members are sound, connected and secured.				
16.	Ground wire connections between copper grounding rods, sheds and jumpers are intact. Electrical Grounding is continuous.				
17.	Shed signs are installed as per DOB requirements				
18.	All pipe clamps are tight and secured				
19.	Building address signs are secured in place at all buildings				
20.	All GFCI breakers are working properly				
21.	Daily log of Sidewalk Shed inspections is maintained				
22.	All stand pipes, fire hydrants and Siamese connections are accessible				

**Additional Remarks**

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**Contractor Rep. (Print & Sign)**

Date

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**NYCHA Construction Project Manager (Print & Sign)**

Date

**cc: Development Management, Project Administrator, NYCHA CPM, Contractor Rep, File**

### Maintenance Log Requirements

Supported scaffolds and sidewalk sheds must be inspected daily and the results recorded in a maintenance log, readily available on-site at all times. The log must include, at a minimum, the following information:

<b>General Information</b>	Permit #
Name of Scaffold Erector	Installation Date _____ Expiration _____
Renters Name	Phone #
Shed type: Light ___ Med. ___ Heavy ___ Duty	Drawings on site for inspection?
<b>Specific Information</b>	Scaffold Height _____
Number of platforms decked _____	Are the base plates and mudsills secured?
Are the signs on the parapets?	Are the scaffold pins and bolts installed?
<b>Maintenance Information</b>	Are the legs and poles plumb, braced and not displaced?
Are cross braces fully attached, not bent, and not missing?	Are tie-ins correctly spaced, properly secured and the correct amount?
Are pipe clamps tight?	Are window jacks tight?
Are all the planks secured?	Are decking and planks in good condition?
Is deck fully planked?	Are there gaps or open spaces on decking?
Are the guardrails and toe boards secured at all places where required?	Is the netting extension of full length and height?
Is the netting secured?	Is the parapet the proper height and secured?
Are the lights working?	Is the deck clean and free of debris?
Name:	
Signature:	Date:

**END OF SECTION**

**DIVISION 02 – EXISTING CONDITIONS**  
**SECTION 02 91 00**  
**TEMPORARY FENCE**

**PART 1 GENERAL**

**1.01 SUMMARY**

- A. As part of this Contract, the Contractor shall provide and install construction fencing completely surrounding the construction site, according to provisions and requirements listed in this Section. The area to be enclosed shall include space for access to the staging, temporary storage of materials and equipment, Construction Waste Management requirements, and any other construction related activities.
- B. The Contractor must submit a sketch to the Construction Manager for approval, showing the location of the proposed site fence and all gates and sidewalk closures, prior to its erection. Location of the fence, and the location, size and number of gates may be revised at the discretion of the Authority's Representative.
- C. The Contractor shall obtain the necessary permits for the location and erection of the site enclosure and any other protective structures from the agencies having jurisdiction over its location and erection.
- D. Secure gates shall be provided as the only access to the site. Any person entering shall sign in and out and shall list the name of the company or agency they represent and the reason for the visit. A sign shall be posted outside of all gates stating, "**No Trespassing – For Authorized Personnel Only**". Such signs shall also be posted along the fence at intervals of not less than 75'.
- E. The Contractor shall assume all responsibility for erection of the fence and proper location, as well as maintenance, including repairing damage due to vandalism, for the duration of the Project.
- F. The site will need to conform to all noise reduction requirements of the City Department of Environmental Protection (DEP) and NYC Local Law 113. The following detail description is for security only. The security fence may also serve as the noise reduction barrier, and the Contractor will be responsible for revising the materials listed herein to bring the fence into full compliance, with materials, details, and design as approved by the Authority's Representative/ Authority and DEP.

**1.02 SCOPE OF WORK**

- A. The scope of work of this section includes providing temporary fencing at locations as shown on drawings and as directed by Authority's Representative.

**1.03 SUBMITTALS**

- A. Submit in accordance with Section 01 33 00, "Submissions".
  - a. Shop drawing indicating layout of temporary fencing, location and size of gates, existing pavement and roads, access to fire hydrants and hose connections, and other site specific conditions. Prepare drawing after site survey and verification of existing conditions. Shop drawing shall be approved by Authority's Representative.

**PART 2 PRODUCTS**

**2.01 CHAIN LINK FENCING**

- A. Chain link fence: New or previously used salvaged chain link fencing in good condition. Height of fence shall be as per details on Contract Drawings.
- B. Fabric shall consist of steel wire helically wound and interwoven in such a manner as to provide a continuous 2" (two inch) chain link mesh with knots or ties.
- C. The base metal of the fabric shall be 9 gauge steel wire when tested in accordance with ASTM Designation E8.
- D. The chain link mesh is zinc-coated by the hot-dip process after fabrication. The weight of zinc coating shall not be less than 1.2 oz. per square foot of actual surface covered when tested in accordance with ASTM Designation A90.
- E. The height of the fabric shall be the overall dimension from ends of twists or knuckles. The tolerance of the nominal height shall be plus or minus one inch.
- F. The size of mesh shall be determined by measuring the minimum clear distance between the wires forming the parallel sides of the mesh, measured in either direction. The tolerance of the size or the mesh shall be plus or minus 1/8 inch.
- G. The diameter of the zinc coated wire shall be determined as the average of two readings measured to the nearest 0.001 inch taken at right angles to each other on the straight portion of the parallel sides of the mesh. The tolerance in the diameter of the coated wire shall be plus or minus 0.005 inch.
- H. Chain link fabric 72 inches high and over shall be furnished with twisting at the top. Twisting shall be accomplished by twisting adjacent pairs of wire ends together in a closed helix of 1-1/2 machine turns which is equivalent to three full twists, and cutting the wire ends at a sharp angle to provide sharp points. The wire ends beyond the twist shall be at least 1/4 inch long.
- I. Tie wire shall be 9 gauge steel wire, galvanized as specified above. The wire shall be provided at intervals not to exceed 12 inches for attaching fabric to all line and corner posts, and not exceeding 18 inches when attaching fabric to top rail. Mesh shall be attached using a "wrap and wrap" tie method.
- J. For additional information, refer to Temporary Chain Link Fence, details on Contract drawing.
- K. All Metal Parts shall be Electrically Grounded. Provide ground electrodes.

**2.02 POSTS AND RAILS**

- A. Line posts shall be 2" O.D. standard weight steel pipes, hot dipped galvanized, spaced not more than 8 feet apart O.C. End and corner posts shall be 2½" O.D., standard weight steel pipes, hot dipped galvanized. Diagonal bracing shall be installed in the bays at the corners of the fence and such other places as may be required by the Authority's Representative.
- B. Posts shall be set to the proper specified depths in the earth or in core drilled sidewalk or asphalt (parking lots).
- C. The top and bottom rails shall be 1 5/8" O.D. standard weight steel pipe, hot dipped galvanized, and shall be coupled with outside sleeves coupling to allow for expansion and contraction and shall pass through holes provided in fittings on all tops of line posts.
- D. Rails shall be fastened with ties to corner and line posts. Top rails shall butt together at corner posts. Sections of top rail shall be coupled with outside sleeve couplings to allow for expansion and contraction. The posts are to be truly vertical.
- E. Ties shall be of high tensile strength galvanized wire 9 gauge, or clamps, tension strips or galvanized bands.
- F. Fittings shall be 3/16" thick prepared steel, hot dipped galvanized, with galvanized steel

nuts and bolts as required. Bolts shall be located on the inside of the fence, with only smooth bolt heads exposed to the outside. Couplings shall be standard weight galvanized steel as described above.

- G. All Metal Parts shall be Electrically Grounded.

### **2.03      WIRE MESH FABRIC AT OTHER LOCATIONS**

- A. Fabric: Woven galvanized steel wire mesh. Provide in continuous lengths to be wire tied to fence posts or prefabricated into modular pipe-framed fence panels.

### **2.04      GATES:**

- A. Provide personnel and vehicular access gates of the quantity and size as indicated on the shop drawings or required for functional access to site.
  - 1. Fabricate of same material as used for fencing.
  - 2. Vehicle gates:
    - a. Minimum width: 20 feet to allow access for emergency vehicles.
    - b. Operable manually by one person.

## **PART 3   EXECUTION**

### **3.01      LAYOUT**

- A. Installation of temporary fencing shall not deter or hinder access to existing and new hose connections and fire hydrants.
  - a) Maintain 3 feet diameter clear space around fire hydrants.
  - b) Where fire hydrant or hose connection is blocked by fencing, provide access gate.
- B. Access: Provide gates for personnel, delivery of materials, and access by emergency vehicles.
- C. Field verify location with Authority's Representative and Management.

### **3.02      INSTALLATION**

- A. Posts shall be set properly and to the specified depths in the ground or in core drilled holes in sidewalk or asphalt (parking lots) or base frame loaded with sand bags. Posts shall be set plumb, properly aligned. After posts have been set in place, top and bottom rails shall be attached to corner and line posts. Sections of rail shall be coupled with outside sleeve couplings that allow for expansion and contraction. Rails shall be parallel to the finished grades. Top and bottom rails shall be furnished for all panels for all fences. When sidewalk or parking lot is core drilled for fence post installation, the Contractor must patch the holes with material that matches the surrounding material; once the fence is dismantled.
- B. After the frame work is complete, new galvanized chain link mesh shall be installed. The galvanized fabric shall be stretched uniformly and tightly. The galvanized fabric shall then be attached to all line and corner posts with tie wires at intervals not to exceed 12 inches and to top, bottom and intermediate rails with tie wires at intervals not to exceed 14 inches. Galvanized fabric shall remain in tension after pulling force is released.
- C. Chain link posts:
  - 1. Space 8 feet maximum.
  - 2. Drive posts, set in holes and backfill, or anchor in precast concrete blocks.
  - 3. For soft and unstable ground conditions, cast concrete plug around post.



4. Posts over pavement: Use steel post plates / frame or precast concrete blocks.
  5. Gate posts: Use bracing or concrete footings to provide rigidity for accommodating size of gate.
- D. Fabric: Securely attach to posts.
- E. Gates: Install with required hardware.

**3.03 MAINTENANCE AND REMOVAL**

- A. Maintain fencing and gates in good condition. If damaged, immediately repair.
- B. Relocate with the approval or direction of the authority's representative, any sections of the fence as may be necessary to permit installation of work under this contract.
- C. Remove temporary fencing upon completion of work or when no longer required. Backfill holes and compact, sodded smooth with surrounding landscaping. Holes in pavement shall be surfaced to match existing paving. Repair damage caused by installation of temporary fencing. Any damage to the site incurred during removal of the fence shall be repaired at no additional expense to the Authority.

**END OF SECTION**

**DIVISION 3 - CONCRETE**  
**SECTION 03 01 00**  
**CONCRETE RESTORATION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes restoration of concrete spalls and cracks, and other aesthetic and structural restorative treatments to concrete. This work includes the repair of concrete members at the locations shown on the contract drawings and as directed by the Authorities Representative.

**1.02 SUBMITTALS**

- A. Product Data: For each product specified in Part 2 - Products.
- B. Samples:
  - 1. Injection Ports: One for each type to be incorporated in the Work.
- C. Manufacturer Approved Installer Credentials: Prior to pre-installation conference, submit installer credentials issued by manufacturer of concrete restoration products.
- D. Pre-construction Test Reports:
  - 1. Concrete Spall Restoration Bond Strength Test Reports.
- E. Field Quality Control Test Reports:
  - 1. Concrete Spall Restoration Sounding Test Reports.
- F. Warranty Prerequisites:
  - 1. Sample Warranty: Prior to pre-installation conference, submit sample warranty and warranted application procedures from manufacturer.
  - 2. Manufacturer Inspection Reports/Certifications (On-demand).

**1.03 QUALITY ASSURANCE**

- A. Comply with the following, except where exceeded by the requirements in this Section:
  - 1. ACI 224 "Cracking."
  - 2. ACI 503 "Adhesives for Concrete."
  - 3. ACI 546 "Repair of Concrete."
- B. Pre-installation Conference: Prior to starting concrete restoration Work, conduct an on-site conference to review the detailed requirements of the Work.
  - 1. Attendees shall include Contractor's Project manager and superintendent, Architect's Project representative, Owner's Project representative, manufacturer's authorized representative, manufacturer approved installer. Provide seven (7) business days advance notice to attendees.
  - 2. Agenda shall include:
    - a. Manufacturer approved installer credentials.

- b. Sample warranties and warranted application procedures.
- c. Project construction schedule.
- d. Weather conditions.
- e. Condition of substrate and preparation.
- f. Proposed equipment.
- g. Mixing procedures.
- h. Installation sequence.
- i. Quantification procedures.
- j. Curing procedures.
- k. Mockups.
- l. Tests and inspections.

#### **1.04 TESTS AND INSPECTIONS**

##### **A. Pre-construction Testing:**

###### **1. Concrete Spall Restoration Bond Strength Testing:**

- a. Performance Models: Prior to installation of repair mortar Work, construct a minimum of three (3) performance models of concrete spall restoration, or one (1) for every two hundred (200) spalls, whichever is greater. Models shall be at least one (1) square foot in size, and located in the field as determined by Architect.
- b. Testing: Immediately following manufacturer's recommended time period for development of bond, conduct pull tests on each performance model to measure bond strength of concrete patch to existing concrete construction. Arrange for Architect and manufacturer's authorized representative to be present at testing, provide five (5) business days notice.
- c. Test Reports: Reports shall include date of test, location, date concrete spall restoration was installed, test method, and test results..
- d. Acceptance: Obtain Architect's written acceptance of test reports before proceeding with the Work.

##### **B. Field Quality Control Testing:**

###### **1. Concrete Spall Restoration Sounding Test:**

- a. Testing: Test quality of concrete spall restoration installations by sounding at locations selected in writing by Architect.
- b. Test Reports: Reports shall include date of test, locations, test method, and detailed test results and recommendations.

#### **1.05 PROJECT CONDITIONS**

- A. Weather Condition Limitation: Proceed with concrete restoration Work only when existing and forecasted weather conditions will permit Work to be performed in accordance with manufacturers' recommendations and warranty requirements.

**1.06 WARRANTY**

- A. Product Manufacturer's Warranty: Written form in which manufacturer agrees to furnish concrete restoration products to repair or replace those that do not comply with performance and other requirements specified in the Contract Documents during the warranty period.
  - 1. Warranty Period: Ten (10) Years.
- B. Manufacturer's Inspection and Certification:
  - 1. Coordinate inspections required by manufacturer. Provide three (3) business days notice to manufacturer's authorized representative to inspect Work at the required milestones or intervals. No Work is to proceed until after each inspection is completed with written acceptance by manufacturer's authorized representative.
  - 2. Upon acceptance of completed Work by manufacturer, obtain manufacturer's certification stating that the Work complies with the requirements for Warranty.

**PART 2 - PRODUCTS**

**2.01 COMPOSITE PATCHING COMPOUNDS**

**A. Corrosion Resistant Rebar Coating**

- 1. Rebar Primer and Bonding Agent Thoroc (BASF)
- 2. EMACO P24 BASF
- 3. Or Equal

**B. Bonding Agent**

- 1. HB2 Repair Mortar Thoroc (BASF)
- 2. EMACO P24 BASF
- 3. Or Equal

Note: Bond coat per manufacturer's recommendations.

**C. Modified Repair Mortar**

- 1. HB2 Repair Mortar Thoroc (BASF)
- 2. LA / LA 40 Repair Mortar (For form repairs) BASF
- 3. 10-60 Rapid Mortar (For horizontal surfaces) Thoroc (BASF)
- 4. Or Equal

**D. Curing Agent**

- 1. Polymer Liquid Thoroc (BASF)
- 2. Or Equal

**E. Finish Coating**

- 1. Weatherguard Flex Coating Thoroc (BASF)

2. Or Equal

## 2.02 CONCRETE SLAB PATCHING MATERIAL

### A. Rapid Hardening Patching Mortar

1. 10-60 Rapid Mortar      BASF
2. SikaQuick 2500      Sika Corp.
3. Sikaset Roadway patch      Sika Corp.

## 2.03 REINFORCING MATERIALS

### A. Deformed Steel Reinforcing Bar

1. Epoxy Coated, ASTM A 775, Grade 60, unless otherwise indicated

### B. 1/4" / 3/8" diameter stainless steel hooked bar / U-shaped bars / Threaded rod

1. Comply with AISI 302/304 for stainless steel.

### C. Epoxy Adhesive

1. Concreive 1090      BASF
2. HIT RE 500SD      Hilti, Inc.
3. Or Equal

## 2.04 STEEL REINFORCING CORROSION INHIBITOR

### A. Migrating Corrosion Inhibitor

1. Corrosion Inhibitor      Sonneborn (BASF)
2. Or Equal

## 2.05 ACCESSORIES

### A. Duct Tape (3" Wide)

1. Duct Tape 6969      3M  
Silver, 72 mm Wide

## PART 3 - EXECUTION

### 3.01 VERTICAL AND OVERHEAD CONCRETE SURFACES RESTORATION

#### A. Preparation for Concrete Surface Restoration:

1. Sound all concrete slab edges, vertical concrete surfaces, overheads and exposed spandrels with a 3 lb. dead blow hammer. Remove all loose material and mark areas of delamination.

2. Saw-cut minimum 1/2" deep existing concrete, minimum 3" away from the marked perimeter of the resulting spall/delamination into sound concrete and in a configuration indicated on Drawings.
3. Remove decayed concrete using methods least likely to damage elements to be retained or adjoining sound construction. Removal methods must not create micro-cracking in the base concrete. Temporarily cover openings when not in use.
4. Expose embedded reinforcing steel by removing surrounding concrete with hand tools. Expose all steel reinforcing bars within 2" of the surface by chipping away concrete to minimum 3/4" beyond the steel reinforcing steel and into sound concrete.
5. Clean reinforcing steel using a motor driven wire brush to remove all rust and scale.
6. Wash the cavity with potable water
7. Saturate the cavity with water using brush or spray bottles to prevent suction of water from the repair mortar.

At 50° F, cavity to be saturated but surface dry (SSD) 1.5 hour prior to repair.  
At 70° F, cavity to be saturated but surface dry (SSD) 1.0 hour prior to repair.  
At 90° F, cavity to be saturated but surface dry (SSD) 0.5 hour prior to repair.

**B. Installation of Modified Composite Patching Mortar (Cavity Less Than 3" Deep):**

1. Follow manufacturer's written instructions regarding storage conditions, surface preparation and protection, mixing ratio, application procedure, application time, and finishing time.
2. Complete and finish surface of patch to match existing surface texture and profile.
3. Avoid feathering.

**C. Installation of Modified Composite Patching (Deeper Repair cavity between 3" – 4" deep)**

1. Cavity having closed spaced steel reinforcing bars greater than # 6.
  - a. Use formwork and pump technique for concrete repair. Avoid trapping air during the pumping process by providing venting tubes. Provide injection ports at approximately 3' – 0" apart.
  - b. Prepare pre-mixed modified cement aggregate pumping concrete and apply with pressure into the cavity as per manufacturer's instructions.
  - c. On vertical surfaces start at the lowest point in the cavity filling in a manner that prevents air entrapment. Continue until the cavity is filled.
  - d. At all times monitor the pressure in order to prevent displacement of the formwork.

**3.02 HORIZONTAL REINFORCED CONCRETE SURFACES AND DEEP RESTORATION**

**A. Preparation:**

1. Sound all horizontal concrete surfaces with 3 lb. dead blow hammer and mark areas of damaged and delaminated concrete.
2. If the marked areas of damage at a given reinforced concrete deck were found to be substantial, plan and schedule your preparation and removal without diminishing the structural integrity of the surface.

3. Saw cut minimum ½" deep existing concrete at distance minimum 3" away from the perimeter of the marked area of delamination into adjacent sound concrete and in a configuration shown on the Drawings.
  4. Remove all decaying and delaminated concrete using methods least likely to damage sound adjacent element to be retained. Removal methods must not create micro-cracking in the base concrete. Prepare surface of cavity and boundaries to prevent feathered edge conditions.
  5. Expose embedded steel reinforcing bars by removing surrounding concrete with hand tools. Expose all top steel reinforcing bars within 2" of the surface by chipping away concrete to minimum ¾" beyond the steel reinforcing steel and into sound concrete.
  6. Clean uncovered steel reinforcing bars using motor-driven wire brush to remove all rust, scaling and adhered concrete. If cross section area of any steel reinforcing bars has been reduced by minimum 20%, notify the Engineer for further examination and any instructions for rebar splicing.
    - a. Any of the steel reinforcement restoration shall be used:
      - Complete steel reinforcement
      - Additional or supplemental rebars over or adjacent to affected section.
    - b. Place new rebars in the following manner:
      - Mechanical spliced to existing rebars in accordance with ACI 318 recommendations
      - Placed parallel to and at a distance approximately ¾" away from existing bars in accordance with ACI 318 Recommendations.
  7. Roughen surface of cavity to a profile necessary to achieve bonding. Perform abrasive and pressurized air cleaning to remove all loose particles and clean cavity with potable water to remove any bond inhibitive material. Surface of existing concrete cavity expected to receive the mortar patch shall be sound, clean, and free from any defects with existing aggregate bonded to the cement metrics.
  8. For Joist Restoration provide adequate formwork.
  9. Coat cleaned steel reinforcing bars in accordance with manufacturers written instructions.
- B. Installation of Modified Composite Patching Mortar (Cavity Less Than 3" Deep):
1. Follow manufacturer's written instructions regarding storage conditions, surface preparation and protection, mixing ratio, bonding, patching mortar to existing surface, application procedure, application time, and finishing time.
  2. Complete and finish surface of patch to match existing surface texture and profile and make surface ready for coating application.
  3. Avoid feathering.
  4. Apply bonding agent if recommended by the manufacturer of modified repair concrete.
  5. Prepare repair concrete mix as per Engineer's and manufacturer's instructions. Pore to the level of adjacent concrete surface. Finish the top surface smooth.
  6. Avoid feathering.
- C. Installation of Modified Composite Cement for deep cavity repair (cavity between 3" – 4")

1. Follow manufacturer's written instructions for:
  - a. Mix Proportion of concrete mix using modified cement and aggregate.
  - b. Cavity Preparation includes application of bonding agent approved by the modified cement manufacturer.
  - c. Application Procedure
  - d. Application Time
  - e. Finishing Time
2. Complete and finish surface of patch to match existing surface and make surface ready for coating application.
3. Avoid feathering.

**3.03 CLEAN UP**

- A. Restore site to pre-construction condition including both interior and exterior areas.

**3.04 INSPECTIONS**

- A. Test quality of spall repair installations by sounding at locations selected in writing by Architect.
- B. Defective restoration work or work that does not fulfill warranty requirements shall be fixed at no cost to Owner.
- C. Final inspection and acceptance in writing of concrete restoration work shall be made by the Architect and manufacturer to verify conformance with drawings and specifications.

**3.05 COMPLETION**

- A. Submit all warranties required by these specifications for approval prior to final payment.

**END OF SECTION**



**DIVISION 3 - CONCRETE**  
**SECTION 03 30 00**  
**CAST-IN-PLACE CONCRETE**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes cast-in-place architectural concrete, and related formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishing. Installation procedures shall be in accordance with the product manufacturer's recommendations. Demolition and removal of materials shall be as required to support the work.

**1.02 SUBMITTALS**

- A. Product Data: For each product specified in Part 2 - Products.
- B. Samples:
  - 1. Textured Forms or Form Liners: For each texture proposed for use in imparting texture to form-facing cast-in-place concrete.
- C. Concrete Design Mixtures: Written report in compliance with Special Inspection requirements of authorities having jurisdiction for each type and strength of concrete mixture. Submit in time as indicated by authorities, or no later than fifteen (15) business days prior to start of Work, whichever is sooner.
- D. Special Inspection Reports.
- E. Field Quality Control Test Reports: If not in conflict with special inspections, submit for each test indicated within 24 hours after test is conducted.
  - 1. Sampling Reports.
  - 2. Slump Test Reports.
  - 3. Compressive Strength Test Reports.
  - 4. Air Content Test Reports.
- F. Shop Drawings for Reinforcement (Delegated Design): Prepared by qualified professional engineer, showing complete details for size, fabrication, bending, placement, and splicing. Comply with ACI SP-66 "Detailing Manual."
- G. Shop Drawings for Formwork (Delegated Design): Prepared by qualified professional engineer, detailing fabrication, assembly and support of formwork.

**1.03 QUALITY ASSURANCE**

- A. Installer Qualifications: A qualified contractor who has specialized in installing cast-in-place architectural concrete similar in material, design, and extent to that indicated for this Project.
- B. Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
- C. Comply with the following:

1. ACI 303.1, "Specification for Cast-in-Place Architectural Concrete"
  2. ACI 301 "Specifications for Structural Concrete Buildings."
  3. ACI 318 "Building Code Requirements for Reinforced Concrete" as amended by authorities having jurisdiction.
  4. ACI 117 "Tolerances for Concrete Construction" unless more stringent provisions are indicated.
- D. Mockups (Sample Panels): Before casting architectural concrete, produce a minimum of 3 sets of full-scale sample panels, cast vertically, approximately by 18 by 18 inches by 48 inches long minimum, to demonstrate the expected range of finish, color, and texture variations.

#### 1.04 TESTS AND INSPECTIONS

- A. Special Inspections: Comply with special inspection requirements of authorities having jurisdiction including, but not limited to, those indicated on Drawings.
- B. Field Quality Control Testing: If not in conflict with, or covered by special inspections, comply with the following:
1. Sampling: ASTM C 172.
  2. Slump Testing: ASTM C 143.
    - a. Test Specimen: One test specimen for each load at point of discharge.
  3. Compressive Strength Testing: ASTM C 39.
    - a. Test Specimen: One set of three (3) test specimens for each 50 cubic yards or fraction thereof of each class of concrete:
      - 1) one (1) specimen tested at 7 days
      - 2) one (1) specimen tested at 28 days
      - 3) one (1) specimen retained for later testing if required.
  4. Air Content Testing: ASTM C 173.
    - a. Test Specimen: One test specimen for each set of compressive strength specimens.

#### 1.05 PROJECT CONDITIONS

- A. Comply with ACI 306 "Cold Weather Concreting" for cold weather protection.
- B. Comply with ACI 305 "Hot Weather Concreting" for hot weather protection.

### PART 2 - PRODUCTS

#### 2.01 CONCRETE MATERIALS

- A. **Concrete**
1. Comply with the following:
    - a. Portland Cement: ASTM C 150, Type II.
    - b. Fly Ash: ASTM C 618, Type C or F. Limit use of fly ash in concrete mix design to not exceed 25% of cement content by weight.
    - c. Aggregates:

- 1) For normal weight concrete: ASTM C 33, except local aggregates of proven durability may be used when accepted in advance in writing by Architect.
- d. Water: ASTM C 94, potable.
- e. Air Entraining Admixture: ASTM C 260. Use air entraining admixture in all concrete, providing not less than 4% or more than 8% entrained air for concrete exposed to freezing and thawing, and from 2% to 4% for other concrete. No more than 4% to 7% for lightweight fire-rated interior slabs.
- f. Water Reducing Admixture: ASTM C 494, type as required to suit project conditions.
- g. Only use admixtures which have been tested and accepted in mix designs, unless otherwise approved in advance in writing by Architect.

## 2.02 REINFORCING MATERIALS

### A. Welded Wire Fabric

1. Comply with ASTM A 884

## 2.03 CONCRETE DESIGN MIXTURES

- A. Required concrete strengths are indicated in the Construction Notes on Drawing G-002.
- B. Design mixtures in compliance with Special Inspection requirements of authorities having jurisdiction including, but not limited to, those indicated on Drawings.
- C. If not in conflict with, or covered by the requirements of the authorities, prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both.

## 2.04 CONCRETE MIXING

- A. Job Site Mixing: Use drum type batch machine mixer, mixing not less than 1 1/2 minutes for one cubic yard or smaller capacity. Increase mixing time at least 15 seconds for each additional cubic yard or fraction thereof.
- B. Ready Mix Concrete: ASTM C 94.

## PART 3 - EXECUTION

### 3.01 FORMWORK

- A. Design, erect, shore, brace and maintain formwork to support vertical, lateral, static and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct so that concrete members and structures are of correct size, shape, alignment, elevation and position.
- C. Provide openings in formwork to accommodate Work of other trades.
- D. Clean and adjust forms prior to concrete placement. Apply form release agents or wet forms, as required. Retighten forms during concrete placement if required to eliminate leaks.

**3.02 EMBEDDED ITEMS**

- A. Place and secure anchorage devices and other embedded items required or adjoining Work that is attached to or supported by cast-in-place concrete. Use setting diagrams, templates and instructions provided by others for locating and setting.

**3.03 REINFORCEMENT**

- A. Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
- B. Do not cut or puncture moisture barrier. Repair damage and reseal moisture barrier before placing concrete.

**3.04 JOINTS**

- A. Comply with Section 079200 (Joint Sealants).
- B. Provide construction, isolation, and control joints as indicated, and as required to stabilize differential settlement and random cracking.
  - 1. Locate construction joints so as not to impair strength and appearance of structure.
  - 2. Construct joints true to line with faces perpendicular to surface plane of concrete.

**3.05 CONCRETE PLACEMENT**

- A. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
- B. Consolidate placed concrete using mechanical vibrating equipment with hand rodding and tamping, so that concrete is worked around reinforcement and other embedded items and into forms.

**3.06 CONCRETE FINISHING**

- A. Unless otherwise noted on Drawings, finish concrete as follows:
  - 1. Vertical Surfaces: Provide a smooth finish for exposed concrete surfaces and surfaces that are to be covered with a coating or covering material applied directly to concrete. Remove fins and projections, patch defective areas with cement grout, and rub smooth.
  - 2. Horizontal Surfaces:
    - a. General:
      - 1) Comply with ACI 302 "Guide for Concrete Floor and Slab Construction" recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
      - 2) Comply with ASTM E 1155 to establish flatness and levelness as indicated below.
    - b. Scratch Finish: Apply scratch finish to monolithic slab surfaces to receive concrete floor topping or mortar setting beds for tile, and other bonded applied cementitious finish flooring material.
      - 1) After leveling, while still plastic, roughen surface before final set to produce a profile amplitude of 1/4" in one direction.

- 2) Plane surface to tolerance for floor flatness (Ff) of 15 and floor levelness (Fl) of 13.
- 3) Slope surfaces uniformly to drain where required.
- c. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish; or to slab surfaces to be covered with membrane waterproofing.
  - 1) Plane surface to tolerance for floor flatness (Ff) of 18 and floor levelness (Fl) of 15.
- d. Trowel Finish: After applying a float finish, apply trowel finish to monolithic slab surfaces that are exposed to view or are to be covered with resilient flooring, paint or other thin film coating.
  - 1) Consolidate concrete surfaces by finish troweling, free of trowel marks, uniform in texture and appearance.
  - 2) Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

**3.07 CONCRETE PROTECTING AND CURING**

- A. Protection: Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placement and curing.
- B. Curing: Comply with ACI 308 "Standard Practice for Concrete Curing." Do not use membrane curing compound unless approved by Architect. Approval will only be considered in areas where concrete is not to receive applied coating or toppings.
- C. Repair and cure damaged finished surfaces of cast-in-place architectural concrete when approved by the Owner. Match repairs to color, texture, and uniformity of surrounding surfaces and to repairs on approved mockups.
  - a. Remove and replace cast-in-place architectural concrete that cannot be repaired and cured to the Owner's approval.

**END OF SECTION**

**DIVISION 3 - CONCRETE**  
**SECTION 03 45 00**  
**PRECAST ARCHITECTURAL CONCRETE**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes precast concrete copings, caps, and other building elements.
- B. Related Sections:
  - 1. 014000 (Quality Requirements).
  - 2. 014339 (Mockups, and Physical Quality Assurance Aids).
  - 3. 016000 (Product Requirements).
  - 4. 017300 (Execution).

**1.02 SUBMITTALS**

- A. Product Data: For each product specified in Part 2 - Products.
- B. Samples:
  - 1. Precast Architectural Concrete: Representative of finished exposed face of precast architectural concrete showing the full range of colors and textures indicated, 12" square and of actual thickness.
- C. Pre-construction Test Reports:
  - 1. Anchorage (to Backup) Pull-out Test Reports.
- D. Certification of Concrete Properties: Obtain from manufacturer written certification of concrete properties including compressive strength, air content, and absorption for each type and strength of concrete mixture. Submit no later than fifteen (15) business days prior to manufacturing.
- E. Shop Drawings: For each unit type showing profile, cross sections, reinforcement, exposed faces, typical dimensions, lifting loops, anchorage to structure, and design loads.

**1.03 QUALITY ASSURANCE**

- A. Comply with MNL 117 "Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products."

**1.04 TESTS AND INSPECTIONS**

- A. Pre-construction Testing:
  - 1. Anchorage (to Backup) Pull-out Testing:
    - a. Performance Models: Construct performance models of anchorage into existing backup construction. Individual models shall be constructed for each anchor and backup

construction configuration required for precast architectural concrete installation, at locations determined by Architect.

- b. Testing: Perform pull-out tests on each anchorage performance model.
  - 1) Arrange for Architect to be present at testing, provide five (5) business days' notice.
  - 2) Reconfigure anchorage as necessary until satisfactory test results are obtained.
- c. Test Reports: Reports shall include date of test, location, products used, test method, and test results stating whether anchorage to backup construction complies, or does not comply with load requirements indicated on Shop Drawings, including the applicable factor of safety.
- d. Acceptance: Obtain Architect's written acceptance of test results before proceeding with precast architectural concrete installation Work.

## **PART 2 - PRODUCTS**

### **2.01 PRECAST ARCHITECTURAL CONCRETE**

#### **A. Precast Architectural Concrete**

- 1. Comply with the following:
  - a. Concrete Materials:
    - 1) Portland Cement: ASTM C 150 Type I or III (white).
    - 2) Coarse Aggregate: Granite, quartz, or limestone.
    - 3) Fine Aggregate: ASTM C 33 manufactured sand unless otherwise specified.
    - 4) Color: Non-fading, resistant to lime and other alkalis.
    - 5) Water: Potable.
    - 6) Concrete strength ( $f'_c$ ) per ASTM C 1194 shall be minimum 6000 psi.
    - 7) Absorption per ASTM C 1195 maximum 6%.
    - 8) Air Content per ASTM C 173 between 4% and 6%.
  - b. Reinforcement: Reinforce as required for safe handling and structural stress. Minimum coverage 2" for bars 5/8" or larger and 1 1/2" for smaller bars.
  - c. Hoisting Loops: Provide stainless steel hoisting loops for precast architectural concrete units too large to be handled manually. Loops shall be cast integrally with the unit, and shall not penetrate any exposed surface of any unit.
- 2. Acceptable Manufacturers: Following is a list of acceptable manufacturers of precast architectural concrete products:
  - a. David Kucera, Inc.
  - b. Essex Works
  - c. Towne House Restorations
  - d. Vestacast

## 2.02 REINFORCING

### A. Deformed Reinforcing Bars (Epoxy Coated)

1. Comply with ASTM A 775

### B. Welded Wire Fabric (Galvanized)

1. Comply with ASTM A 185

## 2.03 MORTAR

- A. Comply with Section 040513 (Masonry Mortar).

## 2.04 ANCHORS AND ACCESSORIES

### A. Dowel

1. 406 Stone Anchor  
Stainless steel Hohmann & Barnard

### B. Anchoring Compound

1. M80 Jahn Restoration Mortar Cathedral Stone Products, Inc.

### C. Plastic Bearing Shims

1. #185-P  
Non-staining molded from copolymer plastic with high compressive strength Heckmann Building Products, Inc.

## PART 3 - EXECUTION

### 3.01 REMOVAL OF EXISTING PRECAST ARCHITECTURAL CONCRETE UNITS

- A. Comply with Section 024119 (Selective Demolition).
- B. Support and protect remaining construction formerly supported by removed units.
- C. Remove mortar, loose particles and debris from existing masonry surrounding units, in preparation for replacement.

### 3.02 INSTALLATION OF PRECAST ARCHITECTURAL CONCRETE UNITS

- A. Prepare existing construction by installing flashing, and embedded accessories, where indicated on Drawings.
- B. Lift precast architectural concrete units with suitable lifting devices at points provided by the manufacturer, and set level, plumb, square and true within the allowable tolerances. Provide



temporary supports and bracing as required to maintain position, stability and alignment as units are being permanently connected.

- C. Install and connect precast architectural concrete units as shown on Drawings and on approved Shop Drawings.
- D. Tool exposed mortar joints to match surrounding mortar joints.
- E. Seal vertical and top horizontal joints. Sealant color to match precast concrete, unless otherwise indicated.

**END OF SECTION**

**DIVISION 4 - MASONRY**  
**SECTION 04 01 20**  
**UNIT MASONRY RESTORATION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes brick unit removal and replacement, parging (plastering), patching and repointing of mortar joints.

**1.02 SUBMITTALS**

- A. Product Data: For each product specified in Part 2 - Products.
- B. Samples:
  - 1. Brick: For each type of brick to be incorporated in the Work. Sample sets should be in the form of straps or panels containing not less than 4 units.
- C. Special Inspection Reports.
- D. Product Test Reports:
  - 1. Brick Test Reports (On-demand).

**1.03 QUALITY ASSURANCE**

- A. Comply with ACI 530.1/ASCE 6/TMS 602 "Building Code Requirements for Masonry Structures."

**1.04 TESTS AND INSPECTIONS**

- A. Special Inspections: Comply with special inspection requirements of authorities having jurisdiction including, but not limited to, those indicated on Drawings.
- B. Product Testing:
  - 1. Brick Testing: Comply on-demand by Architect:
    - a. Test Specimens: Provide test specimen of the brick masonry units.
    - b. Testing: Test each type and grade of brick per ASTM C 67. If coefficient of variation of compression samples tested exceeds 12%, obtain compressive strengths by multiplying average compressive strengths by  $(1 - 1.5) \times [(0.01 \times \text{coefficient of variation}) - 0.12]$ .
    - c. Test Reports: Reports shall include date of test, products used, test method, and test results.

**PART 2 - PRODUCTS**

**2.01 BRICK**

- A. **Brick**
  - 1. Face Brick (Unglazed): Comply with ASTM C 216.

- a. Solid brick units (less than 25% core area) with face to fit condition indicated for common bond, headers, coining, lintels, arches, corners, and other special ground, cut, or sawed shapes where required to complete masonry restoration Work.
  - b. Provide uncured units with all exposed surfaces finished, for sills, caps and similar applications resulting in exposure of brick surfaces which otherwise would be concealed from view.
  - c. Size to be determined as an average measurement of the existing brick in each of the brick's dimensions.
  - d. Type as required to match existing masonry:
    - FBS (normal size and color variation)
  - e. Grade: SW (severe weathering)
  - f. Compressive Strength: 6000 psi
2. Face Brick (Glazed): Comply ASTM C 1405.
- a. Solid brick units (less than 25% core area) with glazed face to fit condition indicated for common bond, headers, coining, lintels, arches, corners, and other special ground, cut, or sawed shapes where required to complete masonry restoration Work.
  - b. Provide uncured units with all exposed surfaces finished, for sills, caps and similar applications resulting in exposure of brick surfaces which otherwise would be concealed from view.
  - c. Size to be determined as an average measurement of the existing brick in each of the brick's dimensions.
  - d. Class: Exterior
  - e. Grade: S (select)
  - f. Type: I (single faced)
3. Concealed Brick: Comply with ASTM C 62.
- a. Solid brick units of the same unit dimensions as face brick.
  - b. Grade:
    - 1) Brick Concealed in Inner Wythe or Interior of Wall: Grade MW.
  - c. Other properties shall be compatible with face brick.

## 2.02 CONCRETE MASONRY UNITS (CMU)

### A. CMU

1. Non-load Bearing CMU: ASTM C 129.
  - a. Size shall be manufacturer's standard units with nominal face dimensions of 16" long x 8" high (15 5/8" x 7 5/8" actual) 6" deep.
  - b. Solid Units: Having minimum 75% solid of cross section area.
  - c. Type I moisture controlled units.
  - d. Weight Classification: Normal weight.
  - e. Compressive Strength: 1700 psi in accordance with ASTM C 140.
  - f. Maximum Water Absorption:
    - 1) Normal Weight ( $\geq 125$  lb/cf): 13%

**2.03 ANCHORAGE**

- A. Comply with Section 040519 (Masonry Anchorage and Reinforcing).

**2.04 MORTAR**

- A. Comply with Section 040513 (Masonry Mortar).

**2.05 POURABLE GROUT**

A. **Grout**

- 1. Comply with ASTM C 476.

**2.06 MASONRY ACCESSORIES**

A. **Compressible Filler (Neoprene)**

- |                                     |                   |
|-------------------------------------|-------------------|
| 1. DA 2010 Rapid Soft Joint         | Dur-O-Wal         |
| 2. # NS Closed Cell Neoprene Sponge | Hohmann & Barnard |
| 3. Or Equal                         |                   |

B. **Weep Vent**

- |   |                   |
|---|-------------------|
| 1. DA 1006 Cell Vent Weep Hole Ventilator | Dur-O-Wal         |
| 2. # QV Quadro Vent                       | Hohmann & Barnard |
| 3. Or Equal                               |                   |

C. **Weep Tubes**

- |                                    |                   |
|------------------------------------|-------------------|
| 1. DA 1005 Weep Hole Clear Plastic | Dur-O-Wal         |
| 2. # 341 Plastic Weep Hole         | Hohmann & Barnard |
| 3. PVC Clear Weep Tube             | MasonPro          |

D. **Weep Slot**

- |                   |                   |
|-------------------|-------------------|
| 1. QV Quadro-Vent | Hohmann & Barnard |
|-------------------|-------------------|

E. **Mortar Dropping Control Device**

- |                                     |                      |
|-------------------------------------|----------------------|
| 1. Mortar Trap<br>Dovetail Shape    | Hohmann & Barnard    |
| 2. The Mortar Net<br>Dovetail Shape | Mortar Net USA, Ltd. |
| 3. CavClear<br>Dovetail Shape       | Archovations, Inc.   |

### **PART 3 - EXECUTION**

#### **3.01 MASONRY UNIT REMOVAL AND REPLACEMENT**

A. Removal:

1. Comply with Section 024119 (Selective Demolition) for unit removal.

B. Cold Weather Protection:

1. Provide protection when ambient air temperature is below 40° F, or is expected to fall below 40° F within 48 hours after completion of Work, as follows:
  - a. 40° F to 32° F:
    - 1) Heat sand or mixing water to produce mortar temperatures between 40° F and 120° F.
    - 2) Protect from rain or snow; completely cover with weather-resistive membrane for 24 hours.
  - b. 32° F and Below: No Work permitted.

C. Preparation: Brush, vacuum or rinse masonry units and surrounding masonry to remove dust, dirt and loose debris. Allow to dry before proceeding unless pre-wetting is required below. Do not use wire brush or implements that mark or damage exposed surfaces.

D. Pre-wetting High Absorption Brick Masonry:

1. Do not pre-wet concrete masonry units (CMU).
2. Wet high absorption brick units and surrounding masonry before laying.
3. Allow units to absorb water so they are damp, but not wet (dry on the surface) at time of laying.

E. Bonding and Coursing Pattern:

1. Set masonry units in the bond pattern indicated, or if none is indicated, in running bond.
2. Where rebuilding existing construction, match and fit replacement units into existing bonding and coursing pattern; maintain joint width to match existing.
3. Bond wythes of composite masonry together using bonding system shown on Drawings.
4. Do not traverse existing expansion joints with rebuilt masonry construction.

F. Fitting and Cutting:

1. Cut exposed masonry units, where necessary, in a manner to produce clean, sharp unchipped edges. Avoid the use (by proper layout) of less than half size units.
2. Build other Work into masonry Work as shown on Drawings, fitting masonry units around other Work.

G. Mortar Bedding:

1. Lay solid units as follows:
  - a. Fully bed unit in mortar.

- b. Butter ends of units with sufficient mortar to completely fill head joints and shove into place.
  - c. Do not deeply furrow bed joints or slush head joints.
2. Lay hollow units as follows:
    - a. Fully bed face shells in mortar.
    - b. Fully bed webs in mortar in all courses in piers, columns, pilasters, and in grouted walls (including starting course).
    - c. Fully bed entire units including areas under cells at starting course on footings where cells are not grouted.
    - d. Butter ends of units with sufficient mortar to fill head joints and shove into place.
  3. Fill collar joints between wythes in solid composite walls, unless otherwise shown on Drawings:
    - a. Where accessible from above, after each course is laid, fill the vertical, longitudinal collar joint between wythes solidly with mortar.
    - b. Where not accessible from above, solidly fill collar joints by parging face of wythe already in place and shoving units of other wythe into place.
  4. Keep wall cavities clean of mortar droppings.
- H. Jointing:
1. Do not mortar joints where other joint treatment is indicated on Drawings (e.g., sealant joints).
  2. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated. For glazed units, use a non-metallic jointer.
  3. Cut joints flush for masonry walls to receive plaster, parging, or other direct-applied finishes (other than paint), unless otherwise indicated.
- I. Curing: Cure mortar by maintaining in a damp condition for not less than 72 hours.

### **3.02 ANCHORAGE**

- A. Anchoring to Structural Members:
1. Anchor masonry to structural members where masonry abuts or faces new or existing structural members.
  2. Provide an open space not less than 1 inch in width between masonry and structural member, unless otherwise indicated.
- B. Wall Ties and Anchors:
1. Install wall ties and anchors as shown on Drawings.
  2. Install additional ties within 12 inches of openings and space not more than 36 inches apart around perimeter of openings.
  3. At intersecting and abutting walls, install ties at no more than 24 inches o.c. vertically.

### **3.03 PARGING**

- A. Where required, parge cavity wall face of backup wythe in a single coat approximately 3/8 inch thick. Trowel face of parge coat smooth.

### **3.04 REPOINTING**

- A. Removal of Existing Mortar Joint: Comply with Section 024119 (Selective Demolition).
- B. Preparation: Brush, vacuum or rinse joint substrates to remove dust, dirt and loose debris. Allow to dry before proceeding unless pre-wetting is required below. Do not use wire brush or implements that mark or damage exposed surfaces.
- C. Pre-wetting High Absorption Brick Masonry:
  - 1. Do not pre-wet concrete masonry units (CMU).
  - 2. Wet high absorption brick units and surrounding masonry before laying.
  - 3. Allow masonry to absorb water and become damp, but not wet (dry on the surface) at time of pointing.
- D. Pointing (For Filling Prepared Mortar Joints):
  - 1. Apply first layer of pointing mortar to areas where existing mortar was removed to depths greater than surrounding areas until a uniform depth is formed.
  - 2. Apply mortar in lifts (layers) not greater than 1/4", unless otherwise shown on Drawings.
  - 3. Fully compact the mortar in each layer and allow to become thumbprint hard before applying the next layer.
- E. Tooling:
  - 1. Remove mortar fins and smears before tooling joints.
  - 2. Fully compact mortar. Where existing masonry has rounded edges recess mortar slightly from face. Do not spread mortar over edges onto exposed masonry surfaces. Do not feather edge mortar.
  - 3. When mortar is thumbprint hard, tool joints to match original appearance of joints, unless otherwise indicated. For glazed units, use a non-metallic jointer. Remove excess mortar from edge of joint by brushing.
  - 4. Stipple joints lightly with a soft bristle brush to expose aggregate, if necessary to match appearance of original mortar.
- F. Curing: Cure mortar by maintaining in a damp condition for not less than 72 hours.

### **3.05 PROTECTION**

- A. Protect newly laid masonry from exposure to precipitation, excessive drying, freezing, soiling, backfill and other harmful elements.

### **3.06 CLEANUP**

- A. After mortar is thoroughly set and cured, remove matter accumulated during construction and wash down masonry as follows:
  - 1. Remove large mortar particles by hand with wooden paddles and non metallic scrap hoes or chisels.
  - 2. Wash Down:
    - a. Test wash down methods on sample panels before proceeding with wash down of masonry surfaces.

- b. Wash down brick masonry in accordance with: Brick Industry Association Technical Notes on Brick Construction, No.20, June 2006, "Cleaning New Masonry: Bucket and Brush Hand Cleaning"

**END OF SECTION**



**DIVISION 4 - MASONRY**  
**SECTION 04 01 30**  
**TERRA-COTTA RESTORATION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes terra cotta unit replacement at the building facades and bulkheads at locations shown on Contract Drawings and as directed by Authorities Representative.

**1.02 SUBMITTALS**

- A. Product Data: For each product specified in Part 2 - Products.
- B. Samples:
  - 1. Terra Cotta Units: For each terra cotta unit type to be incorporated in the Work.
- C. Special Inspection Reports.
- D. Manufacturer Approved Installer Credentials: Prior to pre-installation conference, submit installer credentials issued by manufacturer of terra cotta restoration products.
- E. Warranty Prerequisites:
  - 1. Sample Warranty: Prior to pre-installation conference, submit sample warranty and warranted application procedures from manufacturer.
  - 2. Manufacturer Inspection Reports/Certifications (On-demand).

**1.03 QUALITY ASSURANCE**

- A. Pre-installation Conference: Prior to starting terra cotta restoration Work, conduct an on-site conference to review the detailed requirements of the Work.
  - 1. Attendees shall include Contractor's Project manager and superintendent, A/E's Project representative, Owner's Project representative, manufacturer's authorized representative, manufacturer approved installer. Provide seven (7) business days advance notice to attendees.
  - 2. Agenda shall include:
    - a. Manufacturer approved installer credentials.
    - b. Sample warranties and warranted application procedures.
    - c. Project construction schedule.
    - d. Weather conditions.
    - e. Surface preparation
    - f. n / proposed demolition equipment.
    - g. Mixing procedures.
    - h. Installation sequence.

- i. Curing procedures.
- j. Mockups.
- k. Tests and inspections.
- l. Quantification procedures.

**1.04 TESTS AND INSPECTIONS**

- A. Special Inspections: Comply with special inspection requirements of authorities having jurisdiction including, but not limited to, those indicated on Drawings.

**1.05 WARRANTY**

- A. Terra Cotta Restoration Products Manufacturer's Warranty: Written form in which manufacturer agrees to furnish terra cotta restoration products to repair or replace those that do not comply with performance and other requirements specified in the Contract Documents during the warranty period.
  - 1. Warranty Period: Ten (10) Years, No Dollar Limit (NDL).
- B. Manufacturer's Inspection and Certification:
  - 1. Coordinate inspections required by manufacturer. Provide three (3) business days notice to manufacturer's authorized representative to inspect Work at the required milestones or intervals. No Work is to proceed until after each inspection is completed with written acceptance by manufacturer's authorized representative.
  - 2. Upon acceptance of completed Work by manufacturer, obtain manufacturer's certification stating that the Work complies with the requirements for Warranty.

**PART 2 - PRODUCTS**

Manufacturers: Interchanging of system components between manufacturers is not permissible.

**2.01 ADHESIVES, ANCHORS, DOWELS**

**A. Epoxy Adhesive**

- 1. Sikadur 32 Hi Mod LPL Epoxy Sika Corporation

**B. Anchors (Stainless Steel)**

- 1. Comply with AISI 302/304 for stainless steel.

**C. Dowels (Stainless Steel)**

- 1. Comply with AISI 302/304 for stainless steel.

**2.02 TERRA COTTA WALL COPINGS:**

- A. Terra-cotta copings shall consist of vitrified glazed tile as per ASTM C126 having minimum compressive strength of 600 psi and a water absorption rate of glaze 0.15% as per ASTM C 67. They shall be equal to existing, sound and free from cracks, checks and other defects impairing its durability or water tightness and shall be reasonable true and even.

**B. Terra Cotta Coping**

Vitrified Clay Wall coping	Superior Clay Corp.
Vitrified Clay Wall coping	Ludowici Celadon
Vitrified Clay Wall coping	Boston valley Terracotta

**PART 3 - EXECUTION**

**3.01 TERRA COTTA COPING REMOVAL AND REPLACEMENT:**

- A. Comply with Section 024119 (Selective Demolition) for removal of units.
- B. Carefully remove by hand terra cotta coping units which are indicated on Drawings. Cut out full units from joint to joint to permit replacement with full size units.
- C. Support and protect remaining masonry previously supported by removed units.
- D. Remove mortar, loose particles and debris from existing masonry surrounding existing units in preparation for replacement. Clean with stiff brushes or by flushing with water and compressed air.
- E. Set terra cotta replacement units. Unless otherwise indicated, set in full bed of mortar with both horizontal and vertical joints of same width as existing. Comply with Section 040513 (Masonry Mortaring) for mortaring and tooling.
- F. Anchor units as shown on the Drawings. If no anchors are explicitly indicated, replace existing anchors with new stainless steel anchors matching existing in size and type.

**END OF SECTION**

**DIVISION 4 - MASONRY**  
**SECTION 04 05 13**  
**MASONRY MORTARING**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes masonry mortar materials.

**1.02 SUBMITTALS**

- A. Product Data: For each product specified in Part 2 - Products.
- B. Samples:
1. Mortar Components: Dry samples (minimum 4 oz.) of each component.
    - a. Portland cement.
    - b. Lime.
    - c. Pigment (color).
    - d. Sand (aggregate) samples.
  2. Scuffed Mortar (showing exposed aggregate): For each mortar expected to be incorporated in the Work. Samples shall be fully cured and scuffed (showing exposing aggregate), 6 inch long x 1/2 inch wide strips set in aluminum or plastic channels.
  3. Tooled-only Mortar: For each mortar expected to be incorporated in the Work. Samples shall be fully cured and tooled-only (unscuffed), 6" long x 1/2" wide, set in aluminum or plastic channels.
- C. Special Inspection Reports.
- D. Field Quality Control Test Reports:
1. Mortar Test Reports. If not in conflict with special inspections, submit within 24 hours after test is conducted.

**1.03 QUALITY ASSURANCE**

- A. Comply with the following:
1. Brick Institute of America (BIA)
  2. National Concrete Masonry Association (NCMA)

**1.04 TESTS AND INSPECTIONS**

- A. Special Inspections: Comply with special inspection requirements of authorities having jurisdiction including, but not limited to, those indicated on Drawings.
- B. Field Quality Control Testing:
1. Mortar Testing: If not in conflict with, or covered by special inspections, comply with the following:

- a. Test Specimens: Provide test specimen of mortar batch mix for every one thousand (1000) square feet of wall surface area.
- b. Testing: Test each specimen provided per ASTM C 780. Test for air content and compressive strength.
- c. Test Reports: Reports shall include date of test, products used, test method, and test results.

## 1.05 PROJECT CONDITIONS

### A. Cold Weather Protection:

1. Provide protection when ambient air temperature is below 40° F, or is expected to fall below 40° F within 48 hours after completion of Work, as follows:
  - a. 40° F to 32° F:
    - 1) Heat sand or mixing water to produce mortar temperatures between 40° F and 120° F.
    - 2) Protect from rain or snow; completely cover with weather-resistive membrane for 24 hours.
  - b. 32° F and Below: No Work permitted.
2. Do not lower freezing point of mortar by use of antifreeze, calcium chloride, or other additives.

## PART 2 - PRODUCTS

### 2.01 GENERAL

- A. Refer to Drawings for color and texture of exposed mortars.
- B. Pigmented Portland cement-lime should be used achieve the required color in exposed mortars.
- C. Use aggregates (sand) that match color and grain size of original aggregates as closely as possible.
- D. Mortars shall comply with ASTM C 270, type as indicated.
- E. Mortar components shall comply with the following:
  1. Portland cement: ASTM C 150, Type I or Type II; gray or non-staining white. Portland cement for use with limestone shall contain not more than 0.60 percent total alkali when tested according to ASTM C 114.
  2. Hydrated Lime: ASTM C 207, Type S
  3. Aggregates (for mortar): ASTM C 144
  4. Coloring Agent (Pigments): Alkali stable as approved by in writing by Architect.
  5. Admixtures: None, unless approved in writing by Architect.
  6. Water: Potable

### 2.02 MORTAR

- A. Mortar: ASTM C270 Type N

1. Pre-blended (Pre-bagged with Aggregates)
  - a. Spec-Joint 46 Custom Color (Type N) Edison Coatings, Inc.
  - b. Spec Mix Preblended PCL Sand Color (Type N) Spec Mix, Inc.
  - c. Or Equal

### 2.03 MORTAR MIXING

- A. Measuring: Measure cementitious and aggregate material in a dry condition by volume or equivalent weight. Do not measure by shovel.
- B. Mixing: Mix materials in a clean mechanical batch mixer.
  1. Thoroughly mix cement, binder, pigment and aggregate materials together before adding any water.
  2. Then mix again adding only enough water to produce a damp, unworkable mix which will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 1-1/2 hours.
  3. Add remaining water in small portions until mortar of desired consistency is reached. Use mortar within 30 minutes of final mixing. Do not re-temper or use partially hardened material.

## PART 3 - EXECUTION

### 3.01 MORTARING

- A. Removal of Existing Mortar:
  1. Comply with Section 024119 (Selective Demolition).
  2. Brush, vacuum or rinse joint substrates to remove dust, dirt and loose debris.
- B. Pre-wetting High Absorption Brick Masonry:
  1. Wet both brick and surrounding bricks before laying if initial rate of absorption exceeds 30 grams per 30 square inches per minute when tested per ASTM C 67.
  2. Allow units to absorb water so they are damp (dry on the surface), but not wet at time of laying.
- C. Mortar Beds and Joints (For Setting Units):
  1. Do not mortar joints where other joint treatment is indicated on Drawings (e.g., sealant joints, etc.)
  2. Solid Units: Lay solid units with completely filled bed, head and collar joints. Butter ends of units with sufficient mortar to fill head joints and shove into place.
  3. Hollow Units: Lay hollow units with face shells fully bedded in mortar. Fully bed webs in mortar in all courses of piers, columns, pilasters, and in grouted walls (including starting course). Butter ends of units with sufficient mortar to fill head joints and shove into place.
  4. Cut joints flush for masonry walls to receive plaster, parging, or other direct-applied finishes (other than paint), unless otherwise indicated.
  5. Keep wall cavities clean of mortar droppings.
- D. Pointing (For Filling Prepared Mortar Joints):

1. Apply mortar in lifts (layers) as indicated on Drawings.
2. Apply first layer of pointing mortar to areas where existing mortar was removed to depths greater than surrounding areas.
3. Fully compact the mortar in each layer and allow to become thumbprint hard before applying the next layer.

E. Tooling:

1. Remove mortar fins and smears before tooling joints.
2. Fully compact mortar and allow to become thumbprint hard. Where existing masonry has rounded edges recess mortar slightly from face. Do not spread mortar over edges onto exposed masonry surfaces. Do not feather edge mortar.
3. When mortar is thumbprint hard, tool joints to match original appearance of joints, unless otherwise indicated. Remove excess mortar from edge of joint by brushing.
4. Stipple joints lightly with a soft bristle brush to expose aggregate, if necessary to match appearance of original mortar.

F. Curing: Cure mortar by maintaining in a damp condition for not less than 72 hours.

**3.02 PARGING**

- A. Where required or as directed by Authorities Representative, parge cavity wall face of backup wythe in a single coat approximately 3/8 inch thick. Trowel face of parge coat smooth.

**3.03 CLEANUP**

- A. After mortar is thoroughly set and cured, remove matter accumulated during construction and wash down masonry as follows:
1. Remove large mortar particles by hand with wooden paddles and non metallic scrap hoes or chisels.
  2. Wash Down:
    - a. Test wash down methods on sample panels before proceeding with wash down of masonry surfaces.
    - b. Wash down brick masonry in accordance with: Brick Industry Association Technical Notes on Brick Construction, No.20, June 2006, "Cleaning New Masonry: Bucket and Brush Hand Cleaning"
    - c. Wash down stone or terra cotta masonry in accordance with National Park Service Preservation Brief #1 "Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings" by Robert C. Mack, FAIA, Anne Grimmer, 2000. Do not use wire brushes, steel wool, acid or alkali cleaning agents, cleaning compounds with caustic or harsh fillers, or other materials or methods that could damage stone.

**END OF SECTION**

**DIVISION 4 - MASONRY**  
**SECTION 04 05 19**  
**MASONRY ANCHORAGE AND REINFORCING**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes anchors and fastening systems for masonry.

**1.02 SUBMITTALS**

- A. Product Data: For each product specified in Part 2 - Products.
- B. Samples:
1. Anchors and Fasteners: For each type to be incorporated in the Work.
- C. Show Drawings (Delegated Design): Showing detailed installation layout of helical façade stabilization anchors. Shop Drawings shall bear the seal of a qualified professional engineer.
- D. Pre-construction Test Reports:
1. Anchorage Pull-out Test Reports.
- E. Certificates
1. ICC-ES (Evaluation Service) Report s, for each adhesive or capsule anchor specified.

**1.03 QUALITY ASSURANCE**

- A. Qualifications:
- 1 Manufacturer Qualifications: Company with minimum 10 years of experience in manufacturing of specified products and systems.
  - 2 Applicator Qualifications: Company with minimum of 5 years experience in application of specified products and systems on projects of similar size and scope, and is acceptable to product manufacturer.

**1.04 TESTS AND INSPECTIONS**

- A. Testing:
1. Performance Models: Construct performance models of anchorage into existing substrate material. Individual models shall be constructed for each anchor and substrate material configuration required for the Work, at locations determined by Architect.
  2. Pre-construction Testing:
    - a. Perform tensile proof load pull-out tests (herein referred to as "pull-out tests") on each anchorage performance model.
      - 1) Arrange for Architect to be present at testing, provide five (5) business days' notice.
    - b. Testing: Three (3) of each type and size of drilled-in anchor shall be proof loaded by the independent testing laboratory.



- 1) Strength Design Testing (LRFD): Test in accordance with values indicated in manufacturer's design manual.
  - 2) Allowable Stress Design Testing (ASD): Test in accordance with manufacturer's allowable stress recommendations, multiplied by a factor of safety of 1.5.
3. Construction Pull-out Testing:
- a. Testing: 10% of each type and size of drilled-in anchor shall be proof loaded by the independent testing laboratory. Adhesive anchors and capsule anchors shall not be torque tested unless otherwise directed by the Engineer. If any of the tested anchors fail to achieve the specified torque or proof load within the limits as defined on the Drawings, all anchors of the same diameter and type as the failed anchor shall be tested, unless otherwise instructed by the Engineer.
    - 1) Tension testing should be performed in accordance with ASTM E488.
    - 2) Retest as necessary until satisfactory results are obtained.
  - b. Test Reports: Reports shall include date of test, location, products used, test method, and test results stating whether anchorage complies, or does not comply with the manufacturer's listed allowable load capacity.
  - c. Acceptance: Obtain Architect or Engineer's written acceptance of test results before proceeding with installation Work.
  - d. Anchor type, diameter and minimum embedment shall be as shown on the Drawings or approved Shop Drawings.

**B. Special Inspection:**

1. Periodic special inspection must be performed where required in accordance with related ICC-ES Report (ICC-ESR), per table below.
2. ICC-ES Report (ICC-ESR) numbers listed are for reference only. Verify ICC-ESR with anchor manufacturer.

Manufacturer	Product	ICC-ES Report
ITW Red Head	Trubolt+ Anchor	ICC-ESR 2427
Hilti	HIT-HY 70 Injection Adhesive	ICC-ESR 2682
Hilti	HIT-HY 200 Injection Adhesive	ICC-ESR 3187
Hilti	Kwik Bolt Tension Zone (KB-TZ)	ICC-ESR 1917
Powers Fastener	AC100+ Gold (Concrete)	ICC-ESR 2582
Powers Fastener	AC100+ Gold (CMU/Brick)	ICC-ESR 3200
Powers Fastener	Power Stud+ SD4 Expansion Anchor	ICC-ESR 2502
Simpson Strong-Tie	AT Anchoring Adhesive	ICC-ESR 1958
Simpson Strong-Tie	AT-XP Anchoring Adhesive (Concrete)	ICC-ESR 0263
Simpson Strong-Tie	AT-XP Anchoring Adhesive (CMU)	ICC-ESR 0281
Simpson Strong-Tie	Strong Bolt 2	ICC-ESR 3037

**PART 2 - PRODUCTS**

**2.01 GENERAL**

- A. Product Source Limitation: Where products are intended to be installed as a system (warranted or otherwise) use only compatible products from the same manufacturer without exception, unless authorized in writing by Architect and, for warranted systems, approved in advance by manufacturer.
- B. Components of anchoring systems shall be stainless steel conforming to ASTM A276, ASTM A 493 or ASTM F 593 with chemical composition of either AISI 304 or AISI 316, as indicated on Drawings.
  - 1. Stainless steel wedges shall be of the same material grade as the bolts or superior.
  - 2. Stainless steel nuts shall conform to ASTM F 594 and be of the same material grade as the bolts or superior. Nuts shall be furnished with the bolt and meet the dimensional requirements of ANSI to conform with the bolt.
  - 3. Washers shall conform to ASTM A 240 and be also of the same material grade as the bolts.
- C. Where low temperature limits are listed for products, the listed value refers to minimum air and surface temperature at time of application and for a period required by manufacturer.

**2.02 ANCHORS**

**A. Wedge Anchor**

- 1. Zamac Nail Powers Fasteners or an approved equal  
 Stainless Steel 1/4" x 1-1/2" nail with expandable casing

**B. Expansion Anchor**

- 1. DA5410 Masonry Expansion Anchor Dur-O-Wal or an approved equal  
 Type 304 stainless steel. Expansion sleeve and expander cone of brass.

**C. Adhesive Anchor**

For Concrete Substrates:

- 1. HIT-HY 200 Injection Adhesive Hilti  
 Low temperature limit: 14° F
- 2. AC100+ Gold Powers Fasteners  
 Low temperature limit: 14° F

For CMU Substrates:

- 3. HIT-HY 70 Injection Adhesive Hilti  
 Low temperature limit: 23° F

For Brick Substrates:

- 4. HIT-HY 70 Injection Adhesive Hilti  
 Low temperature limit: 41° F
- 5. AC100+ Gold Powers Fasteners  
 Lower temperature limit: 14° F

**D. Stainless Steel Threaded Rod**

- |    |                                       |                    |
|----|---------------------------------------|--------------------|
| 1. | HAS-R Anchor Rod<br>Stainless steel   | Hilti              |
| 2. | Chisel Pointed Rod<br>Stainless steel | Powers Fasteners   |
| 3. | Threaded Rod<br>Stainless steel       | Simpson Strong-Tie |

**2.03 HORIZONTAL JOINT REINFORCEMENT**

**A. Horizontal Joint Reinforcement**

- |    |   |                   |
|----|---|-------------------|
| 1. | DA3100 Truss<br>Stainless Steel, 9 Gauge wire, 2" wide    | Dur-O-Wal         |
| 2. | #120 Truss Mesh<br>Stainless Steel, 9 Gauge wire, 2" wide | Hohmann & Barnard |
| 3. | Or Equal  |                   |

**2.04 VENEER TIES AND ANCHORING DEVICES**

**A. Veneer Anchor**

Adjustable with rod.

- |    |   |                   |
|----|---|-------------------|
| 1. | T-Lok Tie<br>Stainless steel with pencil rod  | Hohmann & Barnard |
| 2. | Veneer Tie Assembly Series 5213S<br>12 gauge 304 Stainless steel<br>with 9 gauge pencil rod<br>Installed with DA5410 expansion anchor | Dur-O-Wal         |
| 3. | Or Equal  |                   |

1. Secure veneer anchor to the sound back up substrate with mechanical anchor.

**B. Helical Facade Stabilization Anchor (Friction Secured)**

- |    |  |          |
|----|--|----------|
| 1. | Helifix Remedial Wall Tie - DryFix<br>10mm | Helifix  |
| 2. | Blok-Lok Helical Wall Tie<br>10mm          | Blok-Lok |

**2.05 STEEL REINFORCING BAR**

**A. Deformed Steel Reinforcing Bar**

1. Stainless Steel (Type AISI 304)

**2.06 GROUT AND EXPANSIVE CEMENT**

**A. Epoxy Adhesive**

- |    |              |             |
|----|--------------|-------------|
| 1. | HIT RE 500SD | Hilti, Inc. |
| 2. | Or Equal     |             |

**B. Epoxy Grout**

- |                              |                  |
|------------------------------|------------------|
| 1. Sikadur 32, Hi-Mod        | Sika Corporation |
| 2. Power-Fast Epoxy Adhesive | Powers Fasteners |
| 3. CB-G EG Epoxy Grout       | Hilti, Inc.      |

**2.07 EYE BOLT & DOWELS**

**A. Eye Bolt**

- |  |                   |
|--|-------------------|
| 1. 408 Stone Anchor<br>Stainless Steel | Hohmann & Barnard |
|--|-------------------|

**B. Dowel**

- |  |                   |
|--|-------------------|
| 1. 406 Stone Anchor<br>Stainless Steel | Hohmann & Barnard |
|--|-------------------|

**PART 3 - EXECUTION**

**3.01 GENERAL**

- A. Install anchors of type and diameter indicated, at locations shown on the Drawings.
- B. Where length of anchor is not indicated on the Drawings, follow manufacturer's recommendations and obtain approval in writing from Architect prior to proceeding.

**3.02 POST INSTALLED ANCHORS**

- A. Anchor capacity used in design shall be based on the technical data published by Manufacturer or such other method as approved by the Structural Engineer of Record. Substitution requests for alternate products must be approved in writing by the Structural Engineer of Record prior to use. Contractor shall provide calculations demonstrating that the substituted product is capable of achieving the performance values of the specified product including an ICC-ES Report showing compliance with the relevant building code, seismic use, load resistance, installation category, in-service temperature, installation temperature, etc.
- B. Adhesive anchors installed in a horizontally or upwardly inclined orientation into concrete and supporting a sustained tension load shall be installed by a certified adhesive anchor installer. Installer shall be certified through the ACI/CRSI Adhesive Anchor Installer Certification Program or approved equal.
- C. Contractor shall arrange an anchor manufacturer's representative to provide on-site anchor installation training for all of their anchoring products specified. Contractor shall submit documented confirmation that all of the contractor's personnel installing anchors have received the required training prior to the commencement of work.
- D. Anchor capacity is dependent upon spacing between adjacent anchors and proximity of anchors to edge of concrete. Install anchors in accordance with spacing and edge clearances indicated in the manufacturer's design manual.

**END OF SECTION**

**DIVISION 4 - MASONRY**  
**SECTION 04 42 00**  
**DIMENSIONAL STONE: SLATE SILL**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes the dimensional stone slate sills.

**1.02 SUBMITTALS**

- A. Product Data: For each product specified in Part 2 - Products.
- B. Samples:
  - 1. Stone: For each type of stone to be incorporated in the Work. Samples shall be not less than 6" square. Include two (2) or more samples in each set showing the full range of variations in appearance characteristics expected in completed Work.
- C. Pre-construction Test Reports:
  - 1. Dimensional Stone Test Reports.
  - 2. Stone Anchorage Test Reports.
  - 3. Dimensional Stone Cladding System Test Reports.
  - 4. Anchorage (to Backup) Pull-out Test Reports.
- D. Field Quality Control Test Reports:
  - 1. Water Leakage Test Reports.
- E. Shop Drawings: Showing details of fabrication and installation of dimension stone cladding, including dimensions and profiles of stone units; arrangement and details of jointing, supporting, anchoring, and bonding dimension stone cladding; design loads; and details showing relationship with, attachment to, and reception of related Work.
  - 1. Show locations and details of sealant joints both within dimension stone cladding and between dimension stone cladding and other construction.

**1.03 PERFORMANCE REQUIREMENTS**

- A. Structural Performance: Provide dimensioned stone cladding of standard A/Eural grade, and capable of withstanding the effects of gravity loads; free of cracks, seams or starts which may impair its structural integrity or function; and with the following loads and stresses within limits and under conditions indicated:
  - 1. Wind Loads (minimum design wind pressures): Uniform pressure of 30 lbf/sq. ft. (1436 Pa), acting inward or outward.
  - 2. Equipment Loads: Allow for loads due to window cleaning and maintenance equipment.
  - 3. Vertical Deflection: Allow for ¼-inch (6-mm) vertical deflection in 20-foot (6-m) span of structural members supporting dimension stone cladding system due to loads (including live loads) imposed on building's structural frame after stone installation.

4. Air Infiltration: Not more than 0.06 cfm/sq. ft. (0.03 L/s/sq. m) of wall area, as measured by testing mockup per ASTM E 283 at a differential pressure of 6.24 lbf/sq. ft. (300Pa).
5. Water Penetration: No uncontrolled water penetration beyond plane of back of stone that is not contained or drained back to exterior, as measured by testing mockup per ASTM E 331 at a differential pressure of 20 percent of design wind load, but not less than 10 lbf/sq. ft. (480 Pa)
6. Control of Corrosion and Staining: Prevent galvanic and other forms of corrosion as well as staining by isolating metals and other materials from direct contact with incompatible materials. Use materials that are non staining to exposed surfaces of stone and joint materials

#### 1.04 QUALITY ASSURANCE

- A. Source Limitations for Stone: Obtain each variety of stone, regardless of finish, from a single quarry with resources to provide materials of consistent quality in appearance and physical properties and to cut and finish material without delaying the Work. Obtain each variety of stone from a single quarry, whether specified in this Section in other Sections of the Specifications.
- B. The Supplier shall have a minimum of ten (10) years continuous operation, and shall have adequate experience, facilities and capacity to furnish the quality, sizes and quantity of stone units required without delaying the progress of the work. The supplier's products shall have been previously used under similar conditions and exposed to the weather with satisfactory results.
- C. All slate shall be sound, durable, and free of spalls, cracks, open seams, pits, or any other defects that are likely to impair its structural integrity in its intended use. Cutting, finish, surface tolerances, jointing, setting, pointing, protection, cleaning, dimensions, anchoring, mortar joints, and grouting shall all be within tolerance standards for the trade and in accordance with reference standards, unless otherwise specified.
- D. Field verify all job conditions related to replacement of stone window sills.

#### 1.05 PROJECT CONDITIONS

- A. Cold Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates.
- B. Cold Weather Protection:
  1. Provide protection when ambient air temperature is below 40° F, or is expected to fall below 40° F within 48 hours after completion of Work, as follows:
    - a. 40° F to 32° F:
      - 1) Heat sand or mixing water to produce mortar temperatures between 40° F and 120°F.
      - 2) Protect from rain or snow; completely cover with weather-resistive membrane for 24 hours.
    - b. 32° F and Below: No Work permitted.
  2. Do not lower freezing point of mortar by use of antifreeze, calcium chloride, or other additives.

**PART 2 - PRODUCTS**

**2.01 GENERAL**

- A. Stone Sources:
  - 1. Obtain each variety of stone, regardless of finish, from single quarry, with resources to provide materials of consistent quality in appearance and physical properties.
    - a. Where 2 or more stone types listed are identical except for finish, provide the same variety from the same source for each type.
- B. Quarry stone in a manner to ensure as-quarried block orientations yield finished stone with required characteristics.

**2.02 SLATE SILL**

**A. Slate**

- 1. Comply with the following:
  - a. Material Standard: Comply with ASTM C 629, Classification I Exterior.
  - b. Description: Gray slate with a fine, even grain and with uniform, unfading color from clear, sound stock.
  - c. Varieties and sources: Subject to compliance with requirements, provide one of the following available stone varieties that may be incorporated into the Work include, but are not limited to, the following:

Item	Acceptable Product / Standard
Slate	The Structural Slate Company
	Vermont Structural Slate Company

- d. Finish: Honed.
- e. Thickness: To match existing, Not less than 1 inch.
- f. Physical properties:

Property	Test Requirements	Classifications	ASTM Test Method
Absorption, max %	0.25	1 Exterior	C-121
Modulus of Rupture min psi	9000 (62.1)	1 Exterior	C-120
Modulus of rupture min psi (Mpa): along grain	7200	1 Exterior	C-120
Abrasion resistance	8.0	1 Exterior	C-241 / C-1353
Acid Resistance, Max. in. (mm)	0.015 (0.38)		C-127



**2.03 ANCHORS AND DOWELS**

- A. Provide anchors of type and size required to support dimension stone cladding and to sustain imposed loads.
- B. Anchors and Anchor Fasteners:
  - 1. Stainless Steel Anchors:
    - a. For use in penetrating plane of back of stone or in direct contact with stone
      - 1) Comply with ASTM A 666, Type 316, temper as required to support loads imposed without exceeding allowable design stresses.
    - b. Fabricate dowels and pins for anchors from stainless steel, ASTM A 276, Type 316.
    - c. Use annealed stainless steel fasteners (bolts, nuts, and washers) of same alloy as anchors. Comply with ASTM F 593 (ASTM F 738M) for bolts; and ASTM F 594 (ASTM F 836M) for nuts.

**2.04 SILL FABRICATION**

- A. Fabricate sill in size and shape required to comply with requirements indicated, including details on Drawings and Shop Drawings.
- B. Cut and drill sinkages and holes in sill for anchors, fasteners, supports, and lifting devices as indicated or needed to set sill securely in place; shape beds to fit supports.
- C. Cut sill to produce pieces of thickness, size, and shape indicated and to comply with fabrication and construction tolerances recommended by applicable stone association or, if none, by stone source, for faces, edges, beds, and backs.
- D. Thickness of Dimension Stone: Provide thickness indicated, but not less than the following:

Stone Type	Thickness	Tolerance (+/-)
Slate	1-1/4 inches	1/8 inch

**PART 3 - EXECUTION**

**3.01 REMOVAL OF EXISTING UNITS TO BE REPLACED**

- A. Comply with Section 024119 (Selective Demolition).
- B. Carefully remove by hand existing units, which are to be replaced. Cut out full units from joint to joint, and in a manner to permit replacement with full size units, without damaging surrounding construction.
- C. Remove mortar, loose particles and debris from existing masonry surrounding units, in preparation for replacement.
- D. Prepare existing construction by installing flashing and embedded accessories as required.
  - 1. Install anchorage as required.
  - 2. Comply with Section 040513 (Masonry Mortaring) for mortaring and tooling.

### 3.02 PREPARATION

- A. Protect dimension stone cladding during erection as follows:
  - 1. Cover tops of walls with non-staining, waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress. Extend cover a minimum of 24 inches down both sides and hold securely in place.
  - 2. Prevent staining of stone from mortar, grout, sealants, and other sources. Immediately remove such materials without damaging stone.
  - 3. Protect base of walls from rain-splashed mud and mortar splatter by coverings spread on ground and over wall surface.
  - 4. Protect sill, ledges, and projections from mortar and sealant droppings.
- B. Clean stone surfaces that have become dirty or stained by removing soil, stains, and foreign materials before setting. Clean stone thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleansing compounds that contain no caustic or harsh materials or abrasives.

### 3.03 SETTING SILL – GENERAL

- A. Contiguous Work: Provide reveals, reglets, and openings as required to accommodate contiguous work.
- B. Set sill to comply with requirements indicated on Drawings and Shop Drawings. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure sill in place. Shim and adjust anchors, supports, and accessories to set sill accurately in locations indicated with uniform joints of widths indicated and with edges and faces aligned according to established relationships and indicated tolerances.
- C. Use power saws to cut sill. Produce lines cut straight and true, with edges eased slightly to prevent snipping.
- D. Provide expansion, control, and pressure-relieving joints of widths and at locations indicated. Keep expansion joints free of mortar and other rigid materials.
- E. Install concealed flashing at continuous shelf angles, lintels, ledges, and similar obstructions to downward flow of water to divert water to exterior.
- F. Keep cavities open where unfilled space is indicated between back of dimension stone cladding and back-up wall; do not fill cavities with mortar or grout.

### 3.04 CONSTRUCTION TOLERANCES

- A. Variation from Plumb:
  - 1. Vertical lines and surfaces of walls: Do not exceed 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/4 inch in 40 feet or more.
  - 2. External corners, corners and jambs within 20 feet of an entrance, expansion joints, and other conspicuous lines: Do not exceed 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 3/8 inch in 40 feet or more
- B. Variation from Level:
  - 1. Lintels, sills, water tables, parapets, horizontal bands, horizontal grooves, and other conspicuous lines: Do not exceed 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 3/8 inch maximum.

- C. Variation of Linear Building Line:
  - 1. For position shown in plan and related portion of walls and partitions: Do not exceed 1/4 inch in 20 feet or 1/2 inch in 40 feet or more.
- D. Variation in Cross-Sectioned Dimensions:
  - 1. For thickness of walls from dimensions indicated: Do not exceed plus or minus 1/4 inch.
- E. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch in 36 inches or one-fourth of nominal joint width, whichever is less.
- F. Variation in Plane between Adjacent Panels (Lipping): Do not exceed 1/16-inch difference between planes of adjacent units.

### **3.05 SETTING SILL WITH MORTAR**

- A. Set stone in full bed of mortar with vertical joints slushed full, unless otherwise indicated. Comply with Section 040513 (Masonry Mortaring) for mortaring and tooling.
  - 1. Use setting buttons of adequate size, in sufficient quantity, and of thickness required to maintain uniform joint width and to prevent mortar from extruding. Hold buttons back from face of stone a distance at least equal to width of joint.
  - 2. Do not set heavy units or projecting courses until mortar in courses below has hardened sufficiently to resist being squeezed out of joint.
  - 3. Support projecting stone by props or anchors until wall above is set.
  - 4. Fill anchor holes with mortar.
- B. Embed ends of sills in mortar; leave remainder of joint open until final pointing.
- C. Rake out joints for pointing with mortar to depths of not less than 1/2 inch. Rake joints to uniform depths with square bottoms and clean sides.
- D. Prepare stone-joint surfaces for pointing with mortar by removing dust and mortar particles. Where setting mortar was removed to depths greater than surrounding areas, apply first layer of pointing mortar in layers not greater than 3/8 inch until a uniform depth is formed; compact each layer thoroughly and allow to become thumbprint hard before applying next layer.
- E. Point stone joints by placing and compacting pointing mortar in layers not greater than 3/8 inch.
- F. Tool joints with a round jointer having a diameter 1/8 inch larger than width of joint, when pointing mortar is thumbprint hard.
- G. Rake out mortar from sealant-pointed joints to depths of not less than 1/2 inch nor less than that required to provide sufficient depth for sealant and sealant backing. Rake joints to uniform depths with square bottoms and clean sides.
- H. Set the following dimension stone cladding with unfilled vertical joints for installing joint sealants:
  - 1. Adjacent sills

### **3.06 JOINT SEALANT INSTALLATION**

- 1. Prepare joints and apply sealants of type and at locations indicated to comply with applicable requirements in Section 07 92 00 "Joint Sealants."

**3.07 CLEANUP**

- A. Clean dimension stone cladding not less than 6 days after completion of pointing and sealing, using clean water and stiff-bristle fiber brushes. Do not use wire brushes, acid-type cleaning agents, cleaning compounds with caustic or harsh fillers, or other materials or methods that could damage stone.

**END OF SECTION**

**DIVISION 5 - METALS**  
**SECTION 05 12 00**  
**STRUCTURAL STEEL**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes structural steel and miscellaneous steel members.

**1.02 SUBMITTALS**

- A. Product Data: For each product specified in Part 2 - Products.
- B. Special Inspection Test Reports:
  - 1. Special Inspection Reports: Comply with special inspection requirements of authorities having jurisdiction.
- C. Shop Drawings (Delegated Design): Showing complete details for fabrication, assembly and erection, including connections and any proposed splice locations. Shop Drawings and supporting calculations shall bear the seal of a qualified professional engineer.

**1.03 QUALITY ASSURANCE**

- A. Comply with the following:
  - 1. AISC "Code of Standard Practice for Steel Buildings and Bridges."
  - 2. AISC "Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings" including "Commentary" as amended authorities having jurisdiction.

**1.04 TESTS AND INSPECTIONS**

- A. Special Inspections: Comply with special inspection requirements of authorities having jurisdiction including, but not limited to, those indicated on Drawings.
- B. Pre-Construction Testing:
  - 1. Steel Coupon Testing:
    - a. Test Specimen: Where welding to existing steel is indicated, provide test specimen, in the form of a steel coupon, for each different steel substrate.
    - b. Testing: Test for appropriate welding electrode to be used.
    - c. Test Reports: Reports shall include date of test, test specimen identification, preparation method, and recommended electrode to be used in the Work.

**PART 2 - PRODUCTS**

**2.01 STEEL MEMBERS AND SHAPES**

- A. **Steel Shelf Angle** \_\_\_\_\_  
**Shoring Angle** \_\_\_\_\_

1. Comply with ASTM A572
2. Zinc metalized, Minimum thickness: 4.2 mils

**B. Steel Shim**

1. Comply with ASTM A572
2. Hot Dipped Galvanized, Grade: G-90

**C. Steel Channel**

1. C-Shape; Comply with ASTM A36

**D. Steel Plate**

1. Comply with ASTM A572
2. Hot dipped galvanized, Grade: G90

**E. Steel Diamond Plate Tread**

1. Comply with ASTM A36

**F. Steel Tube**

1. Comply with ASTM A500, Grade B

**G. Steel Railing Pipe**

1. Comply with ASTM A 53, Type E, Grade B
2. Hot dipped galvanized, Grade: G90

**H. Steel Bar**

1. Comply with ASTM A572
2. Hot Dipped Galvanized, Grade: G-90

**I. Fasteners (Stainless Steel, Grade 18.8)**

1. Comply with ASTM F593-02 (2008) e1 (for bolts, hex cap screws, studs) bearing registered head markings.
2. Comply with ASTM F594-09 e1 (for nuts).

**J. Diverter Box**

1. Hot dipped galvanized, Grade: G90

## **PART 3 - EXECUTION**

### **3.01 FABRICATION**

- A. Comply with AISC and approved Shop Drawings. Mark and match mark units for field assembly.
- B. Provisions for Other Work: Fabricate structural steel members to provide holes for securing other Work and for passage of other Work through steel framing as indicated. Field cutting or burning of holes will not be permitted.
- C. Provide hot-dip galvanizing on "Steel Members and Shapes" not to receive finish paint coat.
- D. Provide shop coat zinc metallizing for "Steel Members and Shapes" to receive paint finish to conform to ASTM B695. The zinc wire or zinc alloy, conforming to ASTM B833, used for metallizing shall be high grade zinc (Z15001) and shall conform to the chemical properties for steel. Average thickness of the zinc coating shall not be less than 4.2 mils.
- E. Connections: As shown on approved Shop Drawings.
  - 1. Except as otherwise indicated, use ASTM A307 bolts or welds for field connections.
  - 2. Except as otherwise indicated, fabricator shall design welded connections to be stressed to less than 50% capacity.
- F. Splices shall be designed to develop the full capacity of the member at the point of the splice. Beam splices shall be welded, full moment connections. Notify the A/E in writing before performing splices, provide five (5) business days notice.
- G. Comply with AWS Code for procedures, appearance, and quality of welds. Minimum size fillet weld shall be 1/4".

### **3.02 SHOP PAINTING**

- A. Comply with Section 099713 (Steel Coatings).

### **3.03 ERECTION**

- A. Comply with AISC and approved Shop Drawings.

### **3.04 SHELF ANGLE REPLACEMENT**

- A. Refer to details on Contract Drawings.
- B. Field verify site conditions of brick masonry are the same as the detail. Any differences are to be brought to the attention of the Authorities Representative immediately.
- C. Refer to Sections
  - 1. 01 73 29 – Cutting and Patching
  - 2. 02 41 19 – Selective Demolition
  - 3. 02 82 14 – Asbestos Abatement of Exterior Building Components
  - 4. 02 83 19 – Lead Safe Work Practices
  - 5. 04 01 20 – Unit Masonry Restoration
  - 6. 04 05 13 – Masonry Mortaring
  - 7. 04 05 19 – Masonry Anchorage and Reinforcing

- 8. 07 62 00 – Flashing: Sheet Metal and Flexible
- 9. 09 97 13 – Steel Coatings
- D. Shore and Protect existing brick masonry to remain.
- E. Carefully remove existing brick masonry while maintaining structural integrity of wall throughout restoration.
- F. Asbestos Abatement Contractor to carefully remove and dispose of existing flashing materials around steel shelf angle and bricks in front of the shelf angle.
- G. Cut and remove existing shelf angle.
- H. Coat new steel shelf angle
- I. Install new steel shelf angle, anchoring to existing concrete insert with askew head bolt and/or with new chemical anchor, installing shims as required.
- J. Install Drip edge and new flashing, fully adhered to all surfaces with utility mastic.
- K. Replace brick masonry to match existing, with Horizontal Joint Reinforcement and Veneer Anchors.

**END OF SECTION**



## **DIVISION 5 - METALS**

### **SECTION 05 52 00**

#### **METAL RAILINGS**

#### **PART 1 - GENERAL**

##### **1.01 SUMMARY**

- A. This Section includes new extension to existing railing.
- B. Related Sections:
  - 1. 01 45 00 Quality Control
  - 2. 02 41 19 Selective Demolition
  - 3. 09 97 13 Steel Coatings

##### **1.02 GENERAL REQUIREMENTS**

- A. All work shall conform to the latest industry practices and standards as applicable. Install all materials as per manufacturer's instructions.
- B. All repair work shall be performed by competent workers trained and experienced in the particular type of work.
- C. Deviations from the plans and specifications shall not be made without the written approval from Authority's Representative and architect and/or engineer of NYCHA. Definitions

##### **1.03 DEFINITIONS**

- A. Definitions in ASTM E 985, ASTM E 53 Type E Grade B Steel and ASTM A36 for railing related terms apply to this Section.

##### **1.04 QUALITY ASSURANCE**

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication. Do not delay job progress. Allow for trimming and fitting when taking field measurements before fabrication that might delay work.
- B. Shop Assembly: Pre-assemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for re-assembly and coordinated installation.
- C. Reference Standards: The work is subject to requirements of applicable portions of the following standards:
  - 1. "Manual of Steel Construction", American Institute of Steel Construction.
  - 2. AWS D1-1 "Structural Welding Code", American Welding Society.
  - 3. SSPC SP-3 "Surface Preparation Specification No. 3, Power Tool Cleaning", Steel Structures Painting Council.
  - 4. SSPC PA-1 "Painting Application Specification", Steel Structures Painting Council.
  - 5. "Handbook on Bolt, Nut and Rivet Standards", Industrial Fasteners Institute.

D. Sample railing installation and testing:

1. Install the sample in strict accordance with approved shop drawing(s). The length of sample railing shall be as directed by Authority's Representative.
2. Authority's Representative will review technical aspects; surface preparation, and workmanship.
3. Do not alter, move, or destroy approved sample until Work is completed and approved by Authority's Representative.
4. Approved sample will be standard for judging workmanship on remainder of Project.
5. Obtain Authority's Representative's written approval for sample installed.
6. 20% of the fasteners used for railing extension should be tested for the specified torque by system manufacturer in the presence of Authority's Representative.

**1.05 SUBMITTALS**

A. Submit in accordance with Section 01 33 00, "Submissions".

B. Product Data: For each product specified in Part 2 - Products.

C. Samples:

1. Railing Assembly: Two (2) 12" long Samples of each railing assembly including handrails, top rails, posts, balusters, splice plates, solid bars, pipe collars and fasteners. Samples shall 12" long.
2. Color Samples: Six (6) 6" square Samples of each finish and color selected.
3. Fittings (On-demand): For each type of fitting and bracket to be incorporated in the Work, including typical welded connection.

D. Field Quality Control Test Reports:

1. Railing System Test Reports.

E. Manufacturer's Literature: Submit manufacturer's specifications, load tables, dimension diagrams, anchor details and installation instructions for products to be used in the fabrication of miscellaneous metal work, including paint products.

F. Manufacturer Approved Installer Credentials: Prior to commencing installation, submit installer credentials issued by manufacturer of metal railing system/products.

G. Shop Drawings:

1. Show details of fabrication and installation for each type and material of handrail and railing system required including plans, elevations, sections, profiles of rails, fittings, connections, and anchors. Provide templates for anchor and bolt installation by others.
2. Shop drawing showing locations of new posts along entire perimeter with required dimension.
3. Shop drawings for the fabrication and erection of all assemblies of miscellaneous ironwork. Include plans and elevations at not less than 1" to 1'-0" scale, and include details of sections and connections at not less than 3" to 1'-0" scale. Show anchorage and accessory items.
4. Shop drawings must be approved by NYCHA prior to any fabrication or installation.
5. Welding shall be indicated on shop drawings using AWS symbols and showing length, size and spacing (if not continuous). Auxiliary views shall be shown to clarify all welding. Notes such as 1/4" weld, weld and tack weld are not acceptable.

- H. Structural Calculations (Delegated Design): Prepared by a qualified professional engineer, evidencing compliance of handrails and railing systems with design loadings indicated.

#### **1.06 PERFORMANCE REQUIREMENTS**

- A. Structural Performance of Handrails and Railing Systems: Design, engineer, fabricate, and install handrails and railing systems to withstand the following structural loads without exceeding the allowable design working stress of the materials for handrails, railing systems, anchors, and connections. Apply each load to produce the maximum stress in each of the respective components comprising handrails and railing systems.
  - 1. Top Rail of Guardrail Systems:
    - a. Horizontal Loading: Concentrated load of 300 lb applied at any point; Uniform load of 100 lb/ft
    - b. Vertical Loading (downward): Concentrated load of 300 lb applied at any point; Uniform load of 100 lb/ft
  - 2. Handrails Not Serving as Top Rails:
    - a. Horizontal Loading: Concentrated load of 200 lb applied at any point; Uniform load: 50 lb/ft
    - b. Vertical Loading (downward): Concentrated load of 200 lb applied at any point; Uniform load of 50 lb/ft
  - 3. Infill Area of Guardrail Systems:
    - a. Horizontal Loading: Concentrated load of 200 lb applied at any one sq. ft. at any point in the system.
  - 4. Note: Concentrated and uniform loads above need not be assumed to act concurrently.

#### **1.07 TEST AND INSPECTIONS**

- A. Field Quality Control Testing:
  - 1. Railing System Testing:
    - a. Testing: Test railing system for compliance with ASTM E 985, ASTM E 53 Type E Grade B Steel and ASTM A36
    - b. Test Reports: Reports shall include date of test, locations, test method, and test results stating whether railing system complies, or does not comply with the requirements.

#### **1.08 WARRANTY**

- A. The Contractor shall warrant the materials to be free of faults and defects in accordance with the General Conditions, except that the Warranty shall be extended by paint manufacturer's standard multi-year warranty for painted steel railing systems. The warranty shall be in writing and shall be signed by the manufacturer.

## **PART 2 - PRODUCTS**

### **2.01 RAILING SYSTEMS**

#### **A. Rail Extension**

Includes Handrails, end plugs and handrail brackets.

1. Acceptable Manufacturers: Subject to compliance with the requirements, following is a list of acceptable manufacturers offering railing systems:
  - a. Key Safety, Inc or approved equal.

#### **B. Railing System**

1. Acceptable Manufacturers: Subject to compliance with the requirements, following is a list of acceptable manufacturers offering railing systems:
  - a. Blumcraft of Pittsburgh
  - b. Julius Blum & Co., Inc.
  - c. York Metal Fabricators, Inc.
  - d. Or Equal

### **2.02 METALS**

- A. Comply with standards indicated for forms and types of metals indicated or required for handrail and railing system components.
  1. Metal Surfaces, General: For fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.
  2. Steel Plates, Shapes and Bars: ASTM A36.
  3. Steel Tubing: Cold formed, ASTM A500; or hot rolled, ASTM A501.
  4. Steel Pipe: ASTM A53, type and grade selected by fabricator and required for design loading, galvanized. Standard weight, Schedule 40, unless indicated. All steel pipe to be primed and painted, as per section 09 97 13, unless otherwise noted.
  5. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.

### **2.03 FASTENERS, ANCHORS AND INSERTS**

- A. Use fasteners of same basic metal as the fastened metal, unless otherwise indicated. Do not use metals which are corrosive or incompatible with materials joined. Use concealed fasteners for interconnection of handrail and railing components and for their attachment to other work, except where otherwise indicated.
- B. Provide anchors of type, size, and material required for type of loading and installation condition shown, as recommended by manufacturer, unless otherwise indicated. Use nonferrous metal of hot dipped galvanized anchors and inserts for exterior locations and elsewhere as required for corrosion resistance. Use toothed steel or expansion bolt devices for drilled in place anchors.

### **2.04 FABRICATION**

- A. Fabricate handrails and railing systems to design, dimensions and details shown. Provide handrail and railing members in sizes and profiles indicated, with supporting posts and brackets

of size and spacing shown, but not less than required to comply with requirements indicated for structural performance.

- B. Fabricate posts and railings in sizes and profiles to fit applications indicated.
- C. Pre-assemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for re-assembly and coordinated installation.
- D. Provide welded connections of handrail and railing members. Use welding method which is appropriate for metal and finish indicated and develops strength required to comply with structural performance criteria. Finish exposed welds and surfaces smooth, flush, and blended to match adjoining surfaces.
- E. For handrails and railing systems with no welded connections which are exposed to exterior or to moisture from condensation or other sources, provide weep holes or other means for evacuation of entrapped water in hollow sections of railing members.
- F. Provide wall returns at ends of wall mounted handrails, unless otherwise indicated. Close ends of returns unless clearance between end of the railing and wall is 1/4" or less.
- G. Furnish inserts and other anchorage devices for connecting handrails and railing systems to concrete or masonry work. Fabricate anchorage devices which are capable of withstanding loadings imposed by handrails and railing systems. Coordinate anchorage devices with supporting structure.

## **2.05 METAL FINISHES**

- A. Comply with NAAMM "Metal Finishes Manual" for recommendations and designations of finishes, except as otherwise indicated.

## **2.06 COLOR AND FINISH**

- A. As noted on Drawings or as selected by Architect from manufacturer's custom / standard colors and finishes

# **PART 3 - EXECUTION**

## **3.01 GENERAL**

- A. Verify field dimensions on site prior to shop fabrication.
- B. Coordinate with roofing, copings, flashing, masonry and parapet reconstruction and substrate Work to receive, properly fit and/or interface with railing Work as required to ensure that each element of this Work performs properly and that combined elements are sound, waterproofed and properly secured. Anchor and secure to substrate to withstand lateral and thermal stresses. Include provisions for controlled expansion of railings and components relative to themselves and to adjoining dissimilar materials.
- C. Joints: Provide proper caulking at joints where required.
- D. Isolation: Where metal surfaces of units installed are in contact with dissimilar metal or corrosive substrates, including wood and concrete, apply bituminous coating on concealed metal surfaces and/or provide other permanent separation as recommended by the manufacturer.

### 3.02 WORKMANSHIP

#### A. General

1. Metal railing work shall be fabricated by an experienced fabricator or manufacturer and installed by experienced workers.
2. Materials, methods of fabrication, fitting, assembly, bracing, supporting, fastening, operating devices, and erection shall be in accordance with drawings and specifications, approved shop drawings, and best practices of the industry, using new and clean materials as specified, having structural properties sufficient to safely sustain or withstand stresses and strains to which materials and assembled work will be subjected.
3. All work shall be accurately and neatly fabricated, assembled and erected.

B. Shop Assembly: Insofar as practicable, fitting and assembly of work shall be done in shop, in largest practical sizes to minimize fieldwork. It is the responsibility of the Contractor to assure him/herself that the shop-fabricated metal railing items will properly fit the field condition. In the event that shop-fabricated items do not fit the field condition, the item shall be returned to the shop for correction.

C. Cutting: Cut metal by sawing, shearing, or blanking. Flame cutting will be permitted only if cut edges are ground back to clean, smooth edges. Make cuts accurate, clean, sharp and free of burrs, without deforming adjacent surfaces or metals.

D. Holes: Drill or cleanly punch holes; do not burn.

E. Connections: Make connections with tight joints, capable of developing full strength of member, flush unless indicated otherwise, formed to exclude water where exposed to weather. Locate joints where least conspicuous. Unless indicated otherwise, weld or bolt shop connections; bolt or screw field connections. Provide expansion and contraction joints to allow for thermal movement of metal at locations and by methods approved by Authority's Representative.

#### 1. Welding

- a. Shall be in accordance with "Standard Code for Welding in Building Construction" of the American Welding Society, and shall be done with electrodes and/or methods recommended by the manufacturer of the metals being welded.
- b. Welds shall be continuous, except where spot welding is specifically permitted. Welds exposed to view shall be ground flush and dressed smooth with and to match finish of adjoining surfaces; undercut metal edges where welds are required to be flush.
- c. All welds on or behind surfaces which will be exposed to view shall be done so as to prevent distortion of finished surface. Remove weld spatter and welding oxides from all welded surfaces.

2. Bolts and Screws: Make threaded connections tight with threads entirely concealed. Use lock nuts. Bolts and screw heads exposed to view shall be flat and countersunk. Cut off projecting ends of exposed bolts and screws flush with nuts or adjacent metal.

F. Operating Mechanism: Operating devices (i.e. pivots, hinges, etc.) and hardware used in connection with this work shall be fabricated, assembled, installed and adjusted after installation to operate smoothly, freely, noiselessly and without excessive friction.

G. Built-In Work: Furnish anchor bolts, inserts, plates and any other anchorage devices, and all other items specified under this Section of the Specifications to be built into concrete, masonry or work of other trades, with necessary templates and instructions, and in ample time to facilitate proper placing and installation.

- H. Supplementary Parts: Provide as necessary to complete each item of work, even though such supplementary parts are not shown or specified.
- I. Coordination: Accurately cut, fit, drill and tap work of this Section to accommodate and fit work of other trades. Furnish or obtain, as applicable, templates and drawings to or from applicable trades for proper coordination of this work.
- J. Exposed Work
  - 1. In addition to requirements specified herein and shown on drawings, all surfaces exposed to view shall be clean and free from dirt, stains, grease, scratches, distortions, waves, dents, buckles, tool marks, butts, and other defects which mar appearance of finished work.
  - 2. Metal work exposed to view shall be straight and true to line or curve, smooth arrises and angles as sharp as practicable, miters formed in true alignment, profiles accurately intersecting, and with joints carefully matched to produce continuity of line and design.
  - 3. Exposed fastenings, where permitted, shall be of the same material, color and finish as the metal to which applied, unless otherwise indicated, and shall be of the smallest practicable size.

### **3.03 INSPECTION**

- A. Examine the areas and conditions where miscellaneous metal is to be installed and notify the Authority's Representative of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

### **3.04 PREPARATION**

- A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorage, such as sleeves, concrete inserts, anchor bolts, and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

### **3.05 INSTALLATION**

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; including threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.
- B. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for installation of metal railing fabrications. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items which are to be built into concrete, masonry, or similar construction.
- C. Fitting Connections: Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind exposed joints smooth and touch up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have been hot dip galvanized after fabrication, and are intended for bolted or screwed field connections.
- D. Perform cutting, drilling, and fitting required for installation of handrails and railing systems. Set work accurately in location, alignment, and elevation, plumb, level, true, and free of rack, measured from established lines and levels. Do not weld, cut, or abrade surfaces of handrails

and railing components which have been coated or finished after fabrication and are intended for field connection by mechanical means without further cutting or fitting.

- E. Field Welding: Comply with applicable AWS specification for procedures of manual shielded metal arc welding, for appearance and quality of welds made, and for methods used in correcting welding Work. Weld connections which are not to be left as exposed joints, but can not be shop welded because of shipping size limitations. Grind exposed welded joints smooth and restore finish to match finish of adjacent rail surfaces.
- F. Adjust handrails and railing systems prior to anchoring to ensure matching alignment at abutting joints. Space posts at interval indicated but not less than that required by design loadings.

**3.06 ANCHORING RAILING ENDS**

- A. Anchor railing ends into concrete or masonry with manufacturer's standard fittings designed for this purpose, unless otherwise indicated.
- B. Expansion Joints: Provide expansion joints at locations indicated or, if not indicated, at intervals not to exceed 40 feet. Provide slip joint internal sleeve extending 2" beyond joint on either side; fasten internal sleeve securely to one side, locate joint with 6" of post.

**3.07 TOUCH-UP**

- A. Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and touch-up exposed areas with same paint products. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.

**END OF SECTION**



## DIVISION 6 - WOOD, PLASTICS, AND COMPOSITES

### SECTION 06 10 00

#### ROUGH CARPENTRY

##### PART 1 - GENERAL

###### 1.01 SUMMARY

- A. Extent of rough carpentry work is indicated on Drawings and by provisions of this section.

###### 1.02 SUBMITTALS

- A. Engineering data on nails to be set by nailing guns for Architect's written acceptance of types proposed to be used as equivalents to specified hand set nails.
- B. Obtain from manufacturer and submit latest technical data, material safety data sheets, and installation instructions for each product specified in Part 2 - Products.

###### 1.03 QUALITY ASSURANCE

- A. Mill and Producers Mark: Each piece of lumber shall bear a stamp by the WWPA, WCLIB or SPIB or other agency certified by ALSC, indicating type, grade, mill and grading. Each piece of sheathing shall bear a stamp by the APA indicating grade, thickness, span ratio, and exposure durability.
- B. Pressure Preservative: Each piece of lumber shall bear markings indicating treatment and fire hazard classification by ALSC accredited agency.

###### 1.04 DELIVERY, STORAGE AND HANDLING

- A. Store lumber on level racks and keep free of ground to avoid warping. Stack to insure proper ventilation and drainage.
- B. Protect lumber and plywood and deep under cover in transit and at job site.

##### PART 2 - PRODUCTS

###### 2.01 WOOD BLOCKING

- A. Wood Blocking
  - 1. Meet requirements of PS 20-99, American Softwood Lumber Standard by US DOC.
  - 2. Pressure treated in accordance with AWPB LP-2 treatment and kiln dried to 19 percent moisture content after treatment.
  - 3. No. 2 or better Douglas Fir, Southern Pine or Hem Fir

###### 2.02 PLYWOOD

- A. Exterior Grade Plywood
  - 1. Exterior grade plywood. CDX for exterior, meeting requirements of PS 1-95/ ANSI A199.1, PS 2-92

## 2.03 SHEATHING

### A. Tongue-and-Groove Wood Board Sheathing

1. Exterior grade Douglas Fir tongue and groove wood board sheathing; kiln dried to 19% moisture content, 1" thick and 8" wide (V.I.F.).

## 2.04 MISCELLANEOUS

### A. Fasteners / Nails

1. Corrosion resistant stainless steel with barbed, annular ring or screw shank. Meet FS FF-N-105 EXECUTION

## PART 3 - EXECUTION

### 3.01 PREPARATION OF SUBSTRATE

- A. Remove all existing overlay material, roof membrane, and accessories (nails, etc.) to expose substrate. Do not damage substrate during removal.
- B. Examine substrate surfaces to receive plywood sheathing and wood.

### 3.02 GENERAL INSTALLATION

- A. Do not use units of material with defects which impair the quality of the Work.
- B. Install blocking accurately to required lines and levels with members plumb and true, accurately cut and fitted and securely fastened.
- C. Securely attach blocking to substrates by anchoring and fastening as indicated on the drawings, or, if not indicated, as required by the referenced standards.
- D. Select fasteners of size that will not penetrate through members where opposite side wall will be exposed to view. Install fasteners without splitting wood, pre-drill material as required.
- E. Position fasteners and anchors in such a manner the they will not spall the underlying substrate. Where feasible, install two rows of fasteners/anchors staggered.
- F. Countersink bolts and nuts flush with surfaces, unless otherwise shown.

### 3.03 BLOCKING INSTALLATION

- A. At a minimum, install in accordance with applicable provisions of the Manual for Wood Frame Construction by AFPA and FM 1-28R, FM 1-29R & FM-49 by Factory Mutual.
- B. Install wood blocking, nailers and cants where indicated and where required for support, attachment of other Work. Form and shim to shapes as indicated or required.
- C. Where multiple layers of wood blocking, framing or nailers are required, off-set and stagger joints a minimum of 12 inches.
- D. Wood blocking shall be at a continuous height around perimeters, penetrations and curbs. The following shall serve as a minimum, unless indicated different on the drawings:

1. Wood Blocking on Expansion Joint Curb: At a minimum, match the width of the coping and be 2 inches thick. Numerous layers of wood blocking may be required to achieve a minimum roof membrane base flashing height of 8 inches.
  2. Wood Blocking at Perimeter Drip/Gravel Stops & Penetrations: Minimum length of 8 inches or larger as shown on drawings with a minimum 2 inch thickness. All blocking shall extend a minimum of a ¼ inch past the metal flange of the gravel stop or penetration flashing. Numerous layers of wood blocking may be required to match the height of the roof insulation at its highest point. Field verify extent of wood blocking required for each gravel stop and penetration flashing dependant on insulation layout.
- E. Attach to substrate as indicated on the Contract Drawings and provision within this section. Unless otherwise shown on the Drawings, as a minimum, install and secure material as follows:
1. Size and space fasteners as required to support applied loading.
  2. Wood-to-CMU/Concrete/Masonry: Anchor with ¼ inch stainless steel rod, nut and washer at 24 inches on center. Space anchors 16 inches apart, 8 feet each way from corner. Stagger anchors if nailer is wider than 6 inches. Fill hollow cells of CMU to receive anchor with high strength grout or drill hole no larger than ¼ inch larger than anchor in solid concrete, CMU and masonry and fill with epoxy grout.
  3. Wood-to-Wood: Fasten with barbed, annular ring shanked nails long enough to penetrate substrate a minimum of 1-1/4 inches. Fasten with two rows so that spacing in any one row should not exceed 24 inches. Spacing shall not exceed 12 inches, 8 feet each way from outside corner. Withdrawal resistance should be 100 lb per nail minimum.
  4. Wood-to-Metal: Secure with two rows of No. 10 (5mm) stainless steel screws at 24 inch centers or equivalent. A galvanized steel washer 5/8 inch outside diameter should be used under screw heads.

**END OF SECTION**

**DIVISION 7 – THERMAL AND MOISTURE PROTECTION**

**SECTION 07 56 00.01**

**COLD FLUID APPLIED REINFORCED ROOFING - PMMA ROOFING SYSTEM  
OPTION 1**

**PART 1 - GENERAL**

**1.01 SECTION INCLUDES**

- A. All requirements for Cold Fluid Applied Reinforced Roofing – PMMA Roofing System

**1.02 RELATED REQUIREMENTS**

- A. The Contract Documents include: the "Contract Drawings"; the "Specifications"; the "Special Notice to Contractors", "Special Conditions", NYC Housing Authority Contracts", latest edition; the "Form of Proposal", "Form of Bid Bond", and all amendments and addenda, all of which govern the work of this Contract.
- B. The Contractor is also directed to Division 01 and other Divisions of this specification. They include a description of additional work for removal and replacement of roofing with all related work described herein under Division 07.
- C. Section 02 82 13 - Asbestos Abatement of Roofing Materials.
- D. Section 03 01 00 - Concrete Restoration.
- E. Section 04 20 00 - Masonry Restoration
- F. Section 07 71 00 - Roof Specialties.
- G. Section 22 14 26 - Drains.

**1.03 REFERENCE STANDARDS**

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual.
- B. ACI-308 - Recommended Practice for Curing Concrete
- C. ANS/SPRI ES-1 - Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems
- D. ASTM- C836 - Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane
- E. ASTM - D638 - Test Methods for Tensile Properties of Plastics
- F. ASTM - D4258 - Standard Practice for Surface Cleaning Concrete for Coatings
- G. ASTM - D4259 - Standard Practice for Abrading Concrete
- H. ASTM - D4541 - Method for Pull-Off Strength of Coatings using Portable Adhesion Tester
- I. ASTM - E96(A) - Test Methods of Moisture Transmission of Material
- J. ASTM E-108, ANSI/UL 790 for fire resistance

- K. Factory Mutual (FM Global) - Approval Guide
- L. Cool Roof Rating Council (CRRC) - Standard 1 - 2012
- M. ASTM E903-96, Standard Test Method for Solar Absorbance, Reflectance, and Transmittance of Materials Using Integrating Spheres in conjunction with ASTM E89187, Tables for Terrestrial Direct Normal Solar Spectral Irradiance Tables for Air Mass 1.5.
- N. ASTM C1371-04a, Standard Test Method for Determination of Emittance of Materials.
- O. ASTM E1918-06, Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
- P. ASTM C1549-09, Standard Test Method for Determination of Solar Reflectance.
- Q. CRRC - 1, Test Method 1
- R. International Concrete Repair Institute Guideline 03732 Concrete Surface Preparation
- S. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) – Architectural Sheet Metal Manual
- T. Steel Structures Painting Council (SSPC)

#### **1.04 GENERAL**

- A. Prior to submission of bid, visit the work site to verify the existing conditions, dimensions and quantities as set forth in the Contract Documents.
- B. The roofing replacement requires a highly reflective & emissive, fully reinforced, cold fluid-applied, 2 component PMMA, liquid resin roofing and waterproofing membrane and flashing system, and all other ancillary waterproofing work including but not limited to installation of Heavy Guard Protected Membrane Roof (PMR) Insulation, sealants and metal work as specified to provide A MINIMUM COMPLETE MANUFACTURER'S NO DOLLAR LIMIT 30 YEAR FULL SYSTEM GUARANTEE ON INSTALLATION AND MATERIALS. As such the contractor must be certified as an installer by roofing manufacturer providing the guarantee. Further the certified installer must pre-register the 30 year guarantee with manufacturer and submit a copy of that pre-registration at the pre start meeting and prior to beginning work. The actual guarantee must be provided to the Authority PRIOR to the close out of the Job.
- C. The work to be performed under this specification shall include but is not limited to the following: Attend necessary job meetings and furnish competent and full time supervision, experienced roof mechanics, all materials, tools, and equipment necessary to complete, in an acceptable manner, the roof installation in accordance with this specification. Comply with the latest written application instructions of the manufacturer of the primary roofing products. In addition, application practice shall comply with requirements and recommendations contained in the latest edition of the Handbook of Accepted Roofing Knowledge (HARK) as published by the National Roofing Contractors Association.
- D. Local Regulations: Conform to regulations of public agencies, including any specific requirements of the city and/or state of jurisdiction.
- E. Manufacturer Requirements: The primary roofing materials manufacturer shall provide direct trained Field Technical Representative to attend necessary job meetings, perform periodic inspections, and conduct a final inspection upon successful completion of the project.
- F. Roofing Conference: To finalize the scope of work for each roof, a roofing conference must be held prior to beginning any work, between the NYCHA, Development Supervisor, and NYCHA's Representative, the certified roofing installer, contractor, The NYCHA field representative the

Field Technical Representative of roofing manufacturer providing the 30 Year NDL Guarantee. At that conference the type of replacement roofing system will be confirmed, and the roofing manufacturer's representative will perform the required inspection for registering the 30 year NDL Guarantee.

- G. Installation of all roofing materials and systems must conform to minimum FM-I-90 wind uplift or any more stringent specific height and location uplift requirements. Fascia, sumps and gravel stops must conform and be tested to meet ANSI/SPRI ES-1 wind resistance for 110 mph. See Section 07 71 00 Roof Specialties.
- H. Phasing and Coordination
1. Phasing work in Overall Development:
    - a. See Division 01 General Requirements and the Schematic Sidewalk Shed Drawing for details and information.
  2. Phasing/Coordinating Work at Each Building
    - a. Temporary Roofing Protection: The contractor must provide temporary roofing protection from water infiltration of the exposed roof and brick.
      - 1) This includes temporary protection immediately after asbestos abatement of waterproofing and flashing at roofs and bulkheads walls as well as abatement of roofing and flashing at other locations. All abatement of roofing materials involves complete removal of roofing down to slab. Temporary roofing protection includes:
        - (a) Temporary torch down / vapor barrier to be manufacturer's approved modified cap sheet for use as water stopping on existing slab and up onto existing roofing.
        - (b) Installer of Torch Down Roofing: Must be a certified installer trained in and adhering to all FDNY and New York City Codes and Industry Standards Regulation and Requirements for utilizing gas/torch equipment and installing torch down roofing.
    - b. General roofing removal and replacement shall only commence once:
      - 1) Asbestos abatement has been completed.
      - 2) Railing replacement has been completed.
    - c. Criteria which allow the Contractor to remove roofing assembly over an entire roof leaving to existing sound waterproof vapor barrier as temporary waterproofing membrane.
      - 1) The ambient temperatures must remain above 45 degrees for the entire period a roofing system will be replaced.
      - 2) If inspection of the existing vapor barrier by the NYCHA representative/ CM finds the existing vapor barrier sound, dry and waterproof the contractor may still under direction of the field representative/CM patch any areas of the existing vapor barrier to assure that the roof is water tight.
      - 3) Then the contractor may be allowed to do a complete removal of all roofing down to the existing waterproof vapor barrier which will act as temporary waterproofing.
      - 4) Subsequently, as per this specification, the Contractor must remove only that portion of the existing vapor barrier and provide the new roofing system, as can be completed in a work day. This includes scarify patching and priming the slab after that portion of the existing vapor barrier has been removed and providing the new roofing system (water stopping, insulation, cover board, roofing membrane and flashing, fascia and cap flashing).

- 5) If any of these criteria and or conditions can't be met then the contractor may only remove as much roofing as can be replaced within one day (which includes removing existing vapor barrier).
- d. Coordinating 2 Piece Cap Flashing Heights: Where shown on drawings new stainless steel in-wall cap flashing are being provided under masonry work. Coordinate to ensure that the cap flashing are installed at adequate height (8" Min. Unless Noted Otherwise) above the finished roofing.
- e. No asbestos-containing materials shall be permitted on site or for any use, as either a temporary or permanent part of construction.

#### 1.05 SCOPE OF WORK

- A. Sloped Insulation Drawing. Though the liquid applied roofing system specified is a waterproofing system and can tolerate standing water, NYCHA the owner requires, at minimum, a hybrid taper and, where possible, a full taper sloped system which will move water towards drains. Therefore the Contractor must survey the roofs and provide sloped insulation drawings. The Schematic Sloped Insulation Plans (in the bid set drawings) are only conceptual but can assist in making Bids as well as serve as a background for final sloped insulation drawings.
  1. Provide Survey: The accepted Contractor shall have Licensed surveyor perform a survey of roof elevations/slopes, door saddle heights, cap flashing/weep holes, heights of curbs and railing/parapet above the roof slab.
  2. Provide sloped insulation shop drawing: The Contractor shall then send that Survey on a scaled roof plan to a taper insulation Designer and coordinate with them to obtain a detailed insulation layout drawing which directs water towards drains and does not overwhelm door saddles, cap flashing/weep holes and leaves minimum contract required 48" between the top of the proposed finished roofing and the top of the perimeter fence or parapet.
  3. For roof sections where insulation cannot provide a 1/8" slope then 1/16" sloped insulation or drainage enhancers/sumps/crickets/kickers to may effectively drain roof. The Contractor shall then incorporate the final sloped insulation drawing into a Shop Drawing for submission and approval by NYCHA.

##### NOTE:

1. NYC Energy Code and HUD CF24R value requirements for roofing insulation: NYS/NYC ECC and HUD require a minimum R-30 ci (continuous insulation) for roofing insulation assemblies (insulation and cover board) above the roof deck.
  2. The Manufacturer's Insulation Layout Design is integral to a 30 year NDG guaranteed roofing system. Deviations from their layout may void the guarantee and as such must not be done without be signed pre-approval by the Roofing Manufacturer and the Authority. Layout design must indicate minimum thicknesses, taper layout, drainage enhancers, and sumps.
  3. GENERAL CONTRACTOR'S COORDINATION OF CAP FLASHING UNDER MASONRY RESTORATION (Section 04 01 20): Since installation the new through wall and regulated cap flashing are being performed under masonry restoration the General Contractor must coordinate the installation height of the 2 piece with the final finished height of the roofing installation.
- B. Roof Drains, Leaders and Traps
    1. Prior to commencement of work, NYCHA's Representative, the Contractor, Development Superintendent and Contract Inspector shall conduct a joint survey to determine which (if any) of the roof drain leaders are blocked. The contractor shall be responsible for performing

- this test. Contractor shall provide all tools, equipment, and manpower required to evaluate every roof drain
2. Attach to the minutes of the pre-construction meeting, three copies of a form listing the condition of each drain line and signed by the Development Superintendent and Contractor.
  3. Contractor shall provide all tools, equipment, and manpower required to evaluate every roof drain
  4. No roofing work shall commence until the Contractor and Development Superintendent certify in writing to NYCHA that all roof drain and leaders are in working order and free of blockages. Any subsequent blockages encountered shall be the responsibility of the Contractor and will be treated as a punch list item.
  5. Clean debris and all foreign matter from the drain bodies.
  6. If located in the cellar or crawl space replace all existing roof drain traps.
  7. Provide new Vandal Resistant stainless steel perforated gravel guard.
  8. Provide wood protection plugs in roof drains during and work. Remove them at the end of each work day and once work is completed.
  9. Provide replacement/retrofit roof drain (all hardware to be Vandal resistant). See Section 22 14 26 Roof Drains.

C. Description of Work

1. Consists of removal of the existing roofing system down to the concrete structural roof slab, repairing and mechanically preparing slab for new roof system installation, providing a fully reinforced, cold fluid applied, insulated roof system assembly and performing related work.
2. Main, Bulkhead and Low Roofs:
  - a. After abatement and partial removal of allowable amounts of existing roofing down to the slab:
    - 1) Scarify the slab.
    - 2) Patch structural roof slab with quick curing patch.
    - 3) Prime with asphalt primer.
    - 4) Torch down temporary roofing / vapor barrier.
    - 5) Temporary flash around all penetrations.
  - b. Provide Torch down SBS Base sheet adhered to roof slab / vapor Barrier, and up onto vertical walls.
  - c. Provide tapered / sloped / or hybrid roof insulation with water stopping every 400 sq. ft., as indicated in the drawings, installed / adhered in compatible roof insulation adhesive.
  - d. Provide cement roofing cover board installed / adhered in compatible roof insulation adhesive.
  - e. Provide SBS top cap sheet adhered to primed cement board to provide a uniform substrate and cover all joints in cement board.

D. Cold Fluid Applied, Reinforced, Liquid Applied Roofing

1. Primer:
  - a. Apply appropriate proprietary fast-curing primer on all substrates as required or recommended by the cold liquid-applied Membrane Manufacturer.



- b. For substrates requiring metal primer, apply single component fast-curing primer as recommended by the Membrane Manufacturer.
  - c. For substrates requiring standard primer, apply two component fast-curing PMMA primer as recommended by the Membrane Manufacturer.
- 2. Reinforcement:
    - a. Needle punched polyester fleece reinforcement with a minimum weight of 110 grams per square meter.
  - 3. Membrane Resin:
    - a. Two (2) component Polymethyl Methacrylate (PMMA), solvent free, Low VOC, odor free for use in field and flashings.
  - 4. Aggregate Walkway Surfacing:
    - a. Supplemental coat of two (2) component PMMA textured finish topcoat with integrally mixed color and aggregate for slip-resistant surfacing and aesthetic finish at the areas indicated in roof plan.
- E. Roofing metal edge systems: Fascias, sumps, and cap flashing metal systems shall be stainless steel and each location's specific profile shall be tested and certified for ANSI/SPRI ES-1 wind resistance for 110 mph. See Section 07 71 13 Manufactured Copings and Fascias.

#### **1.06 SUBMITTALS**

- A. See GENERAL REQUIREMENTS: SECTION 01 33 00 - SUBMISSIONS, for other specific requirements.
- 1. No work shall begin, or any materials be ordered, until receipt of written approval from the Authority on all requested materials, items, Submissions or Shop Drawings. Final approved copies of all Shop Drawings must be completed without added corrections, in pencil or ink.
  - 2. Membrane System Product Data: Provide current standard printed product literature indicating characteristics of membrane materials, flashing materials, components, and accessories product specification and installation.
  - 3. Product Samples: Submit product samples of membrane and flashing materials showing color, texture, thickness and surfacing representative of the proposed system for review and approval by the Owners Representative.
  - 4. Submit sample copies of both the Manufacturer and Applicator warranties for the periods stipulated. Each specimen must be a preprinted representative sample of the issuing company's standard warranty for the system specified.
  - 5. Submit copies of current Safety Data Sheets (SDS) for all components of the work.
  - 6. FM / UL testing data showing that the system assembly complies with the local wind uplift requirements and provides a Class A fire-rated roof assembly.
  - 7. CRRC (Cool Roof Rating Council) report data showing that the product is listed on the CRRC website coolroofs.org and that the initial solar reflectance, thermal remittance, and SRI values comply with LEED requirements, local building code requirements, and any specific project requirements.
  - 8. Survey of existing roof slab elevations, by licensed surveyor.
  - 9. Product data for roof inculcation
  - 10. Shop drawings for Drainage enhancers' layout and details. All elevations and thickness shall be coordinated with field survey. The diagrammatic layout shown on the contract drawings should be used only as a guide.

11. Samples of roof insulation materials and accessories
12. Final executed warranties, from both Manufacturer and applicator.

#### 1.07 QUALITY ASSURANCE

- A. Membrane Manufacturer: Company specializing in manufacturing fully reinforced cold fluid applied liquid resin waterproofing membrane systems with a minimum of ten (10) years of documented applications in the United States. Membrane Manufacturer shall submit the following certifications for review:
- B. Substrates and conditions are acceptable for purpose of providing specified warranty.
- C. Materials supplied shall meet the specified requirements.
- D. Applicator: Company specializing in performing the work of this section with (3) years documented experience and approved by system manufacturer for warranted membrane installation. Applicator shall submit the following certification for review:
  1. Applicator shall submit documentation from the membrane manufacturer to verify contractor's status as an approved applicator for warranted installations.
- E. Evaluate moisture content of cementitious substrate materials. Contractor shall determine substrate moisture content throughout the work and record with Daily Inspection Reports or other form of reporting acceptable to the Owner or designated Representative, and Membrane Manufacturer.
- F. Evaluate surface moisture content by means of a Tramex Concrete Moisture Encounter Meter. A surface moisture content of < 6% is required to allow for proper primer penetration into the substrate.
- G. Random tests to determine tensile bond strength of membrane to substrate shall be conducted by the Contractor at the job site using an Elcometer Adhesion Tester Model 106 or similar device, or by the performance of a manual pull test. Contractor shall perform tests at the beginning of the Work, and at intervals as required to assure specified adhesion with a minimum of three (3) tests per 5000 square feet. Smaller areas shall receive a minimum of three (3) tests. Test results shall be submitted to the Owner or his designated Representative and the Membrane Manufacturer. Contractor shall immediately notify the Owner or his designated Representative and Membrane Manufacturer in the event bond test results are below specified values.
  1. Adequate surface preparation will be indicated by tensile bond strength of membrane to substrate greater than or equal to 116 psi (0.8 N/mm<sup>2</sup>), as determined by use of an adhesion tester.
  2. Adequate surface preparation will be indicated by 135lbf peel bond strength of membrane to substrate such that cohesive failure of substrate or membrane occurs before adhesive failure of membrane/substrate interface.
  3. In the event the bond strengths are less than the minimum specified, additional substrate preparation is required. Repeat testing to verify suitability of substrate preparation.
- H. Monitor quantities of installed materials. Monitor application of resin mixture, reinforcing fleece and flashing. Perform Work in accordance with manufacturer's instructions.
- I. Mock-up areas shall be used to determine required methods and tools to obtain degree of substrate preparation required by the membrane manufacturer. Conduct tests as required to verify that substrate preparation meets specified requirements. Tests shall include, but are not limited to, tensile bond strength and moisture content of substrate.
  1. Prepare and clean a three (3) foot by three (3) foot area of each substrate material type.

2. Submit findings in writing to Owner or his designated Representative and Membrane Manufacturer.
3. Mock-up areas shall be maintained for quality control for the entire project.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. The Contractor together with the Owner or his designated Representative shall define a storage area for all components. The area shall be cool, dry, out of direct sunlight, and in accordance with manufacturer's recommendations and relevant regulatory agencies. Materials shall not be stored in quantities that will exceed design loads, damage substrate materials, hinder installation or drainage.
- B. Store solvent-bearing solutions, resins, additives, inhibitors or adhesives in accordance with the SDS and/or local fire authority. After partial use of materials replace lids promptly and tightly to prevent contamination.
- C. Roll goods shall be stored horizontally on platforms sufficiently elevated to prevent contact with water and other contaminants. DO NOT use rolls that are wet, dirty or have damaged ends.
- D. Roofing/waterproofing materials must be kept dry at all times. If stored outside, raise materials above ground or roof level on pallets and cover with a tarpaulin or other waterproof material. Plastic wrapping installed at the factory should not be used as outside storage covers.
- E. Follow manufacturer's directions for protection of materials prior to and during installation. Do not use materials that have been damaged to the point that they will not perform as specified. Fleece reinforcing materials must be clean, dry and free of all contaminants.
- F. Copies of all current SDS for all components shall be kept on site. Provide any and all crew members with appropriate safety data information and training as it relates to the specific chemical compound he or she may be expected to deal with. Each crew member shall be fully aware of first-aid measures to be undertaken in case of incidents. Comply with requirements of OSHA, NIOSH or local governing authority for work place safety.

#### **1.09 ENVIRONMENTAL REQUIREMENTS**

- A. Protection of adjacent areas from system-related contamination shall be the responsibility of the installer.
- B. Do not apply roofing / waterproofing membrane during or with the threat of inclement weather.
- C. Application of cold fluid-applied reinforced PMMA roofing / waterproofing membrane may proceed while air temperature is between 23°F (-5°C) and 95°F (35°C) providing the substrate is a minimum of 5°F above the dew point.
- D. When ambient temperatures are at or expected to fall below 23°F (-5°C), or reach 95°F (35°C) or higher, follow Membrane System Manufacturer's recommendations for weather related application procedures.
- E. 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.
- F. Modified bitumen membrane should not be installed in extremely cold temperatures unless precautions have been taken to protect the rolls from freezing.
- G. Correct solvent, heat welding, adhesive, and/or bitumen application temperatures must be maintained.

- H. Verify adhesion regularly during application. Hot-applied bituminous roofing materials must be applied promptly.
- I. In cold weather conditions, store rolls in a heated location until needed on the roof.
- K. All materials to be installed must be kept dry.

#### 1.10 SAFETY

- A. Contractor and contractor's crew members shall observe and enforce all appropriate safety and fire department regulations during installation and handling of roofing materials.
- B. A fully operational fire extinguisher shall be maintained within reasonable access to each applicator, at propane tanks, and and/or as required by local fire department regulations.
- C. Protect all partially and fully completed roofing work from other trades until completion. Whenever possible, stage materials in such a manner that foot traffic is minimized over completed roof areas. When it is not possible to stage materials away from locations where partial or complete installation has taken place, temporary walkways and platforms shall be installed in order to protect all completed roof areas from traffic and point loading during the application process.
- D. Temporary tie-ins shall be installed at the end of each workday and removed prior to commencement of work the following day.
  - 1. Additional Criteria:
    - a. Provide protection against staining and mechanical damage for newly applied roofing and adjacent surfaces throughout this project.
    - b. Limited Access: Prevent access by the public to materials, tools and equipment during the course of the project.
    - c. Debris Removal: Remove all debris daily from the project site and take to a legal dumping area authorized to receive such materials.
    - d. Site Condition: Complete, to the NYCHA Field Inspector's satisfaction, all job sites clean-up including building interior where applicable, exterior and landscaping where affected by the construction.
- E. Torch Safety (If torch down application is used for vapor barrier and base sheet over Cement Board): Crew members handling torches shall be trained by an Authorized Certified Roofing Torch Applicator (CERTA) Trainer, be certified according to CERTA torch safety guidelines as published by the National Roofing Contractors Association (NRCA), and follow torch safety practices as required by the contractor's insurance carrier. Designate one person on each crew to perform a daily fire watch. The designated crew member shall watch for fires or smoldering materials on all areas during roof construction activity, and for the minimum period required by CERTA guidelines after roofing material application has been suspended for the day.

*NOTE: The use of Torch down application may require a variance from the NYC Fire Department.*

#### 1.11 REQUIREMENTS PRIOR TO START OF JOB

- A. NOTIFICATION: Give a minimum of five (5) days' notice to the owner and manufacturer prior to commencing any work and notify both parties on a daily basis of any change in work schedule.
- B. PERMITS: Obtain all permits required by local agencies and pay all fees, which may be required for the performance of the work.

- C. SAFETY: Familiarize every member of the application crew with all fire and safety regulations recommended by OSHA, NRCA and other industry or local governmental groups. See also Section 3.12.

#### **1.12 DECK REQUIREMENTS**

- A. Weight limits on Roof Slab. Do not overload any portion of the building either by use of or placement of equipment, storage of debris or storage of materials.
  - 1. The total live and dead load is not to exceed 160 lbs /sq ft.
- B. The roof deck must be sound, smooth, dry, and free from deformation. Provide patching to level areas prior to start of reroofing
- C. The roof deck must be suitable for the type of roofing system selected and must meet all the deck requirements.

#### **1.13 PRE-INSTALLATION CONFERENCE**

- A. Prior to scheduled commencement of the roofing installation and associated work, conduct a meeting at the project site with the installer, NYCHA construction Inspector, The roofing Manufacturer's technical representative and any other persons directly involved with the performance of the work. The installer shall record conference discussions to include decisions and agreements reached (or disagreements), and furnish copies of recorded discussions to each attending party. The main purpose of this meeting is to review foreseeable methods and procedures related to roofing work.

#### **1.14 REGULATORY REQUIREMENTS**

- A. All work shall be performed in a safe, professional manner, conforming to all federal, state and local codes.
- B. Exterior Fire Test Exposure: Provide a roofing system that will achieve a rating for roof slopes indicated.
- C. FM /UL Class A.
- D. Windstorm Classification: Provide a roofing system, which will achieve a wind uplift rating, as listed in the current FM Approval Guide of FM-I-90.
- E. Roof Perimeter Metal Edge Wind Design: Provide a roofing system in compliance with ANSI/SPRI ES-1 "Wind Design Standard for Edge Systems Used with Low Slope Roof Systems" for the performance for Maximum Wind Speed and the Building Height required for the project. Provide a ANSI/SPRI ES-1 Certificate of Compliance.
- F. Conform to applicable New York Building code for roof assembly fire hazard.
- G. Conform to applicable New York Building code for cool/reflective roofing based on product listings available thru CRRC (Cool Roof Rating Council) coolroofs.org.

#### **1.15 PROJECT CONDITIONS**

- A. Protection of adjacent areas from splash or other system-related contamination shall be the responsibility of the Waterproofing installer. Provide adequate protection and windbreaks where necessary.

- B. Install materials in accordance with manufacturers Technical Data Sheets, SDS or as modified by applicable rules and regulations of NIOSH, and local state and federal authorities having jurisdiction.
- C. Odor control and elimination measures are not typically necessary, but if required by the Owner or his designated Representative, Contractor shall implement odor control and elimination measures prior to and during the application of the roofing/waterproofing materials. Control/elimination measures shall be field tested at off-hours and typically consists of one (1) or a multiple of the following measures:
  - 1. Sealing of air intakes with activated carbon filters. Install filters in accordance with requirements and recommendations of the filter manufacturer. Seal filters at joints and against building exterior walls to prevent leakage of unfiltered air.
  - 2. Sealing of doorways, windows, and skylights with duct tape and polyethylene sheeting to prevent leakage of air into the building.
  - 3. Erection and use of moveable enclosure(s) sized to accommodate work area(s) and stationary enclosure for resin mixing station. Enclosure shall be field constructed or pre-manufactured of fire retardant materials in compliance with local code requirements in accordance with requirements of the Owner or his designated Representative. Equipment enclosure(s) with mechanical air intake/exhaust openings and Odor Control Air Cleaners, as required to clean enclosed air volume and to prevent odor migration outside the enclosure. Exhaust opening shall be sealed with activated carbon filter.
  - 4. Protection of Contractor personnel and occupants of the structure and surrounding buildings as necessary to comply with requirements of OSHA, NIOSH and/or governing local authority.
- D. When disposing of all refuse or unused materials, observe all EPA, OSHA or local disposal requirements.
- E. The General Contractor shall ensure that adequate protection is provided for the duration of the contract to prevent damage to the system by others negligence.

#### **1.16 WARRANTY**

- A. Manufacturer's Premier Warranty: Provide (30) year manufacturer's premier full system warranty under provisions of this section. This warranty provides for cost of labor and materials for loss of water tightness, limited to amounts necessary to effect repairs necessitated by either defective material or defects in related installation workmanship, with no dollar limitation ("NDL").
- B. Waterproofing Contractor's Warranty: Provide (5) year "Applicator Maintenance Warranty" covering workmanship for all work of this section including installation of membrane, flashings, metal work, and roofing/waterproofing accessories.
- C. Submit (2) executed copies of both the manufacturer and applicator warranties for the periods stipulated, starting from the date of substantial completion. Each warranty must be signed by an authorized representative of the issuing company.
- D. Overall system warranty to cover damages resulting due to wind speed in excess of 110 MPH.

### **PART 2 - PRODUCTS**

#### **2.01 GENERAL**

- A. The products herein specified are totally pre-engineered products of the listed manufacturers and establish criteria for the approval of substitutions. Products must be part of a pre-engineered, low VOC fully reinforced cold liquid applied 2 component PMMA resin waterproofing membrane

system, equivalent in function, quality, composition and method of application to be considered for approval as an "Approved Substitute". Substitute materials must meet or exceed all physical performance characteristics of the specified materials. PUMA, or single component primers or resin systems will not be accepted. A minimum 110 g/m2 fleece reinforcement is required.

**2.02 FLUID APPLIED MEMBRANE**

**A. Liquid Applied Membrane**

1. Two-component, cold fluid-applied reinforced PMMA waterproofing membrane with a 360 degree needle punched non-woven 110 g/m2 polyester reinforcing fleece, for a finished dry film membrane thickness of .080 inch nominal per ply. Provide products manufactured and supplied by one the following:
  - a. Johns Manville Corporation.
  - b. Siplast, Inc.
  - c. Soprema USA.
  - d. ALT Global/Westwood.
2. Physical Properties

Property - PMMA	Value	Test Method
Thickness (avg) @ 0.31 kg/ft <sup>2</sup> coverage rate	=90 mils	ASTM D751 / D5147
Weight (min per 100 ft <sup>2</sup> of coverage)	68lb	
Peak Load (avg) @ 73°F	70 lbf/in	ASTM D5147
Elongation at Peak Load (avg) @ 73°F	=35%	ASTM D5147
Elongation at Peak Load (avg) @ 73°F	=35%	ASTM D412
Shore A Hardness (avg)	=70	ASTM D2240
Water Absorption, Method I (24h @ 73°F)	0.8%	ASTM D570
Water Absorption, Method II (48h @ 122°F)	1.2%	ASTM D570
Low Temperature Flexibility @ 13°F	PASS	ASTM D5147
Dimensional Stability (max)	0.15%	ASTM D5147
Color	Gray	-
Physical State	Cures to Solid	-
Min Thickness (110 fleece)	90 mils	ASTM D751 or D5147
Tensile Strength @ Break	> 60 lbs/in	ASTM D5147/D4073
Elongation	> 49%	ASTM D751
Tear Resistance	>7 lbs	ASTM D751
Water Vapor Transmission	0.45 Perms	ASTM E96
Water Absorption	< 1.5%	ASTM D471
Static Puncture	=30	ASTM D5602
Usage Time*	15 minutes	-
Rainproof after*	30 minutes	-
Solid to walk on after*	1 hour	-
Solid to drive on with air rubber tires after*	3 hours	-
Overburden may be applied after	3 hours	-
Completely hardened after	3 hours	-
Solid Content	100%	
Solvent Content	0%	

\* All times are approximate and depend upon wind, humidity and temperature

**2.03 FLASHINGS**

**A. Membrane Flashing**

1. A composite of the same resin material as field membrane with 110 g/m2 fleece reinforcement.

**2.04 SUBSTRATE PRIMERS**

**A. Substrate Primer**

1. Apply appropriate fast-curing primer on all substrates as recommended by the cold fluid-applied PMMA Membrane Manufacturer.

**2.05 INSULATION**

**A. High Thermal Foam Board Tapered Insulation**

1. Polyisocyanurate Insulation with Nonasphaltic Facers: Meeting or exceeding the requirements for ASTM C1289-06, Type II, Class 1, Grade 3 (25 psi), 1.5 inch minimum thickness, with the following characteristics:
 

a. Board Density	2.0 lb/cu ft
b. Board Size	48x48 inches
c. Thermal Conductivity	K factor of 0.17 per ASTM C177
d. Board Edges	Square
  
2. Tapered Polyisocyanurate Insulation with Nonasphaltic Facers: Meeting or exceeding the requirements for ASTM C1289-06, Type II, Class 1, Grade 3 (25 psi), 0.5 - 4.5 inch thickness, with the following characteristics:
 

a. Board Density	2.0 lb/cu ft
b. Board Size	48x48 inches
c. Board Taper	As required
d. Thermal Conductivity	K factor of 0.17 per ASTM C177
e. Board Edges	Square

**2.06 COVER BOARD / INSULATION**

**A. Cover Board**

1. High compressive strength, non-combustible, roof underlayment board consisting of aggregated portland cement slurry with polymer-coated glass-fiber mesh, with the following characteristics:
 

a. Board Weight	2.4 lbs/sq.ft.
b. Board Size	[48 x 96] inches
c. Board Thickness	1/2 inch
d. Flexural Strength	>750 psi, <span style="float: right;">ASTM C-947</span>
e. Compressive Strength	>1000 psi nominal



f.	Flute Spannability	12 in.	ASTM E-661
g.	Permeance	5.84 perms	ASTM E-96
h.	Thermal Conductivity	R-value of 0.39	ASTM C-518
i.	Coefficient of thermal expansion	4.5 x 10 <sup>6</sup>	ASTM E-831
j.	Linear variation w change in moisture	<0.07% max	ASTM D-1037
k.	Water absorption	<15 % max	ASTM C-473
l.	Mold resistance	10	ASTM D-3273
m.	Board Edges	Square	

**2.07 INSULATION AND COVER BOARD SECUREMENT**

**A. Polyurethane Adhesive**

1. FM-approved single component moisture-cured, or two component reactive-cured polyurethane adhesive. Adhesive application rate shall be in accordance with specified wind uplift rating for system application. Roofing adhesive shall be a type approved by membrane and insulation manufacturer.

**2.08 TAPERED EDGE STRIP**

**A. Tapered Edge Strip**

1. Rigid, closed cell polyisocyanurate foam core integrally bonded to non-asphaltic, fiber-reinforced organic felt, suitable for installation with adhered roofing system.

**2.09 UNDERLAYMENT PLY MEMBRANE / BASE SHEET (Suitable for Cold Fluid Application Above it)**

**A. Base Sheet**

1. SBS Base Sheet: Mineral surfaced polyester reinforced SBS modified bitumen sheet conforming to ASTM D-6164; Grade S, suitable for torch and self-adhesive application prior to the PMMA membrane installation.

**2.10 VAPOR BARRIER**

**A. Vapor Barrier**

1. SBS Base Sheet: Mineral surfaced fiberglass reinforced SBS modified bitumen sheet conforming to ASTM D-6163; Grade S, suitable for torch application and adhesion of polyisocyanurate insulation board directly above it.

NOTE: The temporary roofing/waterproofing to be provided as existing roofing is removed shall remain and function as the vapor barrier for the new roofing system.

**2.11 INITIAL MEMBRANE**

**B. Initial Membrane**

DynaBase	Johns Manville
SBS (Fiberglass Reinforced) – Cold Applied	
Elastophene Sanded	Soprema
SBS (Fiberglass Reinforced) – Cold Applied	
Irex 40	Siplast
SBS (Fiberglass Reinforced) – Cold Applied	

## 2.12 WATER-STOPPING

### A. Waterstop

1. Water-stopping (every 400 sq. ft.) shall consist of 70 mil thick dual side adhered reinforced SBS membrane sheet or 2 plies of type IV fiberglass roof felt, extending 10" under and 6" over the top of the insulation. Water stops felts shall be installed with cold applied flashing cement. Felts should be fully saturated in flashing cement at all sides to provide full water tightness.

## 2.13 SURFACING

### A. Surfacing

1. Kiln dried Surfacing Silica Sand shall be washed, kiln-dried, and dust-free.
2. Color of surfacing at each location to match with adjoining finishes.

## 2.14 ASPHALT PRIMER

### A. Primer

1. Asphalt primer shall have maximum curing time of 1-1/2 hour, shall meet ASTM D41.

## 2.15 ACCESSORIES

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

### A. Water-Based Cleaner for Membrane

1. Simple Green HD or approved equal.

### B. Protective Coating

1. Membrane Manufacturers proprietary PMMA textured finish topcoat with integrally mixed aggregate providing an aesthetic and slip-resistant topcoat.

### C. Patching Compound

1. Provide Membrane Manufacturers proprietary resin mortar for leveling, patching and repairs of all substrates as recommended by the Membrane Manufacturer.
  - a. Provide Manufacturers proprietary PMMA Paste or PMMQA resin-mortar for leveling, patching and repairs of all non-traffic bearing horizontal or vertical substrates as recommended by the Membrane Manufacturer.
  - b. Resin-mortar should be placed after priming substrate with Membrane Manufacturers proprietary primer and in lifts no greater than the maximum thicknesses indicated by the Membrane Manufacturer. Trowel into place and allow to harden. If additional lifts will be required, broadcast top surface of the placed resin-mortar with clean dry 0.7 - 1.2 mm quartz silica at approximately 25% coverage while the resin-mortar is wet. Place next lift once the resin-mortar has cured.

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. Verify deck/substrate openings, curbs, and protrusions through deck/substrate, wood cant

strips and reglets are in place and solidly set.

- B. Verify that surfaces and site conditions are ready to receive work.
- C. Verify deck/substrate is structurally supported, secure and sound.

### 3.02 INSPECTION

- A. NYCHA's field inspector, Installer shall inspect and approve the prepared substrate prior to application of the sealer/primer coat.
- B. Random tests for adequate tensile strength of the substrate shall be conducted (using an Elcometer Adhesion Tester) on the substrate by the installer (for an agreed fee), at a minimum frequency of one per 5000 sf. For roofs 15,000 sq. ft. and smaller, a minimum of three tests shall be conducted and the results recorded.
- C. The minimum tensile bond strength of the concrete shall be 116 psi.

### 3.03 ROOFING SYSTEM SUBSTRATE PREPARATION

- A. General: Surfaces to be prepared as a substrate for the new waterproofing system as follows:
  - 1. The contractor shall determine the condition of the existing structural deck/substrate. All defects in the deck or substrate shall be corrected before new waterproofing work commences. Areas of deteriorated deck/substrate, porous or other affected materials must be removed and replaced with new to match existing.
  - 2. Prepare flashing substrates as required for application of new waterproofing membrane flashings.
  - 3. Inspect substrates, and correct defects before application of new waterproofing. Fill all surface voids greater than 1/8 inch wide with an acceptable fill material.
  - 4. Remove all ponded water, snow, frost and/or ice from the work substrate prior to installing new waterproofing materials.
  - 5. The final substrate for waterproofing shall be clean, dry, free of loose, spalled or weak material including coatings, mineral aggregate, and flood coat/gravel surfacing, oil, grease, contaminants, abrupt changes in level, waterproofing agents, curing compounds, and free of projections which could damage membrane materials.
- B. Structural Pre-Cast Concrete:
  - 1. New concrete shall have cured a minimum of 28 days in accordance with ACI-308, or as approved by Waterproofing Manufacturer's Technical Department.
  - 2. New or existing concrete shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, bituminous products and previous waterproofing materials.
  - 3. New or existing concrete shall be dry with a maximum moisture content of six (6) percent.  
Determinations of moisture content shall be performed by the Contractor. Contractor shall be responsible to perform periodic evaluations of moisture content during the work. Moisture evaluation results shall be submitted in writing to the Owner or his designated Representative and Waterproofing manufacturer for acceptance.
  - 4. Where required, concrete shall be abrasively cleaned in accordance with ASTM D4259 to provide a sound substrate free from laitance. Achieve an open concrete surface in accordance with ICRI surface profiles CSP 3-5. When using mechanical methods to remove existing waterproofing products or surface deterioration, the surface profile is not to exceed ¼ inch (peak to valley).
  - 5. The substrate shall be sound and all spalls, voids and blow holes on vertical or horizontal

surfaces must be repaired prior to placement of the primer coat. Spalls and other deterioration shall be repaired in accordance with the requirements of the Owner or his designated Representative and Membrane manufacturer.

6. Areas of minor surface deterioration of 0.25" (6 mm) or greater in depth shall be repaired to prevent possible pooling of the liquid applied materials, leading to excessive usage of primer and resin.
  7. Hollow-core panels, T-panels, and Twin-T panels shall have grouted joints between panels and shall be provided with mechanical securement from panel to panel.
  8. For concrete materials with a compressive strength of less than 3,000 psi contact waterproofing Manufacturer's Technical Department for substrate preparation requirements,
- C. Masonry:
1. Walls shall be built with hard kiln dried brick or waterproof concrete block construction.
  2. Areas of soft or scaling brick or concrete, faulty mortar joints, or walls with broken, damaged or leaking coping shall be repaired in accordance with the requirements of the Owner or his designated Representative and Flashing Membrane Manufacturer.
- D. Steel/Metal:
1. Clean and prepare metal surfaces to near white metal in accordance with SSPC - SP3 (power tool clean) or as required by membrane manufacturer. Extend preparation a minimum of one (1) inch beyond the termination of the membrane flashing materials.
  2. In addition to cleaning, all metal surfaces shall be abraded to provide a rough open surface. A wire brush finish is not acceptable.
- E. Wood/Plywood:
1. Plywood shall be identified with American Plywood Association (APA) grade trademarks and shall meet the requirements of product standard PS1. Strip all plywood joints with minimum 1.5-inch (+/-4 cm) wide bond breaker tape followed with minimum 6 inch (15 cm) wide strips of cold fluid-applied reinforced membrane flashing strip. Fill all knot holes and cracks with Membrane Manufacturers PMMA Paste.
- F. Other Flashing Surfaces:
1. Remove all contaminants as required by membrane manufacturer. Surface preparation shall be performed by means approved by NYCHA or designated Authority Representative.
- G. Finish, Leveling, Patching and Crack Preparation:
1. General: Membrane Manufacturers proprietary PMMA Paste and Repair Mortar are the preferred materials for all concrete and masonry substrate finish leveling, crack and wall/deck preparation and patching. PMMA Paste and Repair Mortars provides a fast-set time of approximately 45-minutes and does not require surface grinding. PMMA Paste and Repair Mortars are typically applied after general surface priming.
  2. Concrete and Masonry Substrate Leveling & Patching: Substrate conditions are to be evaluated by the Contractor, the Owner, or his designated Representative, and Membrane manufacturer. Perform leveling and patching operations as follows:
    - a. Level uneven surfaces. Spread and plane PMMA Paste or Repair Mortar using trowel.
    - b. Fill cavities PMMA Paste or Resin Mortar.
    - c. Any surface to be leveled or filled must first be primed with an appropriate primer.
- H. Joint and Crack Preparation: Joints, cracks and fractures in the structural deck/substrate shall

be prepared as defined below prior to installation of the waterproofing membrane. Note: Joints, cracks, and fractures may telegraph through the waterproofing membrane.

1. Non-Moving Cracks, Joints, and Voids: Determine that crack/joint is nonmoving. Clean out crack/joint by brushing and oil-free compressed air. Fill crack/joint with PMMA Paste or Repair Mortar. Large voids may require the installation of backer rod or other backing material prior to application of PMMA Paste or Repair Mortar. Allow for a minimum of 45- minutes cure or as required by Membrane Manufacturer.
2. Moving Cracks: Determine that crack is moving. Clean out crack by brushing and oil-free compressed air. Fill crack with PMMA Paste or Repair Mortar. Allow for a minimum of 45- minutes cure or as required by Membrane Manufacturer. Following full curing of primer, apply reinforced PMMA membrane flashing strip 4 inch (10 cm) wide with bond breaker tape as necessary, recommended or required (resin and fleece) in strict accordance with Membrane manufacturer's written instructions.

### **3.04 SBS BASE SHEET TEMPORARY ROOF / VAPOR RETARDER INSTALLATION**

- A. Install Base Sheet: Install mineral-surfaced Base sheet in accordance with sheet manufacturer's current published specifications and recommendations for use with adhered roofing.
  1. Mineral Surfaced Base Sheet / SBS Base sheet Torch-Applied Attachment: Follow Base sheet manufacturer's recommendations for the appropriate application procedure. Roll each Base sheet into molten bitumen. Limit bitumen bleed-out at laps to 1/4" or less.
  2. Mineral Surfaced Base Sheet/SBS base sheet Self-Adhered Attachment: Follow Base sheet manufacturer's recommendations for the appropriate application procedure.
- B. Fit Base Sheet / SBS Base Sheet: Neatly fit sheet to all penetrations, projections, curbs, and walls. Extend over all nailers. Base sheet shall be overlapped a minimum of 3" for side laps and 6" for end laps. Seal at penetrations, projections, curbs and walls with urethane-based sealant. Do not use asphaltic flashing cement.

### **3.05 PRIMER APPLICATION**

- A. General:
  1. Mix and apply single and two-component PMMA primer in strict accordance with written instructions of Membrane Manufacturer. Use only proprietary materials, as supplied by the membrane manufacturer.
  2. The substrate surface must be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth wipe or a combination of methods.
  3. Do not install primer on any substrate containing newly applied and/or active asphalt, coal- tar pitch, creosote or penta-based materials unless approved in writing by Membrane Manufacturer. Some substrates may require additional preparation before applying primer.
- B. Application of Primer:
  1. Roll or brush the primer evenly onto the surface to fully saturate the substrate in one application. Do not allow primer to pond or collect in low areas. Follow manufacturer's recommended application rates to ensure that a thin layer of cured primer remains on the substrate surface.
  2. Apply primer only up to the edge of the membrane flashing terminations. Primer application past the membrane terminations requires surfacing with an approved

material.

3. Allow standard primers to cure for a minimum of 45-minutes before membrane application or as indicated in manufacturer's written instructions. Membrane must be applied to primer only when completely dry and without tack.
4. The clean and fully cured primer can be coated after a minimum of approximately 30-45 minutes up to a maximum of 6-months. If the surface of the primer becomes dirty or contaminated or left exposed to the elements for more than 12-hours, thoroughly clean the in-place and cured primer with Membrane Manufacturers proprietary Activator/Cleaner. Activator/Cleaner should be allowed a minimum of 20-minutes evaporation time after application, and over-coated within 60-minutes of application. Primer should not be used as temporary waterproofing, unless approved in writing by the Membrane Manufacturer.

C. Disposal of Primer:

1. Cured primer may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components.
2. Uncured primer is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulation. Do not throw uncured resin away.

### 3.06 MEMBRANE APPLICATION

A. General:

1. Follow application procedures as indicated in manufacturer's written Instructions.
2. 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.
3. PMMA systems that utilize an SBS base sheet can allow phasing or postponement of the PMMA application. The SBS base sheet can be utilized as temporary waterproofing. Contact membrane manufacturer for application requirements.
4. Mix and apply cold fluid-applied reinforced PMMA waterproofing membrane in strict accordance with written instructions of Membrane Manufacturer. Use only proprietary membrane resins and materials, as supplied by the membrane manufacturer.
5. The primed substrate surface shall be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth-wipe or a combination.
6. Protect all areas where membrane has been installed. Do not work off installed membrane during application of remaining work before one (1) hour of curing. Movement of materials and equipment across installed membrane is not acceptable. If movement is necessary, provide complete protection of affected areas.
7. Closely follow the Membrane Manufacturer's recommendation for hot and cold weather application. Monitor surface and ambient temperatures, including the effects of wind chill.

B. Mixing of Resin:

1. Mix PMMA resin component with a spiral agitator until the liquid is a uniform color. Pour PMMA resin to be used into a clean mixing bucket, add an appropriate amount of Membrane Manufacturers proprietary Catalyst Powder and thoroughly mix with clean spiral agitator for 2 to 4-minutes depending on ambient temperature. Mix only that amount of PMMA resin with catalyst powder that can be used in 30 minutes.

C. Application of Resin/Fleece:

1. Apply mixed resin to the prepared surface at the manufacturer's recommended application rate. The resin should be rolled liberally and evenly onto the surface using a broad, even stroke. Cover one working area at a time, between 15 - 20 ft.2 (1.4 - 1.9 m2). Using a

lambs' wool roller, apply an even layer of cold fluid-applied resin at the minimum consumption of 0.21 kg/ft<sup>2</sup> (2.3 kg/m<sup>2</sup>) or as recommended by the Membrane Manufacturer.

2. Roll out Membrane Manufacturers proprietary fleece reinforcement into the wet resin making sure the SMOOTH SIDE IS FACING UP (natural unrolling procedure), avoiding any folds and wrinkles. Removing trapped air, using the lambs' wool roller. Maintain 2-inches (5 cm) minimum overlap at all side and butt laps of reinforcement and extend flashing a minimum of 4-inches (10 cm) horizontally onto deck.
3. Apply an even topcoat of cold fluid-applied resin at the minimum consumption of 0.09 kg/ft<sup>2</sup> (1.0 kg/m<sup>2</sup>) or as recommended by the Membrane Manufacturer.
4. Allow completed membrane to cure as recommended by the Membrane Manufacturer prior to continuing application or applying loads. Fluid-applied membrane must be rainproof after approximately 60-minutes, and capable of carrying a load, i.e., be walked-on, in approximately 2-hours.
5. 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.
6. At all fleece seams, allow a 2" (5 cm) overlap for all side joints and a 4" (10 cm) overlap for all end joints.
7. At membrane tie-offs, clean in-place membrane with Membrane Manufacturers proprietary Activator/Cleaner Allow solvents to fully evaporate before application of new resin.

D. Disposal of Resin:

1. Cured resin may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components.
2. Uncured resin is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulation. Do not throw uncured resin away.

**3.07 FLASHING APPLICATION**

A. General

1. Install flashing system in accordance with the requirements / recommendations of the Membrane manufacturer and as depicted on standard drawings and details. Provide system with base flashing, edge flashing, penetration flashing, counter flashing, and all other flashings required for a complete watertight system.
2. Wherever possible, install the flashings before installing the field membrane to minimize foot traffic over newly installed field membrane.
3. All membrane flashings shall be installed concurrently with the waterproofing membrane as the job progresses. Temporary flashings are not allowed without prior written approval from the Membrane manufacturer. Should any water penetrate the new waterproofing membrane because of incomplete flashings, the affected area shall be removed and replaced at the contractor's expense.
4. Provide a minimum vertical height of 8" for all flashing terminations. Flashing height shall be at least as high as the potential water level that could be reached as a result of a deluging rain and/or poor slope. Do not flash over existing through-wall flashings, weep holes and overflow scuppers.
5. All flashings shall be terminated as required by the Membrane Manufacturer.
6. A subsequent coat of PMMA resin broadcast with approved kiln-dried quartz aggregate surfacing shall be applied wherever stone, concrete, or masonry elements will be placed directly over the flashing to provide a bonding surface and additional protection for the membrane.

B. Metal Flashing - General

1. Metal flashings shall be fabricated in accordance with the current recommendations of SMACNA and in accordance with standard drawings and project details.
2. Metal flashing flanges to which membrane is to be bonded shall be a minimum of four (4) inches in width, and secured to the substrate or wood nailers six (6) inches on center staggered with fasteners appropriate to the substrate type. The flanges shall be provided with a roughened surface that has been cleaned of all oil and other residue.
3. Metal edges that will be overlaid with membrane shall be provided with a 1/4" min. hemmed edge.
4. Apply primer, resin and fleece to metal flange, extending membrane to outside face of metal edging, and to vertical face of metal base/curb flashing.

C. Membrane Flashing - General

1. Membrane flashings shall be fabricated with primer appropriate for the substrate surface, resin of the same base chemical type as the field membrane, and fleece of the same weight as the field membrane unless specified otherwise. Primer, resin, and fleece mixing and application methods as specified for field membranes are also suitable for membrane flashing. Fleece shall overlap 2" (5 cm) minimum for all side joints and 4-inch (10 cm) overlaps at butt laps, tie-ins and horizontally at all substrates. Fleece shall be cut neatly to fit all flashing conditions without a buildup of multiple fleece layers. Work wet membrane with a brush or roller to eliminate blisters, openings, or lifting at corners, junctions, and transitions.

D. Pipes, Conduits, and Unusual Shaped Penetrations

1. Pipes conduits and other items to be flashed must be separated with 1-inch (2.54 cm) minimum clearance or as recommended by Membrane Manufacturer to adequately waterproof each individual penetration.
2. All penetrations must be flashed individually. Two or more items ganged together in a flashing will NOT be permitted.
3. Flash penetrations using cold fluid-applied reinforced membrane or Membrane Manufacturers proprietary flashing matrix as recommended. Flashing shall consist of a reinforced deck skirt/target flashing and reinforced vertical wrap.

E. Roof Drains

1. Flash roof drains using cold fluid-applied membrane. Flashing shall consist of target flashing extending minimum 12-inches (30 cm) horizontally onto the substrate and extend down into the prepared drain bowl a minimum of 3-inches (7.5 cm).
2. At no time should the cold fluid-applied membrane be installed to restrict or reduce the drain inlet in size.
3. For new roof drains, Contractor shall include cost of all plumbing work, piping and connection to existing storm sewer system. Acceptable drain and scupper materials are cast iron, cast aluminum, and copper.
4. Connect new drains and scuppers to existing storm sewer system.
5. Alternatively, replace all broken or damaged parts of existing drains and scuppers.
6. Flashing material shall extend four (4) inches minimum onto drain or scupper flange and into drain/scupper body.
7. Install clamping ring if provided as part of the drain or scupper design. Install a strainer basket to prevent debris from clogging the drainage line.

F. Hot Pipes



1. Protect cold fluid-applied membrane components from direct contact with steam or heat sources when the in-service temperature exceeds 150 degrees F. In all such cases flash to an intermediate "cool" sleeve.
  2. Fabricate "cool" sleeve in the form of a metal cone using galvanized metal in accordance with membrane manufacturer details.
  3. Flash sleeve using cold fluid-applied reinforced membrane or Membrane Manufacturers proprietary flashing matrix as recommended. Flashing shall consist of a reinforced deck skirt/target flashing and reinforced vertical wrap.
- G. Flexible Penetrations
1. Provide a weather-tight gooseneck set in Membrane Manufacturer's acrylic resin paste and secured to the deck.
  2. Flash gooseneck penetrations using cold fluid-applied reinforced membrane or Membrane Manufacturers proprietary flashing matrix as recommended. Flashing shall consist of a reinforced deck skirt/target flashing and reinforced vertical wrap.
- H. Walls, Curbs and Bases
1. Flash all walls, curbs and base flashings using cold fluid-applied reinforced membrane. Wherever possible extend flashing up and over tops of walls, curbs and bases so the membrane terminates on the opposite vertical face of the building element.
  2. Wall, curb and base flashings shall be installed to solid substrate surfaces only. Adhering to gypsum-based panels, cementitious stucco, synthetic stucco, wood or metal siding, and other similar materials is not acceptable.
  3. All pins, dowels and other fixation elements shall be flashed separately with a vertical flashing component prior to installing the exposed flashing layer.
  4. Flash all expansion joints with two layers of cold fluid-applied reinforced membrane. The bottom ply shall be installed using 1-ply of Membrane Manufacturers fabric reinforced membrane followed by 1ply of Membrane Manufacturers MMA flashing matrix applied over an expansion tube and bond breaker tape.
  5. Metal drip edges and gravel stops shall be installed to solid substrate surfaces or wood nailers only. Securement to gypsum-based panels, cementitious stucco, synthetic stucco, wood or metal siding or coping, and other similar materials is not acceptable.
  6. Flash all drip edges and gravel stops by extending the field membrane all the way to the edge of the exposed face prior to installing the metal edging. Strip in the metal flange with a separate 8 inch wide strip of membrane adhered to both the securement flange and to the field membrane.
  7. For conditions where water infiltration behind the exposed drip edge or gravel stop face is possible, install a separate membrane layer positioned behind the face area and extending a minimum of four (4) inches past the securement flange onto the field substrate prior to installing the drip edge or gravel stop.
- I. Electrical Conduit, Gas Lines and Lightning Protection
1. Supports for electrical conduit and gas lines greater than one (1) inch in diameter require the use of a separate engineered support system.
  2. Supports for electrical conduit and gas lines one (1) inch or less in diameter, and bases for lightning protection rods and cable, can be adhered directly to the membrane surface with a single-component, high quality polyurethane sealant.

### **3.08 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 12 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 12 hours. Membrane Re-activation Following
- C. Subsequent topcoats (i.e., membrane resin topcoat or Finish application) or daily start-up tie-ins should be applied within 12-hours of the base membrane whenever possible. If work is interrupted for more than 12-hours, use Membrane Manufacturers proprietary Activator/Cleaner to clean and reactivate the in-place membrane.
- D. Activator/Cleaner should be wiped on the in-place membrane, allowed 20minutes evaporation time, and over-coated within 60-minutes of application. Activator/Cleaner should only be applied over an area that can be over-coated within a 60-minute period. Re-apply Activator/Cleaner as required to assure proper reactivation of all transition areas.

### **3.09 PROTECTIVE SURFACING**

- A. Slip-Resistant Walkway Surfacing
  1. Where specified for aesthetic treatment provide and install Membrane Manufacturers proprietary aesthetic pigmented Textured Finish topcoat integrally mixed with aggregate.
  2. Apply Membrane Manufacturers proprietary aesthetic cold fluid-applied pigmented resin topcoat finish using a hard rubber squeegee and a lambswool roller apply an even layer of cold fluid-applied resin at the minimum consumption of 0.046 kg/ft<sup>2</sup> (0.5 kg/m<sup>2</sup>) or as recommended by the Membrane Manufacturer and allow to cure for 45 minutes minimum.
  3. Finish topcoat should be rainproof after approximately 30-minutes, and can be walked-on in approximately 2-hours.
  4. Tape off areas designated to be walkway areas.
- B. Protection/Bonding Layer
  1. Where placement of concrete, mortar or adhesive setting beds are required over sections of the waterproofing membrane or flashing, apply manufacturer's PMMA resin at the manufacturer's recommended coverage rate, with broadcast to excess of kiln-dried silica sand into wet resin.
  2. Protection shall extend a minimum of one (1) foot (0.3m) past the concrete form on all sides.

### **3.10 TEMPORARY CLOSURES & WATER STOPS**

- A. Contractor shall be responsible to ensure that moisture does not damage any completed section of the new waterproofing system. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition. All temporary closures shall be made as recommended or required by the membrane manufacturer.

### **3.11 FIELD QUALITY CONTROL**

- A. Site Condition: Leave all areas around job site free of debris, roofing materials, equipment and related items after job completion.
- B. Notification of Completion: Notify the membrane manufacturer of job completion and schedule a final inspection date.
- C. Final Inspection: A meeting at the completion of the project with the membrane manufacturer's technical field representative to evaluate the completed installation of the field and flashing membrane. All punch list items are to be completed prior to the scheduled meeting.
- D. Issuance of the Warrantee: Complete all post installation procedures in accordance with the manufacturer's guidelines for warranty issuance of the specified warrantee.

**3.12 CLOSEOUT ACTIVITIES**

A. Correction of Work:

1. Work that does not conform to specified requirements including tolerances, slopes, and finishes shall be corrected and/or replaced. Any deficiencies of membrane application, termination and/or protection as noted during the Membrane Manufacturer's inspections shall be corrected and/or replaced at Contractor's expense.

B. Clean-Up:

1. Site clean-up, including both interior and exterior building areas that have been affected by construction, shall be restored to preconstruction condition

**3.13 PROTECTION**

- A. Upon completion of waterproofing and flashings (including all associated work), institute appropriate procedures for surveillance and protection of roofing during remainder of construction period. Protect all areas where membrane has been installed.

**END OF SECTION**

**DIVISION 7 – THERMAL AND MOISTURE PROTECTION**

**SECTION 07 56 00.02**

**COLD FLUID APPLIED REINFORCED ROOFING - POLYURETHANE ROOFING SYSTEM - OPTION 2**

**PART 1 - GENERAL**

**1.01 SECTION INCLUDES**

- A. All requirements for Cold Fluid Applied Reinforced Roofing - Polyurethane Roofing System

**1.02 RELATED REQUIREMENTS**

- A. The Contract Documents include: the "Contract Drawings"; the "Specifications"; the "Special Notice to Contractors", "Special Conditions", NYC Housing Authority Contracts", latest edition; the "Form of Proposal", "Form of Bid Bond", and all amendments and addenda, all of which govern the work of this Contract.
- B. The Contractor is also directed to Division 01 and other Divisions of this specification. They include a description of additional work for removal and replacement of roofing with all related work described herein under Division 07.
- D. Section 03 01 00 - Concrete Restoration.
- E. Section 04 01 20 - Masonry Restoration
- G. Section 22 14 26 - Drains

**1.03 REFERENCE STANDARDS**

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual.
- B. ACI-308 - Recommended Practice for Curing Concrete
- C. ANS/SPRI ES-1 - Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems
- D. ASTM - D638 - Test Methods for Tensile Properties of Plastics
- E. ASTM - D4258 - Standard Practice for Surface Cleaning Concrete for Coatings
- F. ASTM - D4259 - Standard Practice for Abrading Concrete
- G. ASTM - D4541 - Method for Pull-Off Strength of Coatings using Portable Adhesion Tester
- H. ASTM - E96(A) - Test Methods of Moisture Transmission of Material
- I. ASTM E-108, ANSI/UL 790 for fire resistance.
- J. Factory Mutual (FM Global) - Approval Guide
- K. Cool Roof Rating Council (CRRC) - Standard 1 - 2012
- L. ASTM E903-96, Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres in conjunction with ASTM E891-87, Tables for Terrestrial Direct Normal Solar Spectral Irradiance Tables for Air Mass 1.5.
- M. ASTM C1371-04a, Standard Test Method for Determination of Emittance of Materials.
- N. ASTM E1918-06, Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.

- O. ASTM C1549-09, Standard Test Method for Determination of Solar Reflectance.
- P. CRRC - 1, Test Method 1
- Q. International Concrete Repair Institute Guideline 03732 Concrete Surface Preparation
- R. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) – Architectural Sheet Metal Manual
- S. Steel Structures Painting Council (SSPC)

**1.04 GENERAL**

- A. Prior to submission of bid, visit the work site to verify the existing conditions, dimensions and quantities as set forth in the Contract Documents.
- B. The roofing replacement requires a highly reflective & emissive, fully reinforced, cold fluid-applied, 2 component 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, sealants and metal work as specified to provide A MINIMUM COMPLETE MANUFACTURER'S NO DOLLAR LIMIT 30 YEAR FULL SYSTEM GUARANTEE ON INSTALLATION AND MATERIALS. As such the contractor must be certified as an installer by roofing manufacturer providing the guarantee. Further the certified installer must pre-register the 30 year guarantee with manufacturer and submit a copy of that pre registration at the pre start meeting and prior to beginning work. The actual guarantee must be provided to the Authority PRIOR to the close out of the Job.
- C. The work to be performed under this specification shall include but is not limited to the following: Attend necessary job meetings and furnish competent and full time supervision, experienced roof mechanics, all materials, tools, and equipment necessary to complete, in an acceptable manner, the roof installation in accordance with this specification. Comply with the latest written application instructions of the manufacturer of the primary roofing products. In addition, application practice shall comply with requirements and recommendations contained in the latest edition of the Handbook of Accepted Roofing Knowledge (HARK) as published by the National Roofing Contractors Association.
- D. Local Regulations: Conform to regulations of public agencies, including any specific requirements of the city and/or state of jurisdiction.
- E. Manufacturer Requirements: The primary roofing materials manufacturer shall provide direct trained Field Technical Representative to attend necessary job meetings, perform periodic inspections, and conduct a final inspection upon successful completion of the project.
- F. Roofing Conference: To finalize the scope of work for each roof, a roofing conference must be held prior to beginning any work, between the NYCHA, Development Supervisor, and NYCHA's Representative, the certified roofing installer, contractor, The NYCHA field representative the Field Technical Representative of roofing manufacturer providing the 30 Year NDL Guarantee. At that conference the type of replacement roofing system will be confirmed, and the roofing manufacturer's representative will perform the required inspection for registering the 30 year NDL Guarantee.
- G. Installation of all roofing materials and systems must conform to minimum FM-I-90 wind uplift or any more stringent specific height and location uplift requirements. Fascia, sumps and gravel stops must conform and be tested to meet ANSI/SPRI ES-1 wind resistance for 110 mph. See Section 07 71 13 Manufactured Copings And Fascias.
- H. Phasing and Coordination
  - 1. Phasing work in Overall Development:
    - a. See Division 01 General Requirements and the Schematic Sidewalk Shed Drawing for details and information.

2. Phasing/Coordinating Work at Each Building
  - a. Temporary Roofing Protection: The contractor must provide temporary roofing protection from water infiltration of the exposed roof and brick.
    - 1) This includes temporary protection immediately after asbestos abatement of waterproofing and flashing at roofs and bulkheads walls as well as abatement of roofing and flashing at other locations. All abatement of roofing materials involves complete removal of roofing down to slab. Temporary roofing protection includes:
      - (a) Temporary torch down / vapor barrier to be manufacturer's approved modified cap sheet for use as water stopping on existing slab and up onto existing roofing.
      - (b) Installer of Torch Down Roofing: Must be a certified installer trained in and adhering to all FDNY and New York City Codes and Industry Standards Regulation and Requirements for utilizing gas/torch equipment and installing torch down roofing.
  - b. General roofing removal and replacement shall only commence once:
    - 1) Asbestos abatement has been completed.
    - 2) Railing replacement has been completed.
  - c. Criteria which allow the Contractor to remove roofing assembly over an entire roof leaving to existing sound waterproof vapor barrier as temporary waterproofing membrane.
    - 1) The ambient temperatures must remain above 45 degrees for the entire period a roofing system will be replaced.
    - 2) If inspection of the existing vapor barrier by the NYCHA representative/ CM finds the existing vapor barrier sound, dry and waterproof the contractor may still under direction of the field representative/CM patch any areas of the existing vapor barrier to assure that the roof is water tight.
    - 3) Then the contractor may be allowed to do a complete removal of all roofing down to the existing waterproof vapor barrier which will act as temporary waterproofing.
    - 4) Subsequently, as per this specification, the Contractor must remove only that portion of the existing vapor barrier and provide the new roofing system, as can be completed in a work day. This includes scarify patching and priming the slab after that portion of the existing vapor barrier has been removed and providing the new roofing system (water stopping, insulation, cover board, roofing membrane and flashing, fascia and cap flashing).
    - 5) If any of these criteria and or conditions can't be met then the contractor may only remove as much roofing as can be replaced within one day (which includes removing existing vapor barrier).
  - d. Coordinating 2 Piece Cap Flashing Heights: Where shown on drawings new stainless steel regleted cap flashing are being provided under masonry work. Coordinate to ensure that the cap flashing are installed at adequate height above the finished roofing.
  - e. No asbestos-containing materials shall be permitted on site or for any use, as either a temporary or permanent part of construction.

### 1.05 SCOPE OF WORK

- A. Sloped Insulation Drawing. Though the liquid applied roofing system specified is a waterproofing system and can tolerate standing water, NYCHA the owner requires, at minimum, a hybrid taper and, where possible, a full taper sloped system which will move water towards drains. Therefore

the Contractor must survey the roofs and provide sloped insulation drawings. The Schematic Sloped Insulation Plans (in the bid set drawings) are only conceptual but can assist in making Bids as well as serve as a background for final sloped insulation drawings.

1. Provide Survey: The accepted Contractor shall have Licensed surveyor perform a survey of roof elevations/slopes, door saddle heights, cap flashing/weep holes, heights of curbs and railing/parapet above the roof slab.
2. Provide sloped insulation shop drawing: The Contractor shall then send that Survey on a scaled roof plan to a taper insulation Designer and coordinate with them to obtain a detailed insulation layout drawing which directs water towards drains and does not overwhelm door saddles, cap flashing/weep holes and leaves minimum contract required 48" between the top of the proposed finished roofing and the top of the perimeter fence or parapet.
3. For roof sections where insulation cannot provide a 1/8" slope then 1/16" sloped insulation or drainage enhancers/sumps/crickets/kickers to may effectively drain roof. The Contractor shall then incorporate the final sloped insulation drawing into a Shop Drawing for submission and approval by NYCHA.

NOTE:

1. NYC Energy Code and HUD CF24R value requirements for roofing insulation: NYS/NYC ECC and HUD require a minimum R-30 ci (continuous insulation) for roofing insulation assemblies (insulation and cover board) above the roof deck.
2. The Manufacturer's Insulation Layout Design is integral to a 30 year NDL guaranteed roofing system. Deviations from their layout may void the guarantee and as such must not be done without be signed pre-approval by the Roofing Manufacturer and the Authority. Layout design must indicate minimum thicknesses, taper layout, drainage enhancers, and sumps.
3. GENERAL CONTRACTOR'S COORDINATION OF CAP FLASHING UNDER MASONRY RESTORATION (Section 04 01 20): Since installation the new through wall and regulated cap flashing are being performed under masonry restoration the General Contractor must coordinate the installation height of the 2 piece with the final finished height of the roofing installation.

B. Roof Drains, Leaders and Traps

1. Prior to commencement of work, NYCHA's Representative, the Contractor, Development Superintendent and Contract Inspector shall conduct a joint survey to determine which (if any) of the roof drain leaders are blocked. The contractor shall be responsible for performing this test. Contractor shall provide all tools, equipment, and manpower required to evaluate every roof drain
2. Attach to the minutes of the pre-construction meeting, three copies of a form listing the condition of each drain line and signed by the Development Superintendent and Contractor.
3. Contractor shall provide all tools, equipment, and manpower required to evaluate every roof drain
4. No roofing work shall commence until the Contractor and Development Superintendent certify in writing to NYCHA that all roof drain and leaders are in working order and free of blockages. Any subsequent blockages encountered shall be the responsibility of the Contractor and will be treated as a punch list item.
5. Clean debris and all foreign matter from the drain bodies.
6. If located in the cellar or crawl space replace all existing roof drain traps.
7. Provide new Vandal Resistant stainless steel perforated gravel guard.

8. Provide wood protection plugs in roof drains during and work. Remove them at the end of each work day and once work is completed.
9. Provide replacement/retrofit roof drain (all hardware to be Vandal resistant). See Section 22 14 26 Roof Drains.

C. Description of Work

1. Consists of removal of the existing roofing system down to the concrete structural roof slab, repairing and mechanically preparing slab for new roof system installation, providing a fully reinforced, cold fluid applied, insulated roof system assembly and performing related work.
2. Main, Bulkhead and Low Roofs:
  - a. After abatement and partial removal of allowable amounts of existing roofing down to the slab:
    - 1) Scarify the slab.
    - 2) Patch structural roof slab with quick curing patch.
    - 3) Prime with asphalt primer.
    - 4) Torch down temporary roofing / vapor barrier.
    - 5) Temporary flash around all penetrations.
  - b. Provide Torch down SBS Base sheet adhered to roof slab / vapor Barrier, and up onto vertical walls.
  - c. Provide tapered / sloped / or hybrid roof insulation with water stopping every 400 sq. ft., as indicated in the drawings, installed / adhered in compatible roof insulation adhesive.
  - d. Provide cement roofing cover board installed / adhered in compatible roof insulation adhesive.
  - e. Provide SBS top cap sheet adhered to primed cement board to provide a uniform substrate and cover all joints in cement board.

D. Cold Fluid Applied, Reinforced, Liquid Applied Roofing

1. Primer:
  - a. Epoxy two (2) component, solvent free, Low VOC, odor free for use on all concrete, masonry, cement board and porous substrates.
  - b. Polyurethane, solvent free, Low VOC, odor free for use on non- porous substrates such as plywood, pvc, metal, glass, and some cap sheets and cover boards.
2. Reinforcement:
  - a. Needle punched polyester fleece reinforcement with a minimum weight of 165 grams per square meter.
3. Membrane Resin:
  - a. Polyurethane, solvent free, Low VOC, odor free for use in field and flashings.
4. Aggregate Walkway Surfacing:
  - a. Supplemental coat of finish topcoat with integrally mixed color and aggregate for slip-resistant surfacing and aesthetic finish.

- E. Roofing metal edge systems: Fascias, sumps, and cap flashing metal systems shall be stainless steel and each location's specific profile shall be tested and certified for ANSI/SPRI ES-1 wind resistance for 110 mph. See Section 07 71 13 Manufactured Copings and Fascias.



## 1.06 SUBMITTALS

- A. Also SEE GENERAL REQUIREMENTS: SECTION 01 33 00 - SUBMISSIONS, for other specific requirements.
1. No work shall begin, or any materials be ordered, until receipt of written approval from the Authority on all requested materials, items, Submissions or Shop Drawings. Final approved copies of all Shop Drawings must be completed without added corrections, in pencil or ink.
  2. Membrane System Product Data: Provide current standard printed product literature indicating characteristics of membrane materials, flashing materials, components, and accessories product specification and installation.
  3. Product Samples: Submit product samples of membrane and flashing materials showing color, texture, thickness and surfacing representative of the proposed system for review and approval by the Owners Representative.
  4. Submit sample copies of both the Manufacturer and Applicator warranties for the periods stipulated. Each specimen must be a preprinted representative sample of the issuing company's standard warranty for the system specified.
  5. Submit copies of current Safety Data Sheets (SDS) for all components of the work.
  6. FM / UL testing data showing that the system assembly complies with the local wind uplift requirements and provides a Class A fire-rated roof assembly.
  7. CRRC (Cool Roof Rating Council) report data showing that the product is listed on the CRRC website coolroofs.org and that the initial solar reflectance, thermal remittance, and SRI values comply with LEED requirements, local building code requirements, and any specific project requirements.
  8. Survey of existing roof slab elevations, by licensed surveyor.
  9. Product data for roof inculcation.
  10. Shop drawings for Drainage enhancers' layout and details. All elevations and thickness shall be coordinated with field survey. The diagrammatic layout shown on the contract drawings should be used only as a guide.
  11. Samples of roof insulation materials and accessories.
  12. Final executed warranties, from both Manufacturer and applicator.

## 1.07 QUALITY ASSURANCE

- A. Membrane Manufacturer: Company specializing in manufacturing fully reinforced cold fluid applied liquid resin waterproofing membrane systems with a minimum of ten (10) years of documented applications in the United States. Membrane Manufacturer shall submit the following certifications for review:
- B. Substrates and conditions are acceptable for purpose of providing specified warranty.
- C. Materials supplied shall meet the specified requirements.
- D. Applicator: Company specializing in performing the work of this section with (3) years documented experience and approved by system manufacturer for warranted membrane installation. Applicator shall submit the following certification for review:
1. Applicator shall submit documentation from the membrane manufacturer to verify contractor's status as an approved applicator for warranted installations.
- E. Evaluate moisture content of cementitious substrate materials. Contractor shall determine substrate moisture content throughout the work and record with Daily Inspection Reports or other

form of reporting acceptable to the Owner or designated Representative, and Membrane Manufacturer.

- F. Evaluate surface moisture content by means of a Tramex Concrete Moisture Encounter Meter. A surface moisture content of < 6% is required to allow for proper primer penetration into the substrate.
- G. Bubbling, or pinholes within the primer indicates excessive moisture content within the substrate. Blistering of membrane may result from excessive substrate moisture. Primer application during late afternoon/early evening will reduce vapor pressure within the substrate and may alleviate these conditions.
- H. Continued bubbling or pinholes indicates excessive moisture content that requires more substantial measures. Evaluate substrate moisture content by means of relative humidity (RH) probes in accordance with ASTM F2170. Relative moisture content of 75% or greater indicates the need for more extensive substrate priming and sealing. Contact Membrane Manufacturer for recommendations.
- I. 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 116 psi (0.8 N/mm<sup>2</sup>), 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.
- J. Monitor quantities of installed materials. Monitor application of resin mixture, reinforcing fleece and flashing. Perform Work in accordance with manufacturer's instructions.
- K. Mock-up areas shall be used to determine required methods and tools to obtain degree of substrate preparation required by the membrane manufacturer. Conduct tests as required to verify that substrate preparation meets specified requirements. Tests shall include, but are not limited to, tensile bond strength and moisture content of substrate.
  - 1. Prepare and clean a three (3) foot by three (3) foot area of each substrate material type.
  - 2. Submit findings in writing to Owner or his designated Representative and Membrane Manufacturer.
  - 3. Mock-up areas shall be maintained for quality control for the entire project.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. The Contractor together with the Owner or his designated Representative shall define a storage area for all components. The area shall be cool, dry, out of direct sunlight, and in accordance with manufacturer's recommendations and relevant regulatory agencies. Materials shall not be stored in quantities that will exceed design loads, damage substrate materials, hinder installation or drainage.
- B. Store solvent-bearing solutions, resins, additives, inhibitors or adhesives in accordance with the

SDS and/or local fire authority. After partial use of materials replace lids promptly and tightly to prevent contamination.

- C. Roll goods shall be stored horizontally on platforms sufficiently elevated to prevent contact with water and other contaminants. DO NOT use rolls that are wet, dirty or have damaged ends.
- D. Roofing/waterproofing materials must be kept dry at all times. If stored outside, raise materials above ground or roof level on pallets and cover with a tarpaulin or other waterproof material. Plastic wrapping installed at the factory should not be used as outside storage covers.
- E. Follow manufacturer's directions for protection of materials prior to and during installation. Do not use materials that have been damaged to the point that they will not perform as specified. Fleece reinforcing materials must be clean, dry and free of all contaminants.
- F. Copies of all current SDS for all components shall be kept on site. Provide any and all crew members with appropriate safety data information and training as it relates to the specific chemical compound he or she may be expected to deal with. Each crew member shall be fully aware of first-aid measures to be undertaken in case of incidents. Comply with requirements of OSHA, NIOSH or local governing authority for work place safety.

#### **1.09 ENVIRONMENTAL REQUIREMENTS**

- A. Protection of adjacent areas from system-related contamination shall be the responsibility of the installer.
- B. Do not apply roofing / waterproofing membrane during or with the threat of inclement weather.
- C. 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.
- D. 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.
- E. 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.
- F. Modified bitumen membrane should not be installed in extremely cold temperatures unless precautions have been taken to protect the rolls from freezing.
- G. Correct solvent, heat welding, adhesive, and/or bitumen application temperatures must be maintained.
- H. Verify adhesion regularly during application. Hot-applied bituminous roofing materials must be applied promptly.
- I. In cold weather conditions, store rolls in a heated location until needed on the roof.
- K. All materials to be installed must be kept dry.

#### **1.10 SAFETY**

- A. Contractor and contractor's crew members shall observe and enforce all appropriate safety and fire department regulations during installation and handling of roofing materials and asphalts.
- B. A fully operational fire extinguisher shall be maintained within reasonable access to each applicator, at propane tanks, and and/or as required by local fire department regulations.
- C. Protect all partially and fully completed roofing work from other trades until completion. Whenever possible, stage materials in such a manner that foot traffic is minimized over completed roof

areas. When it is not possible to stage materials away from locations where partial or complete installation has taken place, temporary walkways and platforms shall be installed in order to protect all completed roof areas from traffic and point loading during the application process.

- D. Temporary tie-ins shall be installed at the end of each workday and removed prior to commencement of work the following day.
  - 1. Additional Criteria:
    - a. Provide protection against staining and mechanical damage for newly applied roofing and adjacent surfaces throughout this project.
    - b. Limited Access: Prevent access by the public to materials, tools and equipment during the course of the project.
    - c. Debris Removal: Remove all debris daily from the project site and take to a legal dumping area authorized to receive such materials.
    - d. Site Condition: Complete, to the NYCHA Field Inspector's satisfaction, all job sites clean-up including building interior where applicable, exterior and landscaping where affected by the construction.
- E. Torch Safety (If torch down application is used for vapor barrier and base sheet over Cement Board): Crew members handling torches shall be trained by an Authorized Certified Roofing Torch Applicator (CERTA) Trainer, be certified according to CERTA torch safety guidelines as published by the National Roofing Contractors Association (NRCA), and follow torch safety practices as required by the contractor's insurance carrier. Designate one person on each crew to perform a daily fire watch. The designated crew member shall watch for fires or smoldering materials on all areas during roof construction activity, and for the minimum period required by CERTA guidelines after roofing material application has been suspended for the day.

NOTE: The use of Torch down application may require a variance from the NYC Fire Department.

#### 1.11 REQUIREMENTS PRIOR TO START OF JOB

- A. NOTIFICATION: Give a minimum of five (5) days' notice to the owner and manufacturer prior to commencing any work and notify both parties on a daily basis of any change in work schedule.
- B. PERMITS: Obtain all permits required by local agencies and pay all fees, which may be required for the performance of the work.
- C. SAFETY: Familiarize every member of the application crew with all fire and safety regulations recommended by OSHA, NRCA and other industry or local governmental groups. See also Section 3.12.

#### 1.12 DECK REQUIREMENTS

- A. Weight limits on Roof Slab. Do not overload any portion of the building either by use of or placement of equipment, storage of debris or storage of materials.
  - 1. The total live and dead load is not to exceed 160 lbs /sq ft.
- B. The roof deck must be sound, smooth, dry, and free from deformation. Provide patching to level areas prior to start of reroofing
- C. The roof deck must be suitable for the type of roofing system selected and must meet all the deck requirements.

#### 1.13 PRE-INSTALLATION CONFERENCE

- A. Prior to scheduled commencement of the roofing installation and associated work, conduct a

meeting at the project site with the installer, NYCHA construction Inspector, The roofing Manufacturer's technical representative and any other persons directly involved with the performance of the work. The installer shall record conference discussions to include decisions and agreements reached (or disagreements), and furnish copies of recorded discussions to each attending party. The main purpose of this meeting is to review foreseeable methods and procedures related to roofing work.

**1.14 REGULATORY REQUIREMENTS**

- A. All work shall be performed in a safe, professional manner, conforming to all federal, state and local codes.
- B. Exterior Fire Test Exposure: Provide a roofing system that will achieve a rating for roof slopes indicated.
- C. FM /UL Class A.
- D. Windstorm Classification: Provide a roofing system, which will achieve a wind uplift rating, as listed in the current FM Approval Guide of FM-I-90.
- E. Roof Perimeter Metal Edge Wind Design: Provide a roofing system in compliance with ANSI/SPRI ES-1 "Wind Design Standard for Edge Systems Used with Low Slope Roof Systems" for the performance for Maximum Wind Speed and the Building Height required for the project. Provide a ANSI/SPRI ES-1 Certificate of Compliance.
- F. Conform to applicable New York Building code for roof assembly fire hazard.
- G. Conform to applicable New York Building code for cool/reflective roofing based on product listings available thru CRRC (Cool Roof Rating Council) coolroofs.org.

**1.15 PROJECT CONDITIONS**

- A. Protection of adjacent areas from splash or other system-related contamination shall be the responsibility of the Waterproofing installer. Provide adequate protection and windbreaks where necessary.
- B. Install materials in accordance with manufacturers Technical Data Sheets, SDS or as modified by applicable rules and regulations of NIOSH, and local state and federal authorities having jurisdiction.
- C. Odor control and elimination measures are not typically necessary, but if required by the Owner or his designated Representative, Contractor shall implement odor control and elimination measures prior to and during the application of the roofing/waterproofing materials. Control/elimination measures shall be field tested at off-hours and typically consists of one (1) or a multiple of the following measures:
  - 1. Sealing of air intakes with activated carbon filters. Install filters in accordance with requirements and recommendations of the filter manufacturer. Seal filters at joints and against building exterior walls to prevent leakage of unfiltered air.
  - 2. Sealing of doorways, windows, and skylights with duct tape and polyethylene sheeting to prevent leakage of air into the building.
  - 3. Erection and use of moveable enclosure(s) sized to accommodate work area(s) and stationary enclosure for resin mixing station. Enclosure shall be field constructed or pre-manufactured of fire retardant materials in compliance with local code requirements in accordance with requirements of the Owner or his designated Representative. Equipment enclosure(s) with mechanical air intake/exhaust openings and Odor Control Air Cleaners, as required to clean enclosed air volume and to prevent odor migration outside the enclosure. Exhaust opening shall be sealed with activated carbon filter.
  - 4. Protection of Contractor personnel and occupants of the structure and surrounding

buildings as necessary to comply with requirements of OSHA, NIOSH and/or governing local authority.

- D. When disposing of all refuse or unused materials, observe all EPA, OSHA or local disposal requirements.
- E. The General Contractor shall ensure that adequate protection is provided for the duration of the contract to prevent damage to the system by others negligence.

**1.16 WARRANTY**

- A. Manufacturer's Premier Warranty: Provide (30) year manufacturer's premier full system warranty under provisions of this section. This warranty provides for cost of labor and materials for loss of water tightness, limited to amounts necessary to effect repairs necessitated by either defective material or defects in related installation workmanship, with no dollar limitation ("NDL").
- B. Waterproofing Contractor's Warranty: Provide (5) year "Applicator Maintenance Warranty" covering workmanship for all work of this section including installation of membrane, flashings, metal work, and roofing/waterproofing accessories.
- C. Submit (2) executed copies of both the manufacturer and applicator warranties for the periods stipulated, starting from the date of substantial completion. Each warranty must be signed by an authorized representative of the issuing company.

**PART 2 - PRODUCTS**

**2.01 GENERAL**

- A. The products herein specified are totally pre-engineered products of the listed manufacturers and establish criteria for the approval of substitutions. Products must be part of a virtually odorless, pre-engineered, low VOC fully reinforced cold liquid applied polyurethane resin waterproofing membrane system, equivalent in function, quality, composition and method of application to be considered for approval as an "Approved Substitute". Substitute materials must meet or exceed all physical performance characteristics of the specified materials. A minimum 165 g/m2 fleece reinforcement is required.

**2.02 FLUID APPLIED MEMBRANE**

- A. **Liquid Applied Membrane**
  - 1. Cold fluid-applied reinforced polyurethane waterproofing membrane with a 360 degree needle punched non-woven 165 g/m2 polyester reinforcing fleece, for a finished dry film membrane thickness of .070 inch nominal per ply. Provide products manufactured and supplied by the following:
    - a. Kemperol 2K-PUR waterproofing system.
    - b. Sikalastic Roofpro System
    - c. Tremco

LIQUID PROPERTY REQUIREMENTS		
Physical Properties	Value	Test Method
Color	Bright White	-
Solar Reflectance (Initial)	0.86	ASTM C 1549-09
Thermal Emittance (Initial)	0.86	ASTM C 1371-04a
SRI (initial)	110	ASTM E 1980
Nominal Thickness	80mil	-
Tensile Strength @ Break	70lbf CMD – 100lbf MD	ASTM D 4073

Elongation	Min 30%	ASRM D 5147
Tearing strength	60 lbs/in	ASTM D-4073
Puncture resistance	140 lbf	FTMS 101-2031
Dimensional stability	0.15%	ASTM D-1204
Water absorption	Less Than 3%	ASTM D-570 sec 7.7
Surface hardness	Shore A 75 +/-15	ASTM D-2240
Rapidly Renewable Resources	70%	-
VOC in g/l	6.0 g/l	-
Usage time*	30 minutes	-
Rainproof after*	2 hours	-
Solid to walk on after*	24 hours	-
Completely hardened	after 3 days	-
Crack spanning	2mm/0.08 inch	-
Resistance to temperatures (up to short term)	250°C/482°F	-
*all times are approximate and depend upon airflow, humidity and temperature.		

**2.03 FLASHINGS**

**A. Membrane Flashing**

1. A composite of the same resin material as field membrane with 165 g/m2 fleece reinforcement.

**2.04 SUBSTRATE PRIMERS AND RESIN ADDITIVES**

**A. Primer**

1. Polyurethane Primer: Two-component, solvent-free polyurethane resin for use in improving adhesion of membrane to wood, metal and bituminous substrate surfaces, as provided by the manufacturer.
2. Epoxy Primer: Two-component, solvent-free epoxy resin for use in improving adhesion of membrane to cementitious/masonry substrate surfaces, as provided by the membrane manufacturer.
3. 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 resin Component A prior to mixing of multi-component resin, as provided by the membrane manufacturer.

**2.05 INSULATION**

**A. High Thermal Foam Board Tapered Insulation**

1. Polyisocyanurate Insulation with Nonasphaltic Facers: Meeting or exceeding the requirements for ASTM C1289-06, Type II, Class 1, Grade 3 (25 psi), 1.5 inch minimum thickness, with the following characteristics:
  - a. Board Density 2.0 lb/cu ft
  - b. Board Size 48x48 or 48 x 96 inches
  - c. Board Thickness requirements As required to meet performance
  - d. Thermal Conductivity K factor of 0.17 per ASTM C177
  - e. Board Edges square
  
2. Tapered Polyisocyanurate Insulation with Nonasphaltic Facers: Meeting or exceeding the requirements for ASTM C1289-06, Type II, Class 1, Grade 3 (25 psi), 0.5 - 4.5 inch thickness, with the following characteristics:
  - a. Board Density 2.0 lb/cu ft
  - b. Board Size 48x48 or 48 x 96 inches
  - c. Board Taper As required
  - d. Total Thickness value of 30 for total roofing As required to achieve an average R system.
  - e. Thermal Conductivity K factor of 0.17 per ASTM C177,
  - f. Board Edges square

**2.06 COVER BOARD**

**A. Cover Board**

1. High compressive strength, non-combustible, roof underlayment board consisting of aggregated portland cement slurry with polymer-coated glass-fiber mesh, with the following characteristics:
  - a. Board Weight 2.4 lbs/sq.ft.
  - b. Board Size [48 x 96] inches
  - c. Board Thickness 1/2 inch
  - d. Flexural Strength >750 psi, ASTM C-947
  - e. Compressive Strength >1000 psi nominal
  - f. Flute Spannability 12 in. ASTM E-661
  - g. Permeance 5.84 perms ASTM E-96
  - h. Thermal Conductivity R-value of 0.39 ASTM C-518
  - i. Coefficient of thermal expansion 4.5 x 10<sup>6</sup> ASTM E-831
  - j. Linear variation w change in moisture <0.07% max ASTM D-1037
  - k. Water absorption <15 % max ASTM C-473
  - l. Mold resistance 10 ASTM D-3273
  - m. Board Edges Square

**2.07 INSULATION AND COVERBOARD SECUREMENT**

**A. Polyurethane Adhesive**

1. FM-approved single component moisture-cured, or two component reactive-cured polyurethane adhesive. Adhesive application rate shall be in accordance with specified wind uplift rating for system application. Roofing adhesive shall be a type approved by membrane and insulation manufacturer.



**2.08 TAPERED EDGE STRIP**

- A. **Tapered Edge Strip**
  1. Rigid, closed-cell polyisocyanurate foam core integrally bonded to non-asphaltic fiber reinforced organic felt, suitable for installation with adhered roofing system.

**2.09 UNDERLAYMENT PLY MEMBRANE / BASE SHEET (SUITABLE FOR COLD FLUID APPLICATION ABOVE IT)**

- A. **Base Sheet**
  1. SBS Cap Sheet: Mineral surfaced polyester reinforced SBS modified bitumen sheet conforming to ASTM D-6164; Grade S, suitable for torch and self-adhesive application prior to the PMMA membrane installation.

**2.10 VAPOR BARRIER**

- A. **Vapor Barrier**
  1. SBS Base Sheet: Mineral surfaced fiberglass reinforced SBS modified bitumen sheet conforming to ASTM D-6163; Grade S, suitable for torch application and adhesion of polyisocyanurate insulation board directly above it.

NOTE: The temporary roofing/waterproofing to be provided as existing roofing is removed shall remain and function as the vapor barrier for the new roofing system.

**2.11 INITIAL MEMBRANE**

<b>B. Initial Membrane</b>	
DynaBase	Johns Manville
SBS (Fiberglass Reinforced) – Cold Applied	
Elastophene Sanded	Soprema
SBS (Fiberglass Reinforced) – Cold Applied	
Irex 40	Siplast
SBS (Fiberglass Reinforced) – Cold Applied	

**2.12 WATER-STOPPING**

- A. **Waterstop**
  1. Water-stopping (every 400 sq. ft.) shall consist of 70 mil thick dual side adhered reinforced SBS membrane sheet or 2 plies of type IV fiberglass roof felt, extending 10" under and 6" over the top of the insulation. Water stops felts shall be installed with cold applied flashing cement. Felts should be fully saturated in flashing cement at all sides to provide full water tightness.

**2.13 SURFACING**

- A. **Surfacing**
  1. Kiln dried Surfacing Silica Sand shall be washed, kiln-dried, and dust-free.
  2. Color of surfacing at each location to match with adjoining finishes.

**2.14 ASPHALT PRIMER**

- A. **Primer**
  - 1. Asphalt primer shall have maximum curing time of 1-1/2 hour, shall meet ASTM D41.

**2.15 ACCESSORIES**

Application tools, accessories, and cleaners: Supplied and/or approved by membrane manufacturer for product installation.

- A. **Water-Based Cleaner for Membrane**
    - 1. Simple Green HD or approved equal.
  - B. **Protective Coating**
    - 1. Silica sand, ceramic-coated quartz, or specialty aggregate shall be washed, kiln-dried, and dust-free with the following size specification:
      - a. Alkalinity/Adhesion Key: 0.5 - 1.2 mm
      - b. Light Pedestrian Traffic: 0.4 - 1.0 mm
  - C. **Patching Compound**
    - 1. 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:
      - a. For voids less than 1" in depth: #00 (0.3 - 0.6 mm)
      - b. For voids 1" to 2" in depth: #0 (0.5 - 1.2 mm)
- NOTE: Mixing Proportions shall be a ratio of primer / resin to sand at 1:2 by volume for leveling, 1:4 by volume for patching, or as approved by membrane manufacturer.

**PART 3 - EXECUTION**

**3.01 GENERAL**

- A. Verify deck/ substrate openings, curbs, and protrusions through deck/ substrate, wood cant strips and reglets are in place and solidly set.
- B. Verify that surfaces and site conditions are ready to receive work.
- C. Verify deck/substrate is structurally supported, secure and sound.

**3.02 INSPECTION**

- A. NYCHA's field inspector, Installer shall inspect and approve the prepared substrate prior to application of the sealer/primer coat.
- B. Random tests for adequate tensile strength of the substrate shall be conducted (using an Elcometer Adhesion Tester) on the substrate by the installer (for an agreed fee), at a minimum frequency of one per 5000 sf. For roofs 15,000 sq. ft. and smaller, a minimum of three tests shall be conducted and the results recorded.
- C. The minimum tensile bond strength of the concrete shall be 150 psi.

**3.03 ROOFING SYSTEM SUBSTRATE PREPARATION**

- A. General: Surfaces to be prepared as a substrate for the new waterproofing system as follows:
  - 1. The contractor shall determine the condition of the existing structural deck/substrate. All

defects in the deck or substrate shall be corrected before new waterproofing work commences. Areas of deteriorated deck/substrate, porous or other affected materials must be removed and replaced with new to match existing.

2. Prepare flashing substrates as required for application of new waterproofing membrane flashings.
3. Inspect substrates, and correct defects before application of new waterproofing. Fill all surface voids greater than 1/8 inch wide with an acceptable fill material.
4. Remove all ponded water, snow, frost and/or ice from the work substrate prior to installing new waterproofing materials.
5. The final substrate for waterproofing shall be clean, dry, free of loose, spalled or weak material including coatings, mineral aggregate, and flood coat/gravel surfacing, oil, grease, contaminants, abrupt changes in level, waterproofing agents, curing compounds, and free of projections which could damage membrane materials.

**B. Structural Concrete:**

1. New concrete shall have cured a minimum of 28 days in accordance with ACI-308, or as approved by Waterproofing Manufacturer's Technical Department.
2. New or existing concrete shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, bituminous products and previous waterproofing materials.
3. New or existing concrete shall be dry with a maximum moisture content of five (5) percent. Determinations of moisture content shall be performed by the Contractor. Contractor shall be responsible to perform periodic evaluations of moisture content during the work. Moisture evaluation results shall be submitted in writing to the Owner or his designated Representative and Waterproofing manufacturer for acceptance.
4. Where required, concrete shall be abrasively cleaned in accordance with ASTM D4259 to provide a sound substrate free from laitance. Achieve an open concrete surface in accordance with ICRI surface profiles CSP 3-5. When using mechanical methods to remove existing waterproofing products or surface deterioration, the surface profile is not to exceed ¼ inch (peak to valley).
5. The substrate shall be sound and all spalls, voids and blow holes on vertical or horizontal surfaces must be repaired prior to placement of the primer coat. Spalls and other deterioration shall be repaired in accordance with the requirements of the Owner or his designated Representative and Membrane manufacturer.
6. Areas of minor surface deterioration of 0.25" (6 mm) or greater in depth shall be repaired to prevent possible pooling of the liquid applied materials, leading to excessive usage of primer and resin.
7. Hollow-core panels, T-panels, and Twin-T panels shall have grouted joints between panels and shall be provided with mechanical securement from panel to panel.
8. For concrete materials with a compressive strength of less than 3,000 psi contact Waterproofing Manufacturer's Technical Department for substrate preparation requirements.

**C. Masonry:**

1. Walls shall be built with hard kiln dried brick or waterproof concrete block construction.
2. Areas of soft or scaling brick or concrete, faulty mortar joints, or walls with broken, damaged or leaking coping shall be repaired in accordance with the requirements of the Owner or his designated Representative and Flashing Membrane Manufacturer.

**D. Steel/Metal:**

1. Clean and prepare metal surfaces to near white metal in accordance with SSPC - SP3 (power tool clean) or as required by membrane manufacturer. Extend preparation a minimum of one (1) inch beyond the termination of the membrane flashing materials.
  2. In addition to cleaning, all metal surfaces shall be abraded to provide a rough open surface. A wire brush finish is not acceptable.
- E. Wood/Plywood:
1. Plywood shall be identified with American Plywood Association (APA) grade trademarks and shall meet the requirements of product standard PS1. Strip plywood joints with four inch (4") wide strip of flashing membrane. Cover knot holes or cracks with strips of flashing membrane.
- F. Other Flashing Surfaces:
1. Remove all contaminants as required by membrane manufacturer. Surface preparation shall be performed by means approved by NYCHA or designated Authority Representative.
- G. Finish Leveling, Patching and Crack Preparation:
1. General: epoxy primer/sand mix is the preferred material for all concrete and masonry substrate finish leveling, crack and wall/deck preparation and patching. Epoxy primer/sand patching mix provides a set time of approximately twelve (12) hours and does not require surface grinding. Primer/sand mix is typically applied in conjunction with general surface priming.
  2. Concrete and Masonry Substrate Leveling & Patching: Substrate conditions are to be evaluated by the Contractor, the Owner, or his designated Representative, and Membrane manufacturer. Perform leveling and patching operations as follows:
    - a. Level uneven surfaces with a leveling mixture of primer and approved kiln-dried silica sand in a 1:2 primer to sand ratio by volume. Spread and plane this compound with a squeegee and trowel to achieve a flat surface.
    - b. Fill cavities with a patching mixture of primer and approved kiln-dried sand in a 1:4 primer to sand ratio by volume.
    - c. Silica sand must be kept absolutely dry during storage and handling.
    - d. Any surface to be leveled or filled must first be primed with an appropriate primer.
- H. Joint and Crack Preparation: Joints, cracks and fractures in the structural deck/substrate shall be prepared as defined below prior to installation of the waterproofing membrane. Note: Joints, cracks, and fractures may telegraph through the waterproofing membrane.
1. Non-Moving Cracks, Joints, and Voids: Determine that crack/joint is non-moving. Clean out crack/joint by brushing and oil-free compressed air. Fill crack/joint with polyurethane sealant. Voids require the installation of backer rod or other backing material prior to application of the polyurethane sealant. Allow for a minimum of twelve (12) hours cure or as required by sealant Manufacturer.
  2. Moving Cracks: Determine that crack is moving. Clean out crack by brushing and oil-free compressed air. Fill crack with polyurethane sealant. Allow for a minimum of twelve (12) hours cure or as required by sealant Manufacturer. Following full curing of primer, apply waterproofing resin and 4 inch (10 cm) wide strip of membrane (resin and fleece) in strict accordance with Membrane manufacturer's written instructions.

### **3.04 SBS BASE SHEET TEMPORARY ROOF / VAPOR RETARDER INSTALLATION**

- A. Install Cap Sheet: Install mineral-surfaced cap sheet in accordance with sheet manufacturer's current published specifications and recommendations for use with

adhered roofing.

- B. Mineral Surfaced Cap Sheet/SBS Base sheet Torch-Applied Attachment: Follow cap sheet manufacturer's recommendations for the appropriate application procedure. Roll each cap sheet into molten bitumen. Limit bitumen bleed-out at laps to 1/4" or less.
- C. Mineral Surfaced Cap Sheet Self-Adhered Attachment: Follow cap sheet manufacturer's recommendations for the appropriate application procedure.
- D. Fit Cap Sheet/SBS Base Sheet: Neatly fit cap sheet to all penetrations, projections, curbs, and walls. Extend over all nailers. Cap sheet shall be overlapped a minimum of 3" for side laps and 6" for end laps. Seal at penetrations, projections, curbs and walls with urethane-based sealant. Do not use asphaltic flashing cement.

### 3.06 PRIMER APPLICATION

- A. General:
  - 1. Mix and apply single and two-component primer in strict accordance with written instructions of Membrane Manufacturer. Use only proprietary materials, as supplied by the membrane manufacturer.
  - 2. The substrate surface must be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth wipe or a combination of methods.
  - 3. Do not install primer on any substrate containing newly applied and/or active asphalt, coal- tar pitch, creosote or penta-based materials unless approved in writing by Membrane Manufacturer. Some substrates may require additional preparation before applying primer.
- B. Application of Primer:
  - 1. Roll or brush the primer evenly onto the surface to fully saturate the substrate in one application. Do not allow primer to pond or collect in low areas. Follow manufacturer's recommended application rates to ensure that a thin layer of cured primer remains on the substrate surface.
  - 2. Apply primer only up to the edge of the membrane flashing terminations. Primer application past the membrane terminations requires surfacing with an approved material.
  - 3. Allow standard primers to cure for a minimum of twelve (12) hours before membrane application or as indicated in manufacturer's written instructions. Allow quick-dry primers to cure for a minimum of four (4) hours before membrane application or as indicated in manufacturer's written instructions. Membrane must be applied to primer only when completely dry and without tack.
  - 4. Exposure of the primer in excess of eight (8) days or premature exposure to moisture may require removal and application of new primer. DO NOT apply new primer over exposed primer older than eight (8) days, primer prematurely exposed to moisture, or primer used as temporary waterproofing, unless approved in writing by the Membrane Manufacturer.
- C. Disposal of Primer:
  - 1. Cured primer may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components.
  - 2. Uncured primer is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulation. Do not through uncured resin away.

### 3.05 INSULATION / COVER BOARD INSTALLATION

- A. General: Insulation and cover board shall be installed in accordance with the insulation/cover board manufacturer's current published specifications and recommendations for use with adhered roofing.
- B. Install Insulation/Cover Board: Install only as much insulation and cover board as can be primed, sealed, and protected before the end of the day's work or before the onset of inclement weather.
- C. Fit Insulation/Cover Board: Neatly fit insulation/cover board to all penetrations, projections, and nailers. Insulation shall be loosely butted, with gaps not greater than 1/4". All gaps greater than 1/4" shall be filled with acceptable insulation. Cover board shall be loosely butted, with gaps not greater than 1/4". All gaps greater than 1/8" shall be filled with primer; all gaps greater than 1/4" shall be filled with polyurethane sealant.
1. Strip-In Cover Board Joints: Strip all cover board joints with four inch (4") wide strip of flashing membrane. Under no circumstances shall the membrane be left unsupported over a space greater than 1/4".
  2. Stagger Insulation/Cover Board Joints: When installing multiple layers of insulation, all joints between succeeding layers shall be staggered a minimum of 6" in each direction.
  3. Steel Deck Substrates: Place boards perpendicular to steel deck flutes with edges over flute surface for bearing support. Edges shall be checked so that no edges are left substantially unsupported along the flutes.
  4. Drain Sumps: Insulation shall be feathered or tapered to provide a sump area a minimum of 36" x 36" where possible at all drains. Taper insulation around roof drains so as to provide proper slope for drainage. In areas where feathered or tapered insulation leaves insulation core exposed, cover with an appropriate cover board or base sheet/cap sheet assembly to provide a sound and smooth substrate surface.
  5. Polyurethane Adhesive Attachment: Follow insulation/cover board and adhesive manufacturers' recommendations for the appropriate adhesive application rate and application procedure. Under normal application rate, dispense the first bead 3" inside the outside edges of the insulation/cover board to be attached, with sequential beads equidistant. Place the boards onto the roofing adhesive beads. Walk on the boards to spread the roofing adhesive for maximum contact. Periodically walk on the boards until firmly attached. Reference FM approvals for adhesive application patterns that satisfy FM wind uplift requirements. Typical application is a 3/4" bead of roofing adhesive at a rate of one lineal foot per square foot of insulation/cover board to be attached. Note: additional adhesive is required in the corner and perimeter regions of the roof. Secure insulation/cover board in accordance with approval requirements.

### 3.07 MEMBRANE APPLICATION

- A. General:
1. Follow application procedures as indicated in manufacturer's written instructions
  2. 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.
  3. Mix and apply cold fluid-applied reinforced polyurethane waterproofing membrane in strict accordance with written instructions of Membrane Manufacturer. Use only proprietary membrane resins and materials, as supplied by the membrane manufacturer.
  4. The primed substrate surface shall be dry, with any remaining dust or loose particles

removed using clean, dry, oil-free compressed air, industrial vacuum, cloth-wipe or a combination.

5. Protect all areas where membrane has been installed. Do not work off installed membrane during application of remaining work before forty-eight (48) hours of curing. Movement of materials and equipment across installed membrane is not acceptable. If movement is necessary, provide complete protection of affected areas.
  6. Closely follow the Membrane Manufacturer's recommendation for hot and cold weather application. Monitor surface and ambient temperatures, including the effects of wind chill.
- B. Mixing of Resin:
1. Mix resin component/s per roofing system manufacturer's latest technical guidelines.
  3. Prepare only that amount of resin that can be used in 30 minutes.
- C. Application of Resin/Fleece:
1. Apply mixed resin to the prepared surface at the manufacturer's recommended application rate. The resin should be rolled or brushed liberally and evenly onto the surface using a broad, even stroke. Cover one working area at a time, between 15 - 20 ft.2 (1.4 - 1.9 m2).
  2. Roll out dry polyester fleece onto the liquid resin mix, making sure the SMOOTH SIDE IS FACING UP (natural unrolling procedure), avoiding any folds and wrinkles. The fleece will begin to rapidly saturate with the liquid resin mix. Use a medium nap roller or brush to work the resin into the fleece, saturating from the bottom up, and eliminating air bubbles, wrinkles, etc. It is important to correct these faults before the resin cures.
  3. Apply additional liquid resin mix on top of fleece at the manufacturer's recommended application rate to finish the saturation of the fleece. Roll this final coating into the fleece, which will result in a glossy appearance. The fleece can only hold so much resin and all excess should be rolled forward to the unsaturated fleece, eliminating ponding or excessive build-up of the resin. The final resin coating should be smooth and uniform.
  4. Approximately 2/3 of the total resin should be applied to the substrate below the fleece reinforcement, and 1/3 of the total resin should be applied over the fleece reinforcement.
  5. Prevent contact between mixed/unmixed resin and new/existing membrane. If any unmixed resin contacts membrane surface remove immediately and clean thoroughly with a cloth rag.
  6. At all fleece seams, allow a 2" (5 cm) overlap for all side joints and a 4" (10 cm) overlap for all end joints.
  7. At membrane tie-offs, clean in-place membrane with MEK (methyl ethyl ketone) solvent or acetone once resin has cured. Allow solvents to fully evaporate before application of new resin.
- D. Disposal of Resin:
1. Cured resin may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components.
  2. Uncured resin is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulation. Do not throw uncured resin away.

### 3.08 FLASHING APPLICATION

- A. General:
1. Install flashing system in accordance with the requirements / recommendations of the Membrane manufacturer and as depicted on standard drawings and details. Provide

system with base flashing, edge flashing, penetration flashing, counter flashing, and all other flashings required for a complete watertight system.

2. Wherever possible, install the flashings before installing the field membrane to minimize foot traffic over newly installed field membrane.
3. All membrane flashings shall be installed concurrently with the waterproofing membrane as the job progresses. Temporary flashings are not allowed without prior written approval from the Membrane manufacturer. Should any water penetrate the new waterproofing membrane because of incomplete flashings, the affected area shall be removed and replaced at the contractor's expense.
4. Provide a minimum vertical height of 8" for all flashing terminations. Flashing height shall be at least as high as the potential water level that could be reached as a result of a deluging rain and/or poor slope. Do not flash over existing through-wall flashings, weep holes and overflow scuppers.
5. All flashings shall be terminated as required by the Membrane Manufacturer.
6. Alkalinity surface protection consisting of one application of EP primer and one application of approved broadcast mineral aggregate surfacing shall be applied wherever stone, concrete, or masonry elements will be placed directly over the flashing.

**B. Metal Flashing - General:**

1. Metal flashings shall be fabricated in accordance with the current recommendations of SMACNA and in accordance with standard drawings and project details.
2. Metal flashing flanges to which membrane is to be bonded shall be a minimum of four (4) inches in width, and secured to the substrate or wood nailers six (6) inches on center staggered with fasteners appropriate to the substrate type. The flanges shall be provided with a roughened surface that has been cleaned of all oil and other residue.
3. Metal edges that will be overlaid with membrane shall be provided with a 1/4" min. hemmed edge.
4. Apply primer, resin and fleece to metal flange, extending membrane to outside face of metal edging, and to vertical face of metal base/curb flashing.

**C. Membrane Flashing - General:**

1. Membrane flashings shall be fabricated with primer appropriate for the substrate surface, resin of the same base chemical type as the field membrane, and fleece of the same weight as the field membrane unless specified otherwise.
2. Primer, resin, and fleece mixing and application methods as specified for field membranes are also suitable for membrane flashing.
3. Fleece shall overlap 2" (5 cm) minimum for all joints. Fleece shall be cut neatly to fit all flashing conditions without a buildup of multiple fleece layers. Work wet membrane with a brush or roller to eliminate blisters, openings, or lifting at corners, junctions, and transitions.

**D. Pipes, Conduits, and Unusually Shaped Penetrations:**

1. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

**E. Drains and Scuppers:**

1. Acceptable drain and scupper materials are cast iron, cast aluminum, and copper.
2. Connect new drains and scuppers to existing storm sewer system.
3. Alternatively, replace all broken or damaged parts of existing drains and scuppers.



4. Flashing material shall extend four (4) inches minimum onto drain or scupper flange and into drain/scupper body.
5. Install clamping ring if provided as part of the drain or scupper design. Install a strainer basket to prevent debris from clogging the drainage line.

F. Hot Stacks:

1. Protect the membrane components from direct contact with steam or heat sources when the in-service temperature exceeds 170 degrees F. In all such cases flash to an intermediate "cool" sleeve.
2. Fabricate "cool" sleeve in the form of a flanged metal cone using galvanized metal, mechanically attached to the structure or wood nailers.
3. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

G. Flexible Penetrations:

1. Provide a weathertight gooseneck of round cross-section for each penetration or group of penetrations. Set in water cut-off mastic and secure to the structural substrate.
2. Acceptable gooseneck material is copper, of a sheet weight appropriate for the application.
3. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

H. Walls, Curbs and Base Flashings:

1. Wall, curb and base flashings shall be installed to solid substrate surfaces only. Adhering to gypsum-based panels, cementitious stucco, synthetic stucco, wood or metal siding, and other similar materials is not acceptable.
2. Reinforce all transition locations and other potential wear areas with a four (4) inch wide membrane strip evenly positioned over the transition prior to installing the exposed flashing layer.
3. Reinforce all inside and outside corners with a four (4) inch diameter conical piece of membrane prior to installing the exposed flashing layer.
4. All pins, dowels and other fixation elements shall be flashed separately with a vertical flashing component prior to installing the exposed flashing layer.
5. Extend flashing a minimum of four (4) inches onto the field substrate surface.

I. Drip Edges and Gravel Stops:

1. Metal drip edges and gravel stops shall be installed to solid substrate surfaces or wood nailers only. Securement to gypsum-based panels, cementitious stucco, synthetic stucco, wood or metal siding or coping, and other similar materials is not acceptable.
2. Flash all drip edges and gravel stops by extending the field membrane all the way to the edge of the exposed face prior to installing the metal edging. Strip in the metal flange with a separate 8 inch wide strip of membrane adhered to both the securement flange and to the field membrane.
3. For conditions where water infiltration behind the exposed drip edge or gravel stop face is possible, install a separate membrane layer positioned behind the face area and extending a minimum of four (4) inches past the securement flange onto the field substrate prior to installing the drip edge or gravel stop.

- J. Field Fabricated Control or Expansion Joint Flashing:
  - 1. Control or expansion joints in excess of two (2) inches in width and all expansion joints subject to vehicular traffic require the use of a separate engineered joint system.
  - 2. Grind or otherwise bevel the inside edges of the joint opening to provide a smooth transition edge for the fleece.
  - 3. Flashing typically consists of a fully saturated membrane bottom layer looped into the joint as a cradle, a compressible foam or rubber insert at 25% compression fitted into the joint, and a membrane top layer applied over the joint. Extend both fleece layers four (4) inches minimum onto the field substrate on both sides of the joint.
  - 4. Apply the field membrane over the entire joint area.
- K. Electrical Conduit, Gas Lines and Lightning Protection
  - 1. Supports for electrical conduit and gas lines greater than one (1) inch in diameter require the use of a separate engineered support system.
  - 2. Supports for electrical conduit and gas lines one (1) inch or less in diameter, and bases for lightning protection rods and cable, can be adhered directly to the membrane surface with a single-component, high quality polyurethane sealant.

### **3.09 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.

### **3.10 PROTECTIVE SURFACING**

- A. Aggregate Finish Walkway Surfacing
  - 1. Where specified, provide and install approved kiln-dried silica sand, or other approved mineral surfacing to achieve a non-skid walkway surface.
  - 2. Tape off areas designated to be walkway areas.
  - 3. Pre-mix single-component and two-component coatings prior to application to achieve an even consistency.
  - 4. Broadcast specified and approved sand or aggregate in excess into a supplemental bonding coat of membrane resin applied over clean, cured membrane at the manufacturer's recommended application rate. Aggregate shall be applied to excess to obtain uniform and full coverage.
  - 5. 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.
  - 6. 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.

**B. Alkalinity Protection**

1. Where placement of concrete, mortar or adhesive setting beds are required over sections of the waterproofing membrane or flashing, apply manufacturer's epoxy primer/coating at the manufacturer's recommended coverage rate, with broadcast to excess of kiln-dried silica sand into wet primer/coating.
2. Protection shall extend a minimum of one (1) foot (0.3m) past the concrete form on all sides.
3. Provide continuous cleaning with water and brush to eliminate settlement of concrete residues on in-place waterproofing membrane adjacent to area of concrete placement.

**3.11 TEMPORARY CLOSURES AND WATER-STOPS**

- A. Contractor shall be responsible to ensure that moisture does not damage any completed section of the new waterproofing system. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition. All temporary closures shall be made as recommended or required by the membrane manufacturer.

**3.12 PROTECTION**

- A. Upon completion of waterproofing and flashings (including all associated work), institute appropriate procedures for surveillance and protection of roofing during remainder of construction period. Protect all areas where membrane has been installed.

**3.13 FIELD QUALITY CONTROL**

- A. Site Condition: Leave all areas around job site free of debris, roofing materials, equipment and related items after job completion.
- B. Notification of Completion: Notify the membrane manufacturer of job completion and schedule a final inspection date.
- C. Final Inspection: A meeting at the completion of the project with the membrane manufacturer's technical field representative to evaluate the completed installation of the field and flashing membrane. All punch list items are to be completed prior to the scheduled meeting.
- D. Issuance of the Warrantee: Complete all post installation procedures in accordance with the manufacturer's guidelines for warranty issuance of the specified warrantee.

**3.14 CLOSE-OUT ACTIVITIES**

- A. Correction of Work:
1. Work that does not conform to specified requirements including tolerances, slopes, and finishes shall be corrected and/or replaced. Any deficiencies of membrane application, termination and/or protection as noted during the Membrane Manufacturer's inspections shall be corrected and/or replaced at Contractor's expense.
- B. Clean-Up:
1. Site clean-up, including both interior and exterior building areas that have been affected by construction, shall be restored to preconstruction condition

**END OF SECTION**

## DIVISION 7 – THERMAL AND MOISTURE PROTECTION

### SECTION 07 62 00

#### FLASHING: SHEET METAL AND FLEXIBLE

##### PART 1 - GENERAL

###### 1.01 SUMMARY

- A. This Section includes in-wall and counter flashing, and related accessories.

###### 1.02 SUBMITTALS

- A. Product Data: For each product specified in Part 2 - Products.
- B. Samples:
  - 1. Sheet Metal: For each type to be incorporated in the Work. Samples shall be 12" square.
  - 2. Pre-formed Sheet Metal Flashing: For each type to be incorporated in the Work. Samples shall be 12" long.
  - 3. Sheet Metal Counterflashing: For each type to be incorporated in the Work. Samples shall be 12" long.
  - 4. Accessories: For each type of termination bar, metal clip, strap, anchor, masonry nails (w/ washer), and fastener to be incorporated in the Work.
- C. Fabricator Qualifications: For sheet metal fabrications. Obtain written acceptance from Architect, prior to commencement with fabrication Work.

##### PART 2 - PRODUCTS

###### 2.01 SHEET METAL

- A. **Stainless Steel Sheet Metal**
  - 1. Comply with AISI Type 302/304. ASTM A 167 2D annealed finish, soft, except where harder temper is required for forming or performance.
  - 2. Nominal thickness 24 gauge.

###### 2.02 PRE-FORMED SHEET METAL FLASHING

- A. **Pre-Formed Sheet Metal Flashing**
  - Pre-Formed Sheet Metal Pan**
  - Interlocking Stainless Steel Flashing**
    - 1. One piece, break formed stainless steel, 24 ga unless otherwise indicated.
    - 2. Hemmed Edge and soldered corner seams.
    - 3. Provide manufacture's shop drawings with the Contractor's Company and review dates must be submitted for review and final approval by NYCHA during the submissions process for the

Pre-Formed Sheet Metal Flashing systems. No fabrication is permitted before receiving approval of the shop drawings

4. Stainless steel shall be Type 304 (2D) dull, non-reflective finish, conforming to Federal Specification QQ-S-766 (dead soft fully annealed)
5. Corners of Fascia, coping, sump and cap flashing shall be prefabricated, one piece with soldered or welded seams.
6. Gauges for sheet stainless steel shall be U.S. Standard; gauges for non-ferrous metals shall be B & S.
7. If solder is used for stainless steel shall be 40 percent lead and 60 percent tin (new materials) and shall conform to ASTM B-32. Flux shall meet Federal Specifications O-F-506.
8. Acceptable Manufacturers, or equal:
  - METAL - ERA, INC.  
16000 Airport Road, Waukesha, WI 53188  
Phone: (262) 549 – 6900 Fax: (262) 549 – 6009 Internet: [www.metalera.com](http://www.metalera.com)
  - B&B SHEET METAL  
24-40 50<sup>th</sup> Ave.,  
LIC, NY, Phone: (718) 433 – 2501
  - HICKMAN ENGINEERED SYSTEMS  
4 Commerce Way, Arden, NC 28704  
Phone: 828-676-1700 Fax: 828-676-2330 Internet: [www.wph.com](http://www.wph.com)

**B. Metal Clip**

1. Comply with AISI Type 302/304. ASTM A 167 2D annealed finish, soft, except where harder temper is required for forming or performance.
2. Nominal thickness 22 gauge 2" wide.

**C. Door Saddle**

1. Door Saddle shall be 1/8" thick checkered plate steel, hot dipped galvanized in accordance with ASTM A123. After welding/installing the saddles they shall receive field "touch up" galvanization and then painted with a primer compatible with galvanization and receive 2 finish coats of alkyd enamel.

**D. Drip Edge**

1. Stainless steel, 22 ga.

**2.03 EXPANSION JOINT**

**A. Premanufactured Expansion Joint Flashing**

1. Premanufactured expansion joint with 60 mil neoprene bellow with neoprene and aluminum terminations. Bellow supports compressible rod stock of extruded polyethylene, size as required to conform to the size of the bellow. Supply all custom made, factory-fabricated intersections, joints, splices and closures.
- (1) Expansion joint & accessories must be compatible, supplied and approved by the Manufacturer of the overall roofing system to be included in the specified 20-year full system materials and labor warranty.
- (2) Shop drawings of all joints, splices, intersections and closures shall be supplied by the manufacture for the architects review.

**B. Batt Insulation**

1. Mineral Fiber Insulation: Glass fibers and resinous binders formed into flexible batts meeting ASTM C 665, Type 1. Support insulation within expansion joint with polyethylene sling, vapor barrier.

**2.04 FABRIC FLASHING**

**A. Modified Bitumen Fabric Flashing**

**Adhesive Membrane**

1. Perm-a-barrier End Dams (40 mil.) Grace
2. Or Equal

**B. Composite Fabric Flashing**

1. Multi-Flash SS Stainless Steel Fabric Laminate (2 mil / 0.002") York

**2.05 FLASHING CEMENT/ UTILITY MASTIC**

**A. Utility Mastic**

1. Cop-R-Tite York
2. Or Equal

**B. Flashing Cement**

1. MBR Flashing Cement (2 part) Johns Manville
2. Or Equal

**2.06 ANCHORS**

**A. Wedge Anchors**

1. Zamac Nail Powers Fasteners or an approved equal  
Stainless Steel 1/4" x 1-1/2" nail with expandable casing

**2.07 PIPE INSULATION AND FLASHING**

**A. Weather Jacket**

1. Flex Clad 250 MFM Building Products
2. Solarshield Grace Building Products

**B. Insulation**

1. Fiberglass pipe insulation to match existing insulation R-Value.

**2.08 ACCESSORIES**

**A. Stainless Steel Fasteners**

1. Same metal as flashing/ sheet metal or other non-corrosive metal. For manufactured products, use fasteners recommended by manufacturer.

**B. Metal Accessories**

1. Sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of Work, matching or compatible with material being installed, non corrosive, size and gage required for performance.

**C. Lead Wedges**

1. Type recommended by flashing sheet manufacturer for reglet flashing installation.

**D. Pop Rivets**

- |                               |         |
|-------------------------------|---------|
| 1. POP Rivet                  | Stanley |
| Match material being secured. |         |

**E. Termination Bar**

- |   |                 |
|---|-----------------|
| 1. York 26 Gauge Stainless Steel Termination Bar w/<br>Sealant Lip<br>Stainless Steel | York            |
| 2. T-2 Termination Bar<br>Stainless Steel   | Hohmann-Barnard |

**2.09 FABRICATED UNITS**

- A. General Metal Fabrication: Shop fabricate sheet metal units to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather resistant performance; with expansion provisions for running, sufficient to permanently prevent leakage, damage or deterioration of the Work. Form units to fit substrates. Form exposed sheet metal Work without excessive oil canning, buckling and tool marks, true at line and levels indicated, with exposed edges folded back to form hems.
- B. Seams: Fabricate nonmoving seams in sheet metal with flat lock seams. For metal, tin edges to be seamed, form seams, and solder.
- C. Expansion Provisions: Where lapped or bayonet type expansion provisions in Work cannot be used, or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant (concealed within joints).
- D. Sealant Joints: Where movable, non expansion type joints are indicated or required for proper performance of Work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.

### **PART 3 - EXECUTION**

#### **3.01 INSTALLATION REQUIREMENTS**

- A. General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations, and with SMACNA "Architectural Sheet Metal Manual".
- B. Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units. Conceal fasteners where possible.
- C. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.
- D. Install membrane flashing in accordance with manufacturer's recommendations. Seam adjacent flashing sheets with adhesive, seal and anchor edges in accordance with manufacturer's recommendations.
- E. Nail flanges of expansion joint units to curb nailers, at maximum spacing of 6". Fabricate seams at joints between units with minimum 3" overlap, to form a continuous waterproof system.
- F. All stainless steel shall be given one brush coating of asphalt cement.

#### **3.02 CLEANUP AND PROTECTION**

- A. Clean exposed metal surfaces, removing substances which might cause corrosion of metal or deterioration of finish.
- B. Ensure that work will be without damage or deterioration, other than natural weathering, at time of substantial completion.

**END OF SECTION**



**DIVISION 7 – THERMAL AND MOISTURE PROTECTION**  
**SECTION 07 71 13**  
**MANUFACTURED COPINGS AND FASCIAS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes roof edge metal flashing / fascia and related accessories.

**1.02 SUBMITTALS**

- A. Product Data: For each product specified in Part 2 - Products.
- B. Samples:
1. Sheet Metal: For each type to be incorporated in the Work. Samples shall be 12" square.
  2. Pre-formed Sheet Metal Flashing: For each type to be incorporated in the Work. Samples shall be 12" long.
  3. Sheet Metal Counterflashing: For each type to be incorporated in the Work. Samples shall be 12" long.
  4. Accessories: For each type of termination bar, metal clip, strap, anchor, masonry nails (w/ washer), and fastener to be incorporated in the Work.
- C. Fabricator Qualifications: For sheet metal fabrications. Obtain written acceptance from Architect, prior to commencement with fabrication Work.

**PART 2 - PRODUCTS**

**2.01 GENERAL**

- A. Sheet Metal for Various Elements shall meet the following requirements:

The fascia, fascia sumps coping and cap flashing systems:

1. The fascia, fascia sumps and cap flashing system should have their own guarantee but must be compatible with and covered by the roofing manufacturers 30-year guarantee roofing system. Proof of the guarantees must be provided as part of the shop drawing submission (see below)
  - a. The Fascia, sump, coping and cap flashing metal systems shall be stainless steel and each profile which is designed/detailed for each location shall be tested and certified to meet ES-1 wind uplift standards.
  - b. In addition the coping must meet Fm-1 -90/ Class A fire resistance.
  - c. Manufacture's shop drawings with the Contractor's Company and review dates must be submitted for review and final approval by NYCHA during the submissions process for the Fascia, sump, Coping and cap flashing metal systems. No fabrication is permitted before receiving approval of the shop drawings

- d. Fascia /Sumps and coping must be installed by the manufacturer's pre-certified installer or at minimum the manufacturer's representative must be present and approved the sample installation of all metal systems
  - e. Stainless steel shall be Type 304 (2D) dull, non-reflective finish, conforming to Federal Specification QQ-S-766 (dead soft fully annealed)
  - f. Corners of Fascia, coping, sump and cap flashing shall be prefabricated, one piece with soldered or welded seams.
  - g. Gauges for sheet stainless steel shall be U.S. Standard; gauges for non-ferrous metals shall be B & S.
    - 1) Fascia/gravel stops & Integral fascia Sumps -: cover 22 gauge/concealed cleat/mounting clip 20 gauge
    - 2) Cap flashing: 24 gauge.
    - 3) Fascia Sump down Spout and Leaders @ Roofs: Leaders shall be 3" x 4" 20 gauge stainless steel and carry water from Downspout down to elbow and splash block with pad on roof below. Accessories shall include: Leader clips, elbows, end caps, inside miters, outside miters, Leader/downspout seal, Leaf screen and miscellaneous supports
  - h. If solder is used for stainless steel shall be 40 percent lead and 60 percent tin (new materials) and shall conform to ASTM B-32. Flux shall meet Federal Specifications O-F-506.
  - i. Acceptable Manufacturers, or equal:
    - METAL - ERA, INC.  
16000 Airport Road, Waukesha, WI 53188  
Phone: (262) 549 – 6900 Fax: (262) 549 – 6009 Internet: [www.metalera.com](http://www.metalera.com)
    - B&B SHEET METAL  
24-40 50<sup>th</sup> Ave.,  
LIC, NY, Phone: (718) 433 – 2501
    - OMG Roofing Products  
153 Bowles Road, Agawam, MA 01001  
Phone: (800) 633-3800  
Internet: [www.omgroofing.com](http://www.omgroofing.com)
    - JOHNS MANVILLE
- B. Also See Section 22 14 26 – Drains, for Integral Fascia Sump Scupper Information, and Section 07 62 00 for Pre-manufactured Sheet Metal Flashing Information.**

## 2.02 SHEET METAL

### A. Stainless Steel Sheet Metal

- 1. Comply with AISI Type 302/304. ASTM A 167 2D annealed finish, soft, except where harder temper is required for forming or performance.

### B. Aluminum Sheet Metal

- 1. Strength and durability of 5005 H15, ASTM B 209; 0.50" thick.
- 2. Aluminum Finishes:
  - a. Comply with NAAMM "Metal Finishes Manual" to produce uniformly finished products. For colored finishes, if any, provide colors or color matches indicated below. If not indicated, as selected by Architect through the submittal process.

- b. Finish: High Performance Coating
- c. Standard: AA C12C42R1x (cleaned with inhibited chemicals, conversion coated and painted with specified organic coating). Apply fluorocarbon coating system consisting of thermo-cured primer, 0.2 mil min. dry film thickness, and thermo-cured fluorocarbon coating containing "Kynar 500" resin, 1.0 mil min. dry film thickness.

## 2.03 PRE-FORMED SHEET METAL FLASHING

### A. Edge Flashing

#### Fascia

- 1. Break formed stainless steel, 22 ga unless otherwise indicated.
- 2. Hemmed Edge and soldered corner seams.

### B. Anodized Aluminum Sill Cap

- 1. Pre-finished aluminum sill, 0.05" thick unless otherwise indicated.

### C. Continuous Cleat

- 1. Break formed stainless steel, 20 ga unless otherwise indicated.
- 2. Hemmed Edge and soldered corner seams.

### D. Fasteners (Sheet Metal)

- 1. Same metal as flashing/ sheet metal or other non-corrosive metal. For manufactured products, use fasteners recommended by manufacturer.

### E. Metal Accessories

- 1. Sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of Work, matching or compatible with material being installed, non corrosive, size and gage required for performance.

## 2.04 FABRICATED UNITS

- A. General Metal Fabrication: Shop fabricate sheet metal units to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather resistant performance; with expansion provisions for running, sufficient to permanently prevent leakage, damage or deterioration of the Work. Form units to fit substrates. Form exposed sheet metal Work without excessive oil canning, buckling and tool marks, true at line and levels indicated, with exposed edges folded back to form hems.
- B. Seams: Fabricate nonmoving seams in sheet metal with flat lock seams. For metal, tin edges to be seamed, form seams, and solder.
- C. Expansion Provisions: Where lapped or bayonet type expansion provisions in Work cannot be used, or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant (concealed within joints).

- D. Sealant Joints: Where movable, non expansion type joints are indicated or required for proper performance of Work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.

### **PART 3 - EXECUTION**

#### **3.01 INSTALLATION REQUIREMENTS**

A. Sheet Metal (General)

1. All sheet metal work, unless otherwise specified, shall have a minimum thickness of (24 gauges U.S. Standard).
2. Fabricate and install sheet metal with lines, arises and angles sharp and true with exposed surfaces free from objectionable waves, warps or buckles.
3. Fold back exposed edges of sheet metal to form a 1/2" min wide hem on the side concealed from view.
4. The finished work shall be leak proof under all weather conditions.
5. Fascia-gravel stops shall have shop-fabricated corners. All corners shall be mitered
6. Fascia-gravel stops, cap flashing and base flashing shall be in lengths not exceeding 10 feet. Fascia and gravel stops must conform to FM-90 wind uplift test.
7. The joints between the lengths of the base flashing shall be 1" flat locked soldered. The joints between individual lengths of fascia-gravel stops shall be butt type, with a minimum of 1/2" space between the individual lengths.
8. All nails exposed to weather shall be flat head screw-tite spiral threaded stainless steel nails of sufficient length to secure metal in place. Heads of nails shall be soldered over.
9. Between dissimilar metals, provide an insulating layer of roofing felt bitumen to prevent electrolytic action. Prime coat all stainless steel in contact with roofing and flashing felts.
10. Sheet metal work shall be reinforced where required.
11. Secure flanges of sheet metal work fastened to wood nailers with stainless steel wire slating nails or stronghold type at a maximum of 6 inches on center in a line 1" from edge of the flange.
12. Stainless steel sheets to be joined by soldering shall be cleaned and edges roughened, and an acid type stainless steel soldering flux shall be applied. After soldering, remove all flux residues by scrubbing, neutralizing with ammonia or washing soda and rinsing with clean water.
13. All stainless steel a (excluding fascias) shall be given one brush coating of asphalt cement.
14. The horizontal flanges of fascia-gravel stops, base flashings, Lead sheets at roof drains and other similar metal work shall be covered with 2 plies of felt strip flashing. The first ply shall be at least 4 inches wider than the horizontal flange; the second ply shall be at least 4 inches wider than the first ply. All plies of felt strip flashing shall be installed in trowel coatings of roof cement prior to flood coat and gravel application.

- B. General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations, and with SMACNA "Architectural Sheet Metal Manual".

- C. Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units. Conceal fasteners where possible.

- D. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.

**3.02 INSTALLATION OF EDGE FLASHING / FASCIA AT BULKHEAD ROOFS**

- A. Remove the existing fascia-gravel stops, patch concrete Bulkhead edge as required. Install new gravel stops w/ fascia with crimped drip edge for stiffening fascia.
- B. Extend flanges of gravel stops 4" and flanges for continuous gravel stops 5" (O.U.N) onto the roof. Securely nail to wood nailers with stainless steel nails at a maximum 4 inches on center, in a row 1" from the edge of the flange. Strip in flashing sheet over edge and set horizontal flange in roofing cement.
- C. Fasteners used to secure gravel stops to concrete or to building exteriors shall be as per fascia manufacturer or 1-1/2" long.
- D. Cleats shall be continuous. Cleat fasteners shall have a minimum penetration of 1-1/2 inches into new wood blocking, and shall be of a type approved by the Authority. All fasteners shall develop minimum pullout strength of 50 lbs for fascia gravel stops and 100lbs for gutter gravel stops.
- E. The blocking to secure fascia flanges and continuous gutter flanges shall match the thickness of the insulation above the concrete slab. Nails shall have minimum penetration of 1", and shall be spaced 16" on center.
- F. Provide a 6" cover plate over all joints; cover plate shall be formed to properly fit the profile of the fascia-gravel stop or gutter- gravel stop.

**3.03 CLEANUP AND PROTECTION**

- A. Clean exposed metal surfaces, removing substances which might cause corrosion of metal or deterioration of finish.
- B. Ensure that work will be without damage or deterioration, other than natural weathering, at time of substantial completion.

**END OF SECTION**

## **DIVISION 7 – THERMAL AND MOISTURE PROTECTION**

### **SECTION 07 92 00**

#### **JOINT SEALANTS**

##### **PART 1 - GENERAL**

###### **1.01 SUMMARY**

- A. This Section includes joint sealants, and related cleaners, primers and accessories (e.g., backer rod, etc.) as shown on the Contract Drawings in the course of roof replacement and as directed by Authorities Representative.

###### **1.02 SUBMITTALS**

- A. Product Data: For each product specified in Part 2 - Products.
- B. Samples:
  - 1. Sealant: For each type and color of sealant to be incorporated in the Work. Samples shall be fully cured.
- C. Pre-construction Test Reports:
  - 1. Compatibility and Adhesion Test Reports.
  - 2. Field Adhesion Test Reports.
- D. Joint Sealant Installation Log (On-demand).
- E. Warranty Prerequisites:
  - 1. Sample Warranty: Prior to installation, submit sample warranty and warranted application procedures from manufacturer.
  - 2. Manufacturer Inspection Reports/Certifications (On-demand).

###### **1.03 PERFORMANCE REQUIREMENTS**

- A. Provide joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

###### **1.04 TESTS AND INSPECTIONS**

###### **1. Preconstruction Testing:**

- A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
  - 1. Use ASTM C 794 OR manufacturer's standard test method, as directed, to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
  - 2. Submit no fewer than the recommended number of samples according to manufacturer's recommendation for each kind of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
  - 3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.

4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
- B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:
1. Locate test joints where indicated on Project or, if not indicated, as directed by the manufacturer's technical or authorized representative.
  2. Conduct field tests for each application indicated below in the presence of manufacturer's technical or authorized representative:
    - a. Each kind of sealant and joint substrate indicated.
  3. Notify the Owner seven days in advance of dates and times when test joints will be erected.
  4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
    - a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
      - 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
  5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
  6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

## **2. Field Adhesion Testing:**

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
1. Extent of Testing: Test completed and cured sealant joints as follows:
    - a. Perform 10 tests for the first 1000 feet (300 m) of joint length for each kind of sealant
    - b. Perform 1 test for each scaffold drop for each substrate.
  2. Test Method: Test joint sealants according to Method A, Field- Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
    - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
  3. Inspect tested joints and report on the following:
    - a. Whether sealants filled joint cavities and are free of voids.
    - b. Whether sealant dimensions and configurations comply with specified requirements.
    - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
  5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
  6. For each failed joint, owner's representative will observe two more tests at locations selected by him or her at the same scaffold drop.
- B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

#### **1.05 JOINT SEALANT INSTALLATION LOG**

- A. Maintain a tabular log of all joint sealant installations including columns for date, temperature, weather conditions, and location(s).

#### **1.06 PROJECT CONDITIONS**

- A. Do not proceed with installation of joint sealants (and primers) under the following conditions:
1. When conditions are outside the limitations permitted by the product manufacturer.
  2. When ambient and joint substrate temperature is below 40° F.
  3. When joint substrates are damp or wet. Comply with ASTM C 1193 Paragraph 5.8.3 (Moisture) and Paragraph 16.2 (Environmental Conditions).
  4. When joints do not comply with requirements for joint configurations and sealant installation tolerances.

#### **1.07 WARRANTY**

- A. Joint Sealant Manufacturer's Warranty: Written form in which manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in the Contract Documents during the warranty period.
1. Warranty Period for Silicone Sealants: Twenty (20) Years, No Dollar Limit (NDL).
- B. Manufacturer's Inspection and Certification:
1. Coordinate inspections required by manufacturer. Provide three (3) business days notice to manufacturer's authorized representative to inspect Work at the required milestones or intervals. No Work is to proceed until after each inspection is completed with written acceptance by manufacturer's authorized representative.
  2. Upon acceptance of completed Work by manufacturer, obtain manufacturer's certification stating that the Work complies with the requirements for Warranty.



**PART 2 - PRODUCTS**

**2.01 GENERAL**

- A. Product Callout Abbreviations Key: Sealant product callouts include the following abbreviations:
  - 1. NT..... Non-traffic
  - 2. NS..... Nonsag
- B. Colors of Exposed Sealant Joints: Where not specifically indicated, Architect will select colors through the sample submittal process.

**2.02 SEALANTS – FOR GENERAL WEATHERSEALING (NON-TRAFFIC / NON-SAG)**

- A. **Sealant: NT(NS)**
  - 1. 795 Silicone Building Sealant Dow Corning
  - 2. Silpruf SCS2000 Momentive Performance Materials
  - 3. Or equal
- B. **Self Leveling Sealant**
  - 1. 734Flowable Sealant Dow Corning

**2.03 PRE-COMPRESSED HYBRID SEALANT**

- A. **Precompressed Expansion Joint**
  - 1. Seismic Colorseal Emseal Joint Systems LTD
  - 2. Or equal

**2.04 CLEANERS AND PRIMERS**

- A. **Cleaner**
  - 1. Non-staining cleaner as recommended by sealant manufacturer for each substrate.
- B. **Primer**
  - 1. Non-staining primer as recommended by sealant manufacturer.
- C. **Backer Rod**
  - 1. As recommended by sealant manufacturer and compatible with sealant, typically closed cell backer rod.
- D. **Bond Breaker Tape**
  - 1. As recommended by sealant manufacturer to prevent bond between sealant and joint filler or other materials at back surface of joint.
- E. **Masking Tape**

1. Pressure sensitive tape that will not leave residue upon removal from substrate (as manufactured by 3M).

### **PART 3 - EXECUTION**

#### **3.01 REMOVAL OF EXISTING JOINT TREATMENT**

- A. Comply with Section 024119 (Selective Demolition) for removal of existing joint sealant (and backings as applicable).

#### **3.02 PREPARATION**

- A. Surface Cleaning of Joints: Clean out joints immediately before installation as follows:
  1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant.
    - a. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants.
    - b. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
  2. Remove laitance and form-release agents from concrete joint substrates.
    - a. Clean nonporous surfaces with cleaner as recommended by manufacturer. Ensure that cleaner does not stain, harm, or leave residues capable of interfering with adhesion of joint sealants on joint substrates.
- B. Joint Priming: Prime joint substrates as recommended by joint sealant manufacturer. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that 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.
- D. Repair or replace damaged substrate caused due to surface preparation or removal of existing sealant or any other material at no additional cost to the contract.

#### **3.03 INSTALLATION**

- A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- B. Install sealant backings of type indicated to support sealants during application and at position required to produce uniform cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  1. Do not leave gaps between ends of sealant backings.
  2. Do not stretch, twist, puncture, or tear sealant backings.
  3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- C. Install sealants at the same time backings are installed and using proven techniques that comply with the following:

1. Place sealants so they directly contact and fully wet joint substrates with sealant.
  2. Completely fill recesses in each joint configuration.
  3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- D. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  2. Provide concave joint configuration per Figure 8A in ASTM C 1193, unless otherwise indicated.

### **3.04 CLEANUP**

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants, and manufacturers of joint substrate materials.

**END OF SECTION**

**DIVISION 8 – WINDOWS AND DOORS**  
**SECTION 08 11 13**  
**EXTERIOR METAL DOORS, FRAMES AND HARDWARE**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. The Contractor for this work is referred to the "FORM OF PROPOSAL", "CONTRACT DRAWING(S)", and all Amendments and Addenda thereto, if any, all of which are hereby made a part of this Contract.

**1.02 SCOPE OF WORK**

- A. The work shall consist of furnishing all labor, materials and other incidental items required, to replace:
  - 1. Stair hall Bulkhead doors, bucks, frames, saddles and hardware.
  - 2. Elevator Motor Room doors, bucks, saddle and Hardware
- B. Prior to submission of his bid, the Contractor shall visit the worksite(s) to verify the existing conditions, dimensions and quantities as set forth in the Contract Documents.
- C. Without limiting the generality of the foregoing, the following items of work are included in the work of this Contract:
  - 1. Removals as and where required to properly install all new work.
  - 2. Replace removed and related missing work with new items and work.
  - 3. Legal disposal of all removed items and debris including the door hardware.
  - 4. Repair surrounding areas to match with existing surfaces.
  - 5. Caulk and paint doors and bucks.

**1.03 GENERAL PROVISIONS**

- A. Include all supplementary miscellaneous items not specified but implied or required in order to complete work described by the Contract Specifications.
- B. Supervise and be responsible for proper location and installation of all items.
- C. Workmanship shall be of good quality and subject to approval of the Authority.
- D. Conduct work in such manner as to provide complete safety to workmen and the public, and provide access to buildings at all times.
- E. Protect work areas against any damage, spattering of paint, etc.
- F. All property of the Authority damaged as a result of the work of this Contract shall be restored to its original condition by the Contractor at no cost to the Authority.
- G. At the end of each day's work, remove and legally dispose of all debris. Material not used during the day shall be removed from the project grounds to a designated storage area. No used or unused materials or equipment will be permitted to remain on the grounds after workmen leave.

H. All work areas shall be left broom-clean upon completion of this work.

#### 1.04 SHOP DRAWINGS, SUBMISSIONS AND SAMPLE INSTALLATIONS

A. The Contractor shall submit for the Authority's approval within thirty (30) calendar days calculated from the Authority's Letter of Award, seven (7) copies of a list of proposed materials and shop drawings and two (2) physical sample of each material as indicated below. The list shall indicate brand name, manufacturer, Federal Specification Number, Series and Type (where applicable) to which the item conforms.

1. Doors (Shop Drawing)
2. Door Bucks (Shop Drawing)
3. Spring Hinges (Cat. Cuts)
4. Spring Hinges (Physical Sample)
5. Paint (Cat. Cuts)
6. Roof Door chain (safety chain) mechanism (Cat. Cuts)
7. Roof Door Chain (safety chain) mechanism (Physical Sample)
8. Exit device (Cat Cuts)
9. Exit device (Physical Sample)
10. Segal Lockset (Cat Cut and Physical Sample)
11. Mortise lockset (Physical Sample)
12. Mortise lockset (Cat. Cuts)

**The submissions shall be tendered complete, at one time, in single package. Partial submissions will not be accepted.**

B. The submission shall be checked by the Contractor and shall bear his stamp of approval as evidence that they have been checked by him. Submission not bearing the aforementioned stamp of approval will be returned to the Contractor without checking. One (1) copy of each submission requiring corrections will be returned to the Contractor marked as necessary.

1. Seven (7) copies each of all submissions returned for correction shall be resubmitted with the required corrections made within ten (10) consecutive calendar days calculated from the date of rejection. Under no circumstances will submissions be accepted more than sixty (60) consecutive calendar days after the Letter of Award.
2. The Authority will then return three (3) copies each of all submissions to the Contractor.

C. Shop Drawings shall show gauges, thicknesses, sizes and construction of all members as well as the manner of assembling them. Shop Drawings shall also show profiles, connections to adjoining work & methods of anchoring.

D. All physical samples shall be in original manufacturer's containers, wrappings, etc. Unless specified in the Contract, all samples shall become the property of the Authority.

E. No work shall be fabricated or materials delivered to the site until final approval of all Shop Drawings and/or other required submissions has been obtained. Final approved copies of all Shop Drawings must be complete without added corrections, notes or comments in pencil or ink on the whiteprints or blueprints. The approval by the Authority of such Drawings shall not relieve the Contractor from responsibility for deviations from the Contract Specifications, unless he has, in writing, called attention to the Authority to such deviations at the time of submissions and shall not relieve the Contractor from responsibility for error of any sort in such drawings

F. Sample installation:

A complete sample of installation of:

1. Stairhall Bulkhead Door, Frame, Buck, Saddle & Hardware and
2. Elevator Motor Room Door, Frame, Buck, Saddle and Hardware

will be required after all submissions and shop drawings have been approved. The complete installation must be approved before commencing further work under this Contract. All contract work shall conform to the approved sample installation.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Only the latest editions and/or revisions of referenced Standards, Codes and Specifications in force at the date of bid opening shall be applicable unless otherwise specifically noted.
- B. Gauges, Thickness and Weights of Metal shall not be less than those hereinafter specified.
- C. All doors shall have a 1-1/2 HR fire rating and bear a Fire Rating label.
- D. Steel for exterior doors bucks shall be hot dip galvanized to 0.60 oz/ft<sup>2</sup> per USS A-60 coating designation and conform to ASTM A123.

### 2.02 DOORS

**NOTE:** The clearance between the new door and the new buck shall not be more than 3/16" at the head and jambs. The clearance at the bottom shall not be more than 7/16".

The minimum clearance at the jambs and at the head shall not be less than 1/8" and 3/16" at the bottom.

#### A. Steel Door

1. Doors shall be flush design on both sides and properly sized. They shall be 1-3/4" thick.
2. Door cover sheets shall be made of not less than No. 16 U.S.S. gauge, free from visible waves or other surface defects. Cover sheets shall be rigidly connected and reinforced on the inside with continuous interlocking 20 gauge "zee channel" or other approved type stiffeners spaced not more than 8" apart and spot welded to cover sheets at intervals of not more than 4". The top and all sides of doors shall be closed flush and there shall be no visible seams on faces or edges. All hollow spaces in doors shall be adequately filled with strips of cork, rockwool or other approved material to meet the required fire resistive rating, where applicable. Moldings or glazing beads shall be of 20 gauge, applied with oval head brass tamperproof screws.
3. All work shall be accurately and neatly fabricated. Doors shall be adequately reinforced and properly countersunk for hardware. Reinforcement for the full-mortise hinges shall run full height of door continuously and be not less than 1/4 inch thick.
4. Doors shall be drilled and tapped as required for attachment of all hardware, accurately and in conformance to templates furnished by the hardware manufacturers. Door bevels shall be adjusted to conform with the bevels of the lock faces.

5. For doors swinging out, provide an 18 gauge channel over top of door, with the flanges spot welded 6 inches on center on each side of door, and welded watertight at each end of web and flanges.
6. Doors shall be constructed to conform to the requirements of N.Y. City Building Code and the Board of Standards and Appeals to receive the fire resistant rating for type of opening in which they occur.

## 2.03 DOOR BUCKS

### A. Steel Door Frame

1. Bucks for doors shall be made of not less than 12 gauge steel (ASTM A-366), galvanized to 0.6 oz. per sq. ft. as per USS A-60 coating designation. Internal surfaces of frames shall have a heavy factory applied coat of bituminous paint.
2. Bucks to be set in masonry block partitions shall be of two piece units anchored to substrate with expansion anchors and welded construction type. Welds on exposed surfaces shall be ground smooth.
3. Bucks shall be provided with all necessary cutouts, reinforcements, drilling and tapping for the specified hardware. Reinforcement for hinges shall run full height of buck continuously and shall be not less than 1/4 inch thick. Reinforcing for strikes shall be not less than 1/8 inch thick. Reinforcement shall be of 1/8 inch thick stock (minimum) and shall be heavier, where required, to develop the full strength of the screws used for securing the hardware. Reinforcement shall be offset so that the faces of the butts are flush with the face of the rabbet. Reinforcement shall be welded in place at the factory. Bucks shall be reinforced at the head to receive chains for full width of buck. All templates required to properly locate mortises, reinforcements and holes shall be secured by the Contractor from the finish hardware manufacturer.
4. Bucks shall be primed on all sides and be in smooth and satisfactory condition to receive finish coats of paint.
5. Bucks shall be provided with an approved metal spreader at bottom before shipment so that they hold and maintain their shape. Spreaders shall be removed when directed by the Inspector or after the frames are set in place.
6. Bucks shall be properly located, lined up and securely anchored in place.
7. Bucks shall be erected plumb and true and shall be braced during installation, if and as required, until there is no danger of movement.
8. The Contractor shall neatly remove the existing masonry work around the existing bucks, remove the existing bucks, set the new buck properly in place and rebuild the wall to its original condition around the buck. The new buck shall be keyed with the wall as originally and shall be anchored to the wall and curb as specified hereinbefore and the space between the masonry work and the buck shall be filled with mortar.

## 2.04 PAINTING AND CAULKING

- A. Before painting, all new and existing metal shall including steel lintels be free of all dirt, rust, oil, grease and any other contaminants and shall be cleaned with "Solvent cleaning". Solvent Cleaning" can be accomplished by using Mineral Spirits or Moore's IMC Oil and Grease Emulsifier (M83). All cleaning shall be done immediately prior to painting. All surfaces to be painted shall be absolutely clean and dry.
- B. All paint shall be approved type complying with the following:

1. Primer paint for new doors and bucks shall be one (1) shop coat of M04 Acrylic Metal Primer as manufactured by Benjamin Moor or approved equal and meeting Federal Spec. TT-P-645B.
  2. Finish paint for new doors and bucks shall be two (2) field coats of M22 Urethane Alkyd Gloss Enamel, manufactured by Benjamin Moor or approved equal, Federal Spec. No. TT-E-489.
  3. The dry film thickness of each coat of paint shall be 2 mils.
  4. Each successively applied coat shall be differently tinted.
- C. No painting shall be done in wet or freezing weather. Bare or abraded spots in shop coat shall be touched up with primer as specified for priming, before applying finish coat of paint.
- D. All finished work shall be free from runs and sags, defective brushing and stippling.
- E. The color of the finish coat will be selected by the Superintendent of the Development.
- F. Door bucks shall be caulked in an approved manner on both inside and outside faces. On existing bucks, remove loose caulking where evident and caulk as on new bucks.
- G. Caulking Compound for caulking around door bucks shall conform to Federal Specification TT-S-00230.

## **2.05 FINISH HARDWARE**

- A. Furnish and install new hardware at all locations where new doors are to be installed.
- B. Where the finished shape or size of members which are to receive hardware is such as to prevent or make unsuitable the use of the exact type specified, suitable type as approved by the Authority shall be furnished having the same quality, operation and function as they type specified and shall be of ample size for the service required.
- C. The Type Numbers specified herein refer to types set forth in the following Federal Specifications and all hardware shall conform to the applicable requirements of the Specifications cited, except as modified herein. Where no Federal Reference or ANSI Reference is available, description of physical characteristics are given.
- FF-H-106c - Builders Hardware; for Locks and Door Trim
- FF-H-IIIc - Builders Hardware; for Shelf and Miscellaneous Hardware
- ANSI A 156. 17 American National Standard for Self-Closing Hinges and Pivots
- FF-H-12Id - Builders Hardware; for Door Closers
- D. Exposed surfaces of hardware shall have the following U.S. Standard finishes except as otherwise specified:
1. A US 19 Japan Black finish on steel shall be furnished for all the exterior doors of all buildings, excluding hinges. All interior public space door hardware shall have a US 19 Japan Black finish.
  2. Spring hinges for exterior doors shall be zinc coated to conform with ASTM A153.
  3. All hardware shall be furnished with proper and compatible screws finished to match the items for which they are intended. However, stainless steel screws



shall be used on all exterior doors, bucks and hardware.

- E. Hardware used for doors and bucks shall be made to standard templates and furnished with machine screws.
- F. Hinges are specified by types in accordance with ANSI Specifications descriptive of the types required. In general, hinges of the same type shall be the product of one manufacturer and shall meet the following requirements:
  - 1. Spring Hinges shall meet the requirements of ANSI A156.17, Latest Edition, and shall be the product of one manufacturer. Hinges shall be full mortise meeting or exceeding ANSI Type K 81013, or half surface meeting or exceeding ANSI Type K 81053, as called for on the hardware schedule.
  - 2. Spring hinges must comply with all performance requirements of the Specified ANSI designation, and a certification of such compliance by an independent testing laboratory, shall be submitted to the Authority.

Hinge dimensions shall comply with the following table:

<b>Length of flange Size / Inch</b>	<b>Thickness of flange, Min. / Inch</b>	<b>Diam. of barrel, Min. / Inch</b>
7	.114	1.21

- G. Any questions regarding hardware shall be referred to the Superintendent of the Project and N.Y.C.H.A., Technical Services Department, 23-09 49<sup>th</sup> Avenue, Long Island City, N.Y. 11101. Tel: (718) 707-5732.
- H. All bulkhead doors shall receive a roof door "chain" type stop mechanism (safety chain), consisting of:
  - 1. One, 3 inch x 3 inch x 1/8 inch galvanized staple plate with 1/4 inch diameter galvanized staple welded to the plate and four 1/4 inch x 20 thread/inch galvanized through bolts for fastening plate to door.
  - 2. One, 1 3/4 inch x 2 1/2 inch x 1/8 inch galvanized staple plate with 1/4 inch diameter galvanized staple welded to plate and four No. 12 galvanized machine screws for fastening to door frame.
  - 3. Two, 3 inch triangular galvanized plates 1/8 inch thick attached to chains, plates, and spring with 1 inch diameter split links.
  - 4. The ends of all split links shall be welded.
  - 5. Galvanized extension spring of oil tempered spring wire, not less than 29/32 inches outside diameter, approximately 8 inches long, including 46 looped coils to the body, with an 80 pound pull to 1-1/2 inch.
  - 6. Galvanized steel butt welded passing link chain, 3/16 inch diameter rod, 13 links per foot, approximately 36 inches long and para-rubber or polyvinyl-chloride (plastisol) covering.
  - 7. The spring shall be attached to chain leaving a slack in the chain. When the spring is extended, the chain shall become taut but without sudden tension.
- I. Tamper-proof machine screws shall be used on all door hardware, to reduce the chance of unauthorized removal (ie. spanner or socket pin-head type).

### **PART 3 - INSTALLATION**

#### **3.01 HARDWARE SCHEDULE**

A. Stair hall Bulkhead Doors (Doorways to Roof)

Each door shall have:

- 1-1/2 pair (3) prefinished spring hinges (7" full mortise)
- 1 Exit device, UL listed, PDQ 4200 Series with 4S / 4EN trim or approved equal.
- 1 Safety chain

B. Elevator Motor Room Doors:

Each door shall have:

- 1 pr. satin chrome/ prefinished spring hinges (7" full mortise)
- 1 Mortise lockset and 1 cylinder protection plate, stainless steel, UL listed, HA 113\* Series or approved equal.
- 1 Second Lock installed 19" above door lever, and 1 Protection Plate, stainless steel, UL listed, PDQ KM Series deadbolt or approved equal.
- 1 Safety Chain

#### **3.02 FABRICATION (FRAMES)**

- A. Where not otherwise shown in contract drawings, Bucks that are to be set in concrete walls or other solidly constructed walls shall be of rough buck (anchor strap) and cabinet jamb (frame) welded units type. Bucks which are to be set in masonry block partitions shall be of single unit welded construction type (combination bucks). Rough bucks, cabinet jambs and combination bucks shall have mitered corners rough welded and welds shall be continuous around the entire profile. Welds on exposed surfaces shall be ground smooth. Rough bucks shall be properly expansion bolted to existing work with at least three 5/8 inch diameter steel bolts and steel expansion shields per jamb spacing the bolts not further than 2'-6" apart 4" from ends. Cabinet jambs shall be secured to rough bucks with waterproof, binder thread, size # 16 or heavier sheet metal screws shall be no more than 8 inches o.c. Combination bucks shall be anchored in place with at least three 18 gauge adjustable flat perforated anchors per jamb and field welded to existing or new saddles. Knock down Bucks will not be permitted.
- B. All welds to be ground smooth and filled prior to prime painting.
- C. Floor anchors shall be securely welded inside each jamb for floor anchorage. Where so scheduled or specified, adjustable floor anchors providing not less than 2" height adjustment shall be provided. Minimum thickness of floor anchors shall be 14 gauge.
- D. Whenever the contract drawings indicate jamb/mullion reinforcements of full width, bent steel channels, they shall be spot welded to the hollow metal frame and floor anchors specified above shall be welded to the channel reinforcing.

**END OF SECTION**

## **DIVISION 8 – WINDOWS AND DOORS**

### **SECTION 08 51 00**

#### **METAL WINDOWS AND FRAMES**

##### **PART 1 - GENERAL**

###### **1.01 RELATED DOCUMENTS**

- A. The Contractor for this work is referred to the "Bid Booklet" the "Contract Drawings"; the "Specifications"; Special Notice to Contractor Summary Form" latest edition; the "Form of Proposal", and all amendments and addenda, all of which govern the work of this Contract.

###### **1.02 SCOPE OF WORK**

- A. The work shall consist of furnishing all labor, materials and other incidental items required, to remove under lead abatement procedure and provide windows including hardware and paint
- B. Prior to submission of his bid, the Contractor shall visit the worksite(s) to verify the existing conditions, dimensions and quantities as set forth in the Contract Documents.
- C. Without limiting the generality of the foregoing, the following items of work are included in the work of this Contract:
  - 1. Removals as lead-base safe work practice Division 2 and where required to properly install all new work.
  - 2. Replace removed and related missing work with new items and work.
  - 3. Legal disposal of all removed items and debris.
  - 4. Repair surrounding areas to match with existing surfaces.
  - 5. Caulk ACM as per Division 2 and paint window.

###### **1.03 RELATED WORK**

- A. Sealants: Section 07 92 00
- B. Fixed Louvers: Section 08 91 19

###### **1.04 WORK STANDARDS**

- A. Qualification
  - 1. Installer Qualifications: Installer shall be a company specializing in installation of hollow metal Glazing Systems with a minimum of three (3) years.
  - 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
  - 3. Framing Systems units shall be the product of a single manufacturer.
- B. Certificate/Certifications: Certify that Framing System meets or exceeds performance specified herein.
- C. Project Conditions/Site Conditions

1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; shown recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.
- D. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.
- E. References & Performance Requirements
1. Air infiltration tested in accordance with ASTM E 283.
  2. Water penetration tested in accordance with ASTM E 331.
  3. Structural performance shall be based on:
    - a. Maximum deflection of 1/175 of the span and
    - b. Allowable stress with a safety factor of 1.65. The system shall perform to these criteria under a wind load of 40 PSF.
- F. Approved Manufacturers:
1. Acme
  2. Ceco Corp.
  3. Fenestra.
  4. Pioneer Industries.
  5. Republic Builders Products Corp.
  6. or equal.

#### **1.05 SUBMITTALS**

See Division 01. Submittal-Section 01 33 00.

Shop Drawings: Submit shop drawings for fabrication and installation of hollow metal work. Include details of each frame type, vision light frame types, elevations of window design types, conditions at openings, details of construction, location and installation requirements of reinforcements and all details of joints required by Drawings and connections. Provide a schedule for all windows and frames required by Drawings.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver hollow metal work, packaged within cardboard or crated, to provide protection during transit and job storage.
- B. Inspect hollow metal unit upon delivery for damage. Minor damages may be repaired provided finish items are equal in all respects to new work and acceptable to NYCHA. Remove and replace unacceptable items.
- C. Ordering: Comply with manufacturer's ordering instructions to avoid construction delays.
- D. Packing, Shipping, Handling, and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Hot-Rolled Steel Sheets and Strips: Commercial quality carbon steel, pickled and oiled, complying with ASTM A569 and ASTM A568.
- B. Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A366 and ASTM A568.
- C. Hot Dipped Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A526 and with ASTM A525 – coating designation G90 zinc coating, mill-phosphatized.
- D. Supports and Anchors: Fabricate of not less than 16 gauge sheet metal. Galvanize after fabrication all units to be built into exterior walls, complying with ASTM A153, Class B.
- E. Inserts, Bolts and Fasteners: Manufacturer's standard units, except hot-dip galvanize items to be built into exterior walls, complying with ASTM A153, Class C or D as applicable.
- F. Shop-Applied Paint: Use rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints. Paint galvanized surfaces with rust-inhibiting zinc oxide primer.
- G. All hollow metal window assembly shall be fire rated for exterior wall installation complying with NYC building code.

### **2.02 FABRICATION – GENERAL**

- A. Fabricate hollow metal units to be rigid, neat in appearance and free from defects, warp, or buckle. Accurately form metal to required sizes and profiles. Wherever practicable, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory-assembled before shipment, to assure proper assembly at Project Site. Weld exposed joints continuously, grind, dress, and make, smooth, flush and invisible. Metallic filler to conceal manufacturing defects will not be acceptable.
- B. Exposed Fasteners: Provide countersunk vandal resistant flat Philips or Jackson heads for exposed screws and bolts.
- C. Finish Hardware Preparation: Prepare hollow metal units to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling and tapping in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 "Specifications for window Frame Preparation for Hardware".
  - 1. Reinforce hollow metal units to receive surface-applied hardware.
  - 2. Locate finish hardware as shown on final shop drawings, or if not shown, in accordance with "Recommended Locations for Builders' Hardware", published by National Builder' Hardware Association.

### **2.03 SHOP PAINTING**

- A. Clean, treat and paint exposed surfaces of fabricated hollow metal units, including galvanized surfaces.
- B. Clean steel surfaces of mill scale, rust, oil, grease, dirt and other foreign materials before application of shop paint.

- C. Apply pretreatment to cleaned metal surfaces, using cold phosphate solution (SSPC-PT 2), hot phosphate solution (SSPC-PT 4) or basic zinc chromate-vinyl butyl solution (SSPC-PT 3).
- D. Apply shop coat of prime paint within time limits recommended by pretreatment manufacturer. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 2.0 mils.
- E. Color shall match existing adjacent window color.

#### **2.04 FRAMES**

- A. Provide hollow metal frames for hollow metal windows, vision light panels, trimmed openings and other openings including mullions, all of size and profile, as indicated on the Drawings.
- B. Fabricate frames of full-welded unit construction, with corners mitered, reinforced, continuously welded full depth and width of frame, unless otherwise indicated.
- C. Form frames of 12-gauge hot dipped galvanized steel sheets for exterior.
- D. Finish Hardware Reinforcement: Reinforcement frames for required finish hardware as follows:
  - 1. Sash / Pivots; Steel plate 3/16" thick x 1-1/2" wide x full height of frame, continuously welded to frame.
- E. Frame Anchors: Furnish frame anchors as required to secure frames to adjacent existing wall.
  - 1. Masonry Construction: Adjustable, flat, corrugated, or perforated, T-shaped to suit frame size, with leg not less than two (2) inches by ten (10) inches long. Furnish at least six (6) anchors per frame at plus or minus twelve (12') foot eight (8") inches high window.

#### **2.05 STOPS**

- A. Provide flush type stops around glazed.
- B. Form flush fixed stops integral with frame. Provide flush fixed stops on inside of hollow metal units exposed to exterior.
- C. Provide flush removable solid bar stops or 16 gauge hollow metal tube. Secure with stainless steel (sst.) pan head temper-proof screws placed uniformly no more than twelve (12) inches o.c. with Teflon film or tape. Form corners with butted hairline joints. Coordinate width of rabbet between fixed and removable stops with type of glass indicated.

### **PART 3 - EXECUTION**

#### **3.01 INSPECTION**

- A. Prior to installation of all Work of this Section, carefully inspect the installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. In event of discrepancy, do not proceed with installation until such discrepancy has been fully resolved.

#### **3.02 INSTALLATION**

- A. Install hollow metal window unit and accessories in accordance with the final shop drawings, manufacturer's data, and as herein specified.

- B. Placing Frames: Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged.
  - 1. Make field splices in frames and detailed on final shop drawings, welded and finished to match factory work.
  - 2. Horizontally pivoted sections of window unit and specified Glazing Installation: Fit hollow metal horizontally pivoted sections of window unit and specified Glazing accurately in their respective frames, as per manufacturer's clearances.

**3.03 ADJUST AND CLEAN**

- A. Final Adjustments: Check and readjust operating finish hardware items in hollow metal work just prior to final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including doors or frames which are warped, bowed or otherwise unacceptable.
- B. Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

**END OF SECTION**

## **DIVISION 08 - OPENINGS**

### **SECTION 08 91 19**

#### **FIXED LOUVERS**

#### **PART 1 - GENERAL**

##### **1.01 RELATED DOCUMENTS**

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

##### **1.02 SUMMARY**

- A. Section Includes:
  - 1. Fixed, extruded-aluminum louvers
  - 2. This Section includes new louvers at the reduced incinerator stacks as indicated on Contract Documents.

##### **1.03 DEFINITIONS**

- A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.
- B. Horizontal Louver: Louver with horizontal blades (i.e., the axes of the blades are horizontal).
- C. Drainable-Blade Louver: Louver with blades having gutters that collect water and drain it to channels in jambs and mullions, which carry it to bottom of unit and away from opening.

##### **1.04 ACTION SUBMITTALS**

- A. Product Data: For each type of product indicated.
  - 1. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.

##### **1.05 QUALITY ASSURANCE**

- A. Welding: Qualify procedures and personnel according to the following: 1. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

##### **1.06 FIELD CONDITIONS**

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

#### **PART 2 - PRODUCTS**



## 2.01 MANUFACTURERS

- A. Source Limitations: Obtain louvers and vents from single source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.

## 2.02 MATERIALS

- A. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), Alloy 6063-T5.

FIXED, EXTRUDED-ALUMINUM LOUVERS

- B. Manufacturers: GREENHECK ESD – 635X Or Equal

- C. Fasteners: Use types and sizes to suit unit installation conditions.

Use tamper-resistant screws for exposed fasteners unless otherwise indicated. For fastening aluminum, use aluminum or 300 series stainless-steel fasteners. For color-finished louvers, use fasteners with heads that match color of louvers.

## LOUVER SCREENS

- D. General: Provide screen at **each exterior louver**.
  - 1. Screening Type: **Bird screening**.
- E. Secure screen frames to louver frames with **stainless-steel machine screws** or **machine screws with heads finished to match louver**, spaced a maximum of 6 inches (150 mm) from each corner and at 12 inches (300 mm) o.c.
- F. Louver Screen Frames: Fabricate with mitered corners to louver sizes indicated.
  - 1. Metal: Same kind and form of metal as indicated for louver to which screens are attached.
  - 2. Finish: **Same finish as louver frames to which louver screens are attached**.
  - 3. Type: **Non-rewirable, U-shaped frames**.
- G. Louver Screening for Aluminum Louvers:
  - 1. Bird Screening: Aluminum, 1/2-inch- (13-mm-) square mesh, 0.063-inch (1.60-mm) wire.
- H. Clean exposed surfaces of louvers and vents that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate during construction period.
- I. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.
- J. Restore louvers and vents damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.
- K. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

### **2.03 FABRICATION, GENERAL**

- A. Assemble louvers in factory to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
- B. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.
- C. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.
  - 1. Frame Type: Exterior flange unless otherwise indicated.
- D. Include supports, anchorages, and accessories required for complete assembly.

### **2.04 FINISHES, GENERAL**

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes, except as otherwise indicated.

### **2.05 ALUMINUM FINISHES**

- A. Finish louvers after assembly.
- B. 2-coat 70% Kynar 500 Hylar 5000 – AAMA 2604, dry film thickness 1.2 mil.
  - 1. Color: As selected by Architect from full range of industry colors and color densities.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates and openings, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

### **3.03 INSTALLATION**

- A. Locate and place louvers and vents level, plumb, and at indicated alignment with adjacent work.
- B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weather tight connection.
- C. Form closely fitted joints with exposed connections accurately located and secured.
- D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.
- E. Protect unpainted galvanized and nonferrous-metal surfaces that will be in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.
- F. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Division 07 Section "Joint Sealants" for sealants applied during louver installation.

### **3.04 ADJUSTING AND CLEANING**

- A. Clean exposed surfaces of louvers and vents that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate during construction period.
- B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.
- C. Restore louvers and vents damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.
  - 1. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

**END OF SECTION**

**DIVISION 9 - FINISHES**  
**SECTION 09 97 13**  
**STEEL COATINGS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes exterior coatings on steel items or steel substrates.
- B. This Section excludes coating the following metal surfaces: stainless steel, anodized aluminum, copper, bronze, and brass.

**1.02 SUBMITTALS**

- A. Product Data: For each product specified in Part 2 - Products.
- B. Samples:
  - 1. Steel Coatings: For each coating type, color and steel substrate combination to be incorporated in the Work. Samples shall be fully cured, 8" square, with stepped coats to show each coat required for system; label each coat.

**1.03 QUALITY ASSURANCE**

- A. Qualifications:
  - 1 Manufacturer Qualifications: Company with minimum 10 years of experience in manufacturing of specified products and systems.
  - 2 Applicator Qualifications: Company with minimum of 5 years experience in application of specified products and systems on projects of similar size and scope, and is acceptable to product manufacturer.

**1.04 PROJECT CONDITIONS**

- A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperature are within manufacturer recommendations, and will remain so for at least 24 hours. Verify minimum temperatures listed with products in Part 2 of this Section with manufacturer.
- B. Do not apply coatings under the following conditions:
  - 1. When conditions are outside the limitations permitted by the product manufacturer.
  - 2. In snow, rain, fog, or mist.
  - 3. When relative humidity exceeds 85 percent.
  - 4. When temperatures are less than 5° F above the dew point.
  - 5. When surfaces are damp or wet.

**PART 2 - PRODUCTS**

**2.01 GENERAL**

A. Product Callout Abbreviations Key: Steel coating product callouts include the following abbreviations:

- 2..... 2 coats
- 3..... 3 coats
- E ..... Exterior
- R ..... Restoration of steel

B. Coatings by Category:

1. a. Epoxy:

PPG: Amerlock 2 (2 parts).  
 6 mils (dry film thickness) per coat.  
 Minimum application air and surface temperature is 20° F.

b. Aliphatic Polyurethane (Top Coat):

PPG: Americoat 450H (2 parts).  
 3.5 mils (dry film thickness) per coat.  
 Minimum application air and surface temperature is 20° F.

2. a. Polyamidoamine Epoxy:

Sherwin Williams: Macropoxy 646 Fast Cure Epoxy (2 parts).  
 6 mils (dry film thickness) per coat.  
 Minimum application air and surface temperature is 35° F.

b. Acrylic Polyurethane (Top Coat):

Sherwin Williams: Acrolon 218 HS (2 parts)  
 4 mils (dry film thickness) per coat.  
 Minimum application air and surface temperature is 35° F.

C. Colors of Coatings: Where not specifically indicated, A/E will select colors through the sample submittal process.

**2.02 EXTERIOR STEEL COATINGS**

A. **Steel Coating: 3ER**

1. Sherwin Williams 3-Coat System:

Prime Coat (Mill White Color):	Macropoxy 646 Fast Cure Epoxy	Sherwin Williams
Second Coat (Gray Color):	Macropoxy 646 Fast Cure Epoxy	Sherwin Williams
Top Coat (Color selected by Owner):	Acrolon 218 HS	Sherwin Williams

OR

2. PPG 3-Coat System:

Prime Coat (Red Color):	Amerlock 2	PPG
Second Coat (Gray Color)	Amerlock 2	PPG

Top Coat (Color selected by Owner): Amercoat 450H PPG

OR

3. Or Equal

**B. Steel Coating: 3EN**

1. Sherwin Williams 3-Coat System:

Prime Coat (Gray-Green Color):	Zinc Clad III HS	Sherwin Williams
Second Coat (Gray Color):	Macropoxy 646 Fast Cure Epoxy	Sherwin Williams
Top Coat (Color selected by Owner):	Acrolon 218 HS	Sherwin Williams

OR

2. PPG 3-Coat System:

Prime Coat (Redish Color):	Amercoat 68HS	PPG
Second Coat (Gray Color)	Amerlock 2	PPG
Top Coat (Color selected by Owner):	Amercoat 450H	PPG

**PART 3 - EXECUTION**

**3.01 PREPARATION**

A. Surface Preparation:

1. Clean substrates of substances that could impair bond of coatings, including dirt, oil, grease, and incompatible paints and encapsulants.
2. Perform surface preparation and cleaning in compliance with coating manufacturer's instructions for the particular substrate conditions.
  - a. Where the manufacturer indicates more than one preparation standard, the better preparation (as determined in writing by the A/E) shall apply.
  - b. For restoration of steel, where the coating manufacturer does not specify preparation, prepare substrate in accordance with the following SSPC standard:
    - 1) SSPC-SP 3 "Power Tool Cleaning" and SSPC-VIS 3 "Guide and Reference Photographs for Steel Surfaces Prepared by Power and Hand Tool Cleaning"
  - c. For new steel, where the coating manufacturer does not specify preparation, prepare substrate in accordance with the following SSPC standard:
    - 1) For New Construction Work: SSPC-SP 6 "Commercial Blast Cleaning" and SSPC-VIS 1 "Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning"
  - d. Perform surface preparation and cleaning in compliance with spec section 02 83 19 – Lead Safe Work Practices and remove all the lead based paint to the bare metal and then prepare substrate in accordance with the following SSPC standard:
    - 1) SSPC-SP 3 "Power Tool Cleaning" and SSPC-VIS 3 "Guide and Reference Photographs for Steel Surfaces Prepared by Power and Hand Tool Cleaning"

3. For galvanized metal substrates, comply with manufacturer's instructions and ASTM D 6386.

### **3.02 APPLICATION**

- A. Apply coating systems as indicated on Drawings, and as follows:
  1. New Members (steel and galvanized steel):
    - a. Perform any indicated shop fabrication prior to application of coatings.
    - b. Apply complete coating system to all surfaces in shop prior to delivery to Project.
    - c. Touch up shop applied coating after erection. Clean field welds, bolted connections and abraded areas, and apply primer, intermediate coat (where applicable), and top coat.
  2. Existing Members (steel and galvanized steel):
    - a. Perform any indicated, drilling, structural welding or bolting prior to field application of coatings.
    - b. Apply coating system to all surfaces in field.
  3. Apply coatings to produce uniform surface films without cloudiness, holidays, laps, brush marks, runs, sags, or other surface imperfections.
  4. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.

### **3.03 TOUCH-UP**

- A. At completion of the Work of other trades, touch up and restore damaged or defaced coated surfaces.

**END OF SECTION**

## DIVISION 22 – PLUMBING

### SECTION 22 14 26

#### DRAINS

#### PART 1 - GENERAL

##### 1.01 SUMMARY

- A. This section includes replacement and/or retrofitting of existing roof/terrace drains as indicated on the Drawings, including extension leaders as required.

##### 1.02 SUBMITTALS

- A. Product Data: Submit manufacturers' technical data for each type of drain, indicating drain body style, dimensions, type of outlet and pipe connection, pipe diameter, and non-standard accessories.
- B. Submit shop drawings for metal gutters and leaders showing interface details with adjacent material and work.

##### 1.03 PROJECT CONDITIONS

- A. Protect interior spaces from leaks during testing and installation of roof / terrace drains.
- B. Coordinate work of this section with adjoining work for proper sequence of each installation and interface to ensure best possible weather resistance, waterproofing work and protection of materials and finishes against damage.

#### PART 2 - PRODUCTS

##### 2.01 GENERAL

- A. Provide accessories such as under deck and miscellaneous clamps, adapters, sump receivers, extension collars etc. required for proper installation of all roof and terrace drains.
- B. Domes shall be secured in place with brass or stainless steel tamperproof bolts, and vandal proof hardware.

##### 2.02 ROOF DRAINS

###### A. Roof Drain - Retrofit

1. RD2150 ZURN or approved equal
2. Retrofit Drains: #16 gage/type 304 integral Stainless steel body (bowl) and mounting flange with drain stem with a neoprene gasket at its end which is inserted into the existing drain bowl/leader. The clamping ring and dome are cast iron and are fasten to the integral mounting flange with tamper proof stainless steel screws.
3. Roof Drain Traps: Shall be cast iron, running trap with double hub vent cleanout (Code 7265) as Manufactured by Tyler Pipe or approved equal. New trap shall cut into each riser. Pipe diameter is to match existing size.
4. Compactable Vandal Resistance stainless steel perforated gravel guard over roof drain



**Notes:**

- Coordinate drain stem length with finished height of roofing assembly at drain and 90 degree turns in leader below drain to permit drain stem to be inserted to the proper finished height.
- Drain stem diameter to be determined via surveying sizes of existing leaders into which the stem will be inserted.

**B. Roof Drain (16 inch diameter) – Replacement Drain**

Bottom outlet:

- |    |          |                 |
|----|----------|-----------------|
| 1. | 21500-22 | Josam Company   |
| 2. | 1010     | J.R. Smith      |
| 3. | ZC-Z100  | Zurn Industries |

Provide drain extension collar as required to accommodate required insulation thickness at roof drain.

**C. Conductor Head**

- |    |                |                         |
|----|----------------|-------------------------|
| 1. | Conductor Head | O.M.G. Roofing Products |
| 2. | Collector Box  | Metal-Era               |

**D. Leader**

1. Leaders shall be 3" x 4" 20 gauge stainless steel and carry water from Downspout down to elbow and splash block with pad on roof below. Accessories shall include: Leader clips, straps, elbows, end caps, inside miters, outside miters, Leader/downspout seal, Leaf screen and miscellaneous supports.

**E. Splash Block**

1. Precast Concrete Splash Blocks-shall be light weight 4000 psi concrete with 3/8" Epoxy coated steel reinforcing. Set over 1/2" thick SBS modified walkway pad.

**F. Scupper Drain Grate**

- |    |                                     |                               |
|----|-------------------------------------|-------------------------------|
| 1. | Secured Grate – Scupper Drain       | JR Smith Galvanized Cast Iron |
| 2. | Flush Grate – Oblique Scupper Drain | Zurn or approved equal        |

**G. Integral Fascia Sump Scupper**

With concealed cleat and mounting clip.

1. Acceptable manufacturers, or equal:
  - a. METAL – ERA, INC.
  - b. B&B SHEET METAL
  - c. OMG Roofing Products
2. Integral Fascia Sump Break formed stainless 24 gauge.
3. Concealed cleat/mounting clip stainless steel 22 gauge.
4. The fascia sumps should have their own guarantee but must be compatible with and covered by the roofing manufacturer's 30-year guarantee roofing system. Proof of the guarantees must be provided as part of the shop drawing submission (see below)
  - a. The sump shall meet ES-1 wind uplift standards.

- b. Manufacturer's shop drawings with the Contractor's Company and review dates must be submitted for review and final approval by NYCHA during the submissions process for the sump. No fabrication is permitted before receiving approval of the shop drawings.
- c. Sumps must be installed by the manufacturer's pre-certified installer or at minimum the manufacturer's representative must be present and approved the sample installation of all metal systems.
- d. Stainless steel shall be Type 304 (2D) dull, non-reflective finish, conforming to Federal Specification QQ-S-766 (dead soft fully annealed).
- e. Corners of sumps shall be prefabricated, one piece with soldered or welded seams.
- f. Gauges for sheet stainless steel shall be U.S. Standard; gauges for non-ferrous metals shall be B&S.

## 2.03 ACCESSORIES

### A. Straps

- 1. As recommended by manufacturer.

## PART 3 - EXECUTION

### 3.01 PRE-CONSTRUCTION TESTING

- A. Survey, Document/Report of existing and maintenance and or replacement of roof drains, leaders and traps: Prior to commencement of work, the Contractor, Development Superintendent and NYCHA field representative shall conduct a joint survey to determine which, if any, of the roof drain leaders are blocked.
- B. No roofing work shall commence until the Contractor and Development Superintendent certify in writing to NYCHA's Program Unit that all roof drain leaders are in working order and free of blockages. Any subsequent blockages encountered shall be the responsibility of the Contractor and will be treated as a punch list item.

### 3.02 INSTALLATION

- A. Comply with Drawings, these specifications and manufacturer's written installation instructions and recommendations. When fabrication details are not indicated follow the applicable requirements of the Architectural Sheet Metal Manual of the Sheet Metal And Air Conditioning Contractors National Association, Inc. Coordinate with roofing, metal roofing, flashings, masonry and substrate Work to receive, properly fit and/or interface with the Work of this section as required to ensure that each element of this work performs properly and that combined elements are sound, waterproofed and properly secured. Anchor and secure to substrate to withstand lateral and thermal stresses.
  - 1. Joints: Provide proper waterproofed expansion joints where required.
  - 2. Isolation: Where metal surfaces of units are installed in contact with dissimilar metal or corrosive substrate, including wood and concrete, apply bituminous coating on concealed metal surfaces and/or provide other permanent separation as recommendation by the manufacturer.
- B. Install drains as per manufacturer's instructions. All work shall be performed by a Plumber licensed in New York City.
- C. Maintain integrity of waterproof membrane, where penetrated.

- D. Field verify type and size of pipe connections required to assure a water-tight connection at roof.
- E. Exercise caution to minimize damage to roof deck surrounding drains, and to ceiling below drains.
- F. Patch opening surrounding drain body to provide a level surface for setting new drain.

**3.03 POST - CONSTRUCTION TESTING**

- A. Following completion of construction, inspect drains, and clean drain lines as required for proper flow.
- B. Test drain by inserting a hose in the drain. Run test for a minimum of 15 minutes at a rate of 5 gallons per minute to determine flow adequacy. Notify Architect in writing in advance of test.
- C. Clean exposed metal surfaces in accordance with manufacturer's instruction. Touch-up damaged metal coatings.
- D. Protection: Protect to ensure the work of this section will be without damage or deterioration at time of substantial completion.

**END OF SECTION**



# CAPITAL PROJECTS DIVISION

PROGRAM UNIT: PROJECT MANAGEMENT TEAM 1

CAPITAL PROJECTS DIVISION  
90 Church Street, New York, NY 10007

UPDATED DRAWINGS ADDED ON:  
JANUARY 31, 2019



PROGRAM UNIT: PROGRAM\_UNIT

## DEVELOPMENT: CITYWIDE

## ROOFING REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION

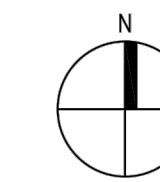
### LIST OF DRAWINGS

SHT No.	DWG No.	DWG Description
001	T001.00	Title Sheet
002	G001.00	General Notes Sheet 1 of 2
003	G002.00	General Notes Sheet 2 of 2
004	G003.00	Organization and Abbreviations
005	G004.00	General Restoration Summary, Schematic Sidewalk Shed and Fencing Plan
006	G005.00	Sidewalk Shed Protection: PRO 01 - PRO 20 (1 of 2)
007	G006.00	Sidewalk Shed Protection: PRO 01 - PRO 20 (2 of 2)
008	G007.00	Temporary Protection Detail: FNC 01, PRO 22, PRO 23
009	H001.00	ACM Abatement Details: ACM 01, ACM 02, ACM 03, ACM 04
010	H002.00	ACM Abatement Details: ACM 05, ACM 06, ACM 07, ACM 08
011	H003.00	ACM Abatement Details: ACM 09, ACM 10, ACM 11, ACM 12
012	H004.00	ACM Abatement Details: ACM 13, ACM 14, ACM 15
013	H005.00	ACM Abatement Details: ACM 16, ACM 17, ACM 18, ACM 19, ACM 20
014	H006.00	ACM Abatement Details: ACM 22, ACM 23, WEP 01, WEP 02
015	A101.00	Roof Plan: Typical Building Layout
016	A501.00	Restoration Details: DEM 01, DEM 02, DEM 03, DEM 04, DEM 05, DEM 06
017	A502.00	Restoration Details: MEM 01, MEM 02, MEM 03, SLB 01, DEM 07
018	A503.00	Restoration Details: DRN 01, DRN 02, DRN 03
019	A504.00	Restoration Details: FLA 01
020	A505.00	Restoration Details: FLA 02
021	A506.00	Restoration Details: FLA 03, FLA 04
022	A507.00	Restoration Details: FLA 05, FLA 06
023	A508.00	Restoration Details: FLA 07, FLA 08, FLA 09, FLA 10
024	A509.00	Restoration Details: FLA 11, FLA 12
025	A510.00	Restoration Details: FLA 13, FLA 14
026	A511.00	Restoration Details: FLA 15, FLA 16
027	A512.00	Restoration Details: FLA 17, FLA 18, FLA 19
028	A513.00	Restoration Details: FLA 20
029	A514.00	Restoration Details: FLA 21, FLA 22, FLA 23
030	A515.00	Restoration Details: FLA 24, FLA 25
031	A516.00	Restoration Details: FLA 26, FLA 27, FLA 28, FLA 29
032	A517.00	Restoration Details: FLA 30, FLA 31

SHT No.	DWG No.	DWG Description
033	A518.00	Restoration Details: FLA 32, FLA 33, FLA 34
034	A519.00	Restoration Details: FLA 35, FLA 36, FLA 37, FLA 38
035	A520.00	Restoration Details: FLA 39, FLA 40, FLA 41, FLA 42
036	A521.00	Restoration Details: FLA 43, FLA 44, FLA 45, FLA 46
037	A522.00	Restoration Details: FLA 47, FLA 48
038	A523.00	Restoration Details: LDR 01, LDR 02
039	A524.00	Restoration Details: SCU 01
040	A525.00	Restoration Details: STR 01
041	A526.00	Restoration Details: EXT 01
042	A527.00	Restoration Details: RAL 01
043	A528.00	Restoration Details: RAL 02 1 of 2
044	A529.00	Restoration Details: RAL 02 2 of 2
045	A530.00	Restoration Details: RAL 03
046	A531.00	Restoration Details: DOR 01, DOR 02
047	A532.00	Restoration Details: DOR 03
048	A533.00	Restoration Details: JNT 01, JNT 02, PNT 01
049	A534.00	Restoration Details: CHM 01
050	A535.00	Restoration Details: CHM 02
051	A536.00	Restoration Details: COP 01
052	A537.00	Restoration Details: COP 02
053	A538.00	Restoration Details: COR 01
054	A539.00	Restoration Details: COR 02
055	A540.00	Restoration Details: CON 01
056	A541.00	Restoration Details: CON 02
057	A542.00	Restoration Details: COA 01, CON 03, CON 04
058	A543.00	Restoration Details: MAS 01, MAS 02
059	A544.00	Restoration Details: LTL 01
060	A545.00	Restoration Details: PPT 01
061	A546.00	Restoration Details: PPT 02
062	A547.00	Restoration Details: SIL 01, SIL 02
063	A548.00	Restoration Details: SIL 03, SIL 04
064	A549.00	Restoration Details: WIN 01



SITE PLAN



DATE	REV. NO.	DESCRIPTION
12/04/18	4	Bid Submission
09/12/17	3	Final Submission
07/27/17	2	100% Submission
03/30/17	1	75% Submission
BY DATE	Rev. No.	Submission

Development: Various  
Building Address:  
Building No: ORACLE No:  
Borough of: Citywide

RECOMMENDED FOR BID	
NAME / TITLE	SIGNATURE / DATE
Project Architect	
Project Engineer	
Deputy Director / Design Department	
Assistant Director / Design Department	
Assistant Director / Project Management	
Vice President for Project Management	

Zone No.: Zoning Map No.:  
Block Nos.: Lot Nos.:  
E.D.P. No.:  
Development No.: Various

Contract Title:  
ROOF REPLACEMENT AND ROOFTOP  
STRUCTURE RENOVATION  
REQUIREMENT CONTRACT

Contract No.: RF1805337

Drawing Title:  
  
TITLE SHEET

Seal & Signature:

Drawn By: AO / YZ / VP  
Checked By: NS / VS  
Date: DECEMBER 4, 2018  
Scale: NOT SCALE

Drawing No.:  
T-001.00

Sheet: 1 OF 64

# 2016 NYC ECC NOTES - ROOF AND MASONRY

## 2016 NYC ENERGY CONSERVATION CODE NOTES

### PROJECT SCOPE

The project involves the following Building Envelope related items of work:

- Replacement of an existing roof system above an existing roof deck.
- Replacement of extreme wythe of brick masonry

### APPLICABILITY OF NYCECC: NON-EXEMPT APPLICATION

The project is subject to the requirements of the NYCECC pursuant to ECC 101.4.

### CODE COMPLIANCE

The project shall comply with the administrative requirements of Chapter 1 of NYCECC Administration), and with 1 RCNY 5000-01 "Construction document approval requirements for compliance with the New York City Energy Conservation Code," and other applicable rules and regulations.

The project shall comply with the requirements of Chapter C4 Commercial Energy Efficiency, Section ECC C401 General Requirements, and applicable portions of Section ECC C402 Building Envelope requirements, as modified by applicable portions of Chapter C5 Existing Buildings.

**ECC 101.5.2.1 Professional Statement.** "To the best of my knowledge, belief and professional judgment, these plans and specifications are in compliance with the New York City Energy Conservation Code (NYCECC)."

**ECC 101.5.2.2 Energy analysis.** The project is a "building alteration project." The energy analysis shall demonstrate how the project design complies with the ECC. For this project the analysis shall compare the proposed design to prescriptive requirements of the ECC, as noted above.

**ECC 101.5.3.3 Supporting documentation.** The construction documents shall demonstrate conformance with the energy analysis for every element contained in the energy analysis, and shall comply with the applicable requirements of Section ECC 103 Construction Documents.

**ECC 103.4 Changes during construction.** Changes made during construction that are not in compliance with the approved construction documents shall be re-submitted to the DOB as an amended set of construction documents.

### GENERAL REQUIREMENTS (ECC CHAPTER 3)

#### ECC C303 Materials.

**ECC 303.1.1 Building thermal envelope insulation.** An R-value identification mark shall be applied by the manufacturer to each piece of building thermal envelope insulation 12 inches (305 mm) or greater in width. Alternately, the insulation installers shall provide a certification listing the type, manufacturer and R-value of insulation installed in each element of the building thermal envelope.

**C303.1.2 Insulation mark installation.** Insulation materials shall be installed such that the manufacturer's R-value mark is readily observable upon inspection.

**C303.1.4 Insulation product rating.** The thermal resistance (R-value) of insulation shall be determined in accordance with the U.S. Federal Trade Commission R-value rule (CFR Title 16, Part 460, May 31, 2005) in units of (h sf °F/Btu) at a mean temperature of 75°F (24°C).

**C303.2 Installation.** All materials, systems and equipment shall be installed in accordance with (i) the manufacturer's installation instructions and (ii) the applicable provisions of the New York City Construction Codes.

### BUILDING DESIGN: PRESCRIPTIVE ANALYSIS PURSUANT TO 2016 NYCECC (ECC)

All Section numbers refer to the 2016 NYCECC, except as otherwise noted.

The subject building is a **Commercial** building as defined in Section ECC C202.

**Climate Zone 4A** shall be used in determining the applicable requirements from Chapter C4, per to C301.1.

### APPLICABILITY: EXISTING BUILDINGS (ECC CHAPTER C5)

#### ECC 501 General.

**C501.1 Scope.** The provisions of Chapter C5 (Existing Buildings) shall control the alteration, repair, addition and change of occupancy of existing buildings and structures.

**C501.2 Existing buildings.** Except as specified in this chapter, the ECC shall not be used to require the removal, alteration or abandonment of, nor prevent the continued use and maintenance of, an existing building or building system lawfully in existence at the time of adoption of the ECC.

**C501.3 Maintenance.** Buildings and structures, and parts thereof, shall be maintained in a safe and sanitary condition. Devices and systems that are required by the ECC shall be maintained in conformance to the code edition under which installed. The owner or the owner's authorized agent shall be responsible for the maintenance of buildings and structures. The requirements of this chapter shall not provide the basis for removal or abrogation of energy conservation, fire protection and safety systems and devices in existing structures.

**C501.4 Compliance.** Alterations, repairs, additions and changes of occupancy to, or relocation of, existing buildings and structures shall comply with (i) all applicable provisions of the ECC, (ii) the provisions for alterations, repairs, additions and changes of occupancy or relocation, respectively, on the NYC Construction Codes, (iii) the NYC Fire Code, and (iv) the NYC Electrical Code.

**C501.6 Historic buildings.** No provisions of this code relating to the construction, repair, alteration, restoration, and change of occupancy shall be mandatory for historic buildings.

### ECC C503 Alterations.

**C503.1 General.** Alterations to any building or structure shall comply with the requirements of the code for new construction. Alterations shall be such that the existing building or structure is no less conforming to the provisions of the ECC than the existing building or structure was prior to the alteration. Alterations to an existing building, building system or portion thereof shall conform to the provisions of the ECC as those provisions relate to new construction without requiring the unaltered portions of the existing building or building system to comply with the ECC. Alterations shall not create an unsafe or hazardous condition or overload existing building systems.

**Exception:** The following alterations need not comply with the requirements for new construction, provided that the energy use of the building is not increased:

- Air barriers shall not be required for roof recover and roof replacement where the alterations or renovations to the building do not include alterations, renovations or repairs to the remainder of the building envelope.
- Construction where the existing roof, wall or floor cavity is not exposed.
- Roof recover.

**C503.3 Building envelope.** New building envelope assemblies that are part of an alteration shall comply with Sections C402.1 through C402.5.

**C503.3.1 Roof replacement.** Roof replacements shall comply with Table C402.1.3 or C402.1.4 where the existing roof assembly is part of the building thermal envelope and contains insulation entirely above the roof deck.

**C503.3.2 Vertical Fenestration.** See note under Fenestration, if applicable.

#### ECC C504 Repairs.

**C504.1 General.** Buildings, structures, and parts thereof, shall be repaired in compliance with Section C501.3 and C504.1. Work on non-damaged components that is necessary for the required repair of damaged components shall be considered part of the repair and shall not be subject to the requirements for alterations (C503.1). Routine maintenance required by Section C501.3 (Maintenance), ordinary repairs exempt from permit and abatement of wear due to normal service conditions shall not be subject to the requirements for repairs specified in this section.

The following items are considered repairs are need not comply with the requirement for alterations, per ECC C504.2 (Application).

- Air-barriers shall not be required for roof repairs where the repairs to the building do not include alterations, renovations or repairs to the remainder of the building envelope.

- Roof repairs.

### BUILDING ENVELOPE REQUIREMENTS (SECTION C402)

**ECC C401.2.2 Prescriptive Compliance Path.** The project design shall comply with the prescriptive compliance path. A Tabular Prescriptive Analysis is provided.

**C402.1 General (Prescriptive).** (Commercial) Building thermal envelope assemblies for buildings that are intended to comply with the code on a prescriptive basis, in accordance with the compliance path described in Item 2 of Section C401.2, shall comply with the following:

- The opaque portions of the building thermal envelope shall comply with the specific insulation requirements of Section C402.2 and the thermal requirements of either Section C402.1.3 (Table C402.1.3 "Opaque Thermal Envelope Insulation Requirements, R-value Method"); or

Section C402.1.4 (Table C402.1.4 "Opaque Thermal Envelope Assembly Maximum Requirements, U-factor Method"); or the component performance alternative of Section C402.1.5.

2. Roof solar reflectance and thermal emittance shall comply with Section 1504.9 NYC Building Code (NYCBC).

3. Air leakage of building envelope assemblies shall comply with Section C402.5.

**C402.1.3 Insulation component R-value-based method.** Building thermal envelope opaque assemblies shall meet the requirements of Sections C402.2 and C402.4 based on Climate Zone 4A.

**C402.2 Specific building thermal envelope insulation requirements (Prescriptive).** Insulation in building thermal envelope opaque assemblies shall comply with Sections C402.2.1 through C402.2.3 and Table C402.1.3, as applicable.

**C402.2.1 Multiple layers of continuous insulation board.** Where two or more layers of continuous insulation board are used in a construction assembly, the continuous insulation boards shall be installed in accordance with Section C303.2 ECC. Where the continuous insulation board manufacturer's instructions do not address installation of two or more layers, the edge joints between each layer of continuous insulation boards shall be staggered.

**C402.2.2 Roof assembly.** The minimum thermal resistance (R-value) of the insulating material installed either between the roof framing or continuously on the roof assembly shall be as specified in Table C402.1.3, based on construction materials used in the roof assembly. Skylight curbs shall be insulated to the level of roofs with insulation entirely above deck or R-5, whichever is less.

#### Exceptions:

- Continuously insulated roof assemblies where the thickness of insulation varies 1 inch (25 mm) or less and where the area-weighted U-factor is equivalent to the same assembly with the R-value specified in Table C402.1.3.
- Where tapered insulation is used with insulation entirely above deck, the R-value where the insulation thickness varies 1 inch (25 mm) or less from the minimum thickness of tapered insulation shall comply with the R-value specified in Table C402.1.3.
- Unit skylight curbs included as a component of a skylight listed and labeled in accordance with NFRC 100 shall not be required to be insulated.

Insulation installed on a suspended ceiling with removable ceiling tiles shall not be considered part of the minimum thermal resistance of the roof insulation.

### ROOF REFLECTANCE (1504.9 NYCBC)

Roof coverings on roofs or setbacks with a slope equal to or less than 2 units vertical in 12 units horizontal (17 percent) shall have:

A minimum initial solar reflectance of 0.7 in accordance with ASTM C1549 or ASTM E 1918 and a minimum thermal emittance of 0.75 as determined in accordance with ASTM C 1371 or ASTM E 408.

Or

A minimum SRI (solar reflective index) of 78 as determined in accordance with ASTM E 1980.

### ENERGY ANALYSIS: 2016 NYCECC CHAPTER C4

Climate Zone: 4A (C301.1)

#### Commercial - Alteration

Table C402.1.3 Opaque Thermal Envelope Component Minimum Requirements: All Other

Replace existing roof system; and miscellaneous masonry/concrete repairs.

Item Description	Proposed Design Value	Code Prescriptive Value
Replace roof membrane system and existing insulation system above concrete deck	R-30 continuous insulation, entirely above deck; Min. Initial Solar Reflectance: 0.7 Min. Thermal Emittance: 0.75 Min Solar Reflective Index (SRI): 78	Minimum continuous insulation entirely above deck: R-30 Initial Solar Reflectance: 0.7 Min. Thermal Emittance: 0.75 Min Solar Reflective Index (SRI): 78
Masonry Repair	N/A	N/A (See *Note 1 below table)
Reconstruction of Cavity	N/A	N/A (See *Note 2 below table)

\*Note 1: This item does not affect the energy use of the building

\*Note 2: Masonry cavity walls are "drainage cavities". They do not have "framing cavities". They are therefore exempted, per Exception #4 (101.4.3). Furthermore, introduction of insulation within an existing cavity of limited width will inhibit drainage, and result in a potentially unsafe condition.

# SPECIAL AND PROGRESS INSPECTIONS

## STRUCTURAL TESTS AND SPECIAL INSPECTIONS - 2014 NYCBC

### GENERAL NOTES

• Special inspections and other tests and inspections required during the progress of Work shall comply with the (administrative and procedural) requirements of Section 28-116.2.3 of the Administrative Code.

• Tests and inspections required shall be performed by approved agencies or special inspectors, as applicable, meeting the requirements of RCNY (Rules of the City of New York) DOB Rules 101-06 and 101-07. Special inspections shall be performed only by individuals who are special inspectors meeting the requirements of DOB Rule 101-06 Appendix A.

• Where tests and inspections are indicated as Owner's responsibility, the Owner will engage an approved agency or special inspector, as applicable, to perform the required services.

• Where tests and inspections are not explicitly indicated as Owner's responsibility, or where tests and inspections are required but not specifically listed, the Contractor shall engage an approved agency or special inspector, as applicable, to perform the required services.

• Contractor shall notify Architect and relevant inspecting party at least 72 hours in advance of time when Work that requires inspection will be performed.

• Inspectors shall promptly notify the Architect in writing of irregularities and deficiencies observed in the Work.

### SPECIAL INSPECTIONS

Items subject to special inspection pursuant to the requirements of Chapter 17 BC include, but are not limited to, those listed in the following table:

Required Special Inspection Items	Owner's Responsibility	Contractor's Responsibility
Masonry per BC 1704.5 – Level 1 Inspection (Table 1704.5.1) if applicable (See exceptions, in related Word doc)		
Structural Safety – Existing Buildings per BC 1704.20.1		
Post-installed Anchors per BC 1704.32 (BB# 2014-012, 2014-013)		

## PROGRESS INSPECTIONS

The following Progress Inspections are required, pursuant to NYC BC 110.3.5 and 1 RCNY §5000-01 (g)(8), and 1 RCNY §5000-01 (h)(2) Table II: Progress Inspections for Energy Code Compliance - Commercial Buildings

Inspection / Test	Periodic (minimum)	Reference Standard (See ECC Chapter C5) or Other Criteria	2014 NYC ECC or Other Citation (ASHRAE 90.1)
IIA Envelope Inspections			
IIA2 Insulation placement and R-values: Installed insulation for each component of the conditioned space envelope and at junctions between components shall be visually inspected to ensure that the R-values are marked, that such R-values conform to the R-values identified in the construction documents and that the insulation is properly installed.  Certifications for unmarked insulation shall be similarly visually inspected.	As required to verify continuous enclosure while walls, ceilings and floors are open.	Approved construction documents.	C303.1, C303.1.1, C303.1.2, C402.1, C402.2;  ASHRAE 90.1 – 5.5, 5.6 or 11; 5.8.1

## FINAL INSPECTION

The following inspection will be made upon the completion of the Work indicated under this application:

- Final Inspection per 28-116.2.4.2 and BC 110.5 and Directive 14 of 1975, and 1 RCNY 101-10.

## REQUIRED SUBMITTALS

- Form TR-1 Technical report: Statement of Responsibility shall be filed with the New York City Department of Buildings by the inspection agency designated by the Owner to perform inspections in each of the above mentioned categories.

- Upon successful completion of the Work subject to special inspection, Form TR-1 Technical Report: Certification of Completion, and all required supporting documentation shall be filed with the New York City Department of Buildings by the inspection agency which performed the respective inspections.

# DEMOLITION NOTES

## GENERAL DEMOLITION NOTES

- This work is subject to the provisions of the specifications, including general and supplementary conditions. All work, shall conform to the New York City Building Code and state regulation and agencies having their jurisdiction.

- Contractor shall visit the site and become familiar with conditions prior to commencing work. All dimensions and conditions are to be verified in field. contractor shall notify the Authority's Representative of any discrepancies from the contract documents. If existing field conditions are at variance with the renovation layout the Contractor shall notify the Authority's Representative and await instructions from Authority's Representative.

- Contractor shall repair and restore all damage caused by his work, at no additional cost to the Authority's Representative / N.Y.C.H.A.

- Do not load or permit any part of existing building to be loaded with any material or equipment that may endanger its structural integrity.

- The streets and all walkways shall be kept clear and clean at all times. All required walk protection and barricades shall be included. All demolition and removal work shall be executed in accordance with the requirements of applicable rules, regulations, codes and ordinances in effect.

DOB Employee Stamps and Signatures

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: G001.00
	Sheet 2 of 64



CAPITAL PROJECTS  
DIVISION  
90 Church Street, New York, New York 10007

PROGRAM UNIT:

Project Management Team 1

Date: Revision:

Date: Submissions:

NEW YORK CITY HOUSING AUTHORITY  
DESIGN DEPARTMENT  
90 Church Street 10th floor, New York, NY 10007  
Tel 212.306-3000 Fax (call)

Development: VARIOUS  
Bldg. Addresses:  
Building No: Oracle No:  
Borough of: CITYWIDE



Key/ Location plan

Zoning Map: Zone:  
Block No.: Lot No.:  
Development No.: VARIOUS E.D.P No.:

Contract Title:  
ROOF REPLACEMENT AND  
ROOFTOP STRUCTURE RENOVATION  
REQUIREMENT CONTRACT

Contract No.:  
RF 1805337

Drawing Title: General Notes  
(1 of 2)

DOB BSCAN STICKER

# NYC DOB NOTES - GENERAL

## NYC DEPARTMENT OF BUILDINGS NOTES - 2014 NYCBC

### SCOPE OF WORK

The following Work is included under the scope of this application:

- Replacement of existing roofing systems: membrane, insulation, flashings, etc. (roofs require additional thermal insulation pursuant to requirements of NYC Energy Construction Code).
- Repair of roof decks.
- Replacement of cracked/spalled masonry units.
- Installation of new code-compliant extension to existing roof perimeter railing/parapet.
- Replacement of existing steel railing
- Replacement of existing steel ladder
- Coping stone repairs
- Corner masonry repair
- Sill replacement
- Replacement of existing bulkhead door, frame, saddle and hardware
- Replacement of existing steel intel
- Height reduction of existing compactor stack
- Parapet reconstruction

### GENERAL NYC DOB NOTES

- All Work shall conform to the requirements of the New York City Building Code (NYCBC) or (BC).
- All Work shall comply with the requirements of the NYC Plumbing, Mechanical, Electrical and Fire codes, as applicable. All Work shall comply with utility company requirements and the best trade practices.
- Work Permit: Before commencing Work, the Contractor shall file all required Certificates of Insurance with the DOB, obtain a Work Permit and any other required permits for the Work by governing agencies. Copies of the Work Permit, and all other required permits shall be posted in a conspicuous place at the Work site.
- Contractor will be responsible for obtaining following permits:
  - Construction work permit
  - Sidewalk shed and fence permits
  - Rigging permits
  - Asbestos and Lead Abatement permits
  - Electrical permit
- Fees: The initial DOB (Alteration application) filing fee, when applicable, shall be paid by the Owner. All other filing and permit fees to the DOB, DOT and all other agencies shall be paid by the Contractor.
- Violations: The Contractor shall be responsible for the removal of all violations issued by the DOB and/or other governing agencies, related to their operations on this Project. The Contractor shall be responsible for the payment of all penalties and fees resulting from and related to the removal of these violations.
- Plans: The Contractor shall maintain a complete set of the plans and applications approved by the DOB at the site, available to DOB inspectors, at all times.
- Materials: All materials shall be used, tested and approved for use in accordance with the provisions of the NYCBC and DOB Rules, as applicable.
- Licenses and Registration: All Work requiring licenses or registration of trades, including, but not limited to plumbing, electrical, welding, rigging, and site safety shall be performed by persons with such licenses and/or registrations, as governed by the requirements of the NYCBC.
- Noise Control Code: All Work shall be performed in accordance with the provisions of the NYC Noise Control Code as set forth in Chapter 2 of Title 24 of the Administrative Code; Section 24-224 (Construction Activities/After Hours Work Permit -DOB Form PW5); Section 24-219 (Noise Mitigation Rules) and 15 RCNY Chapter 28 (Citywide Construction Noise Mitigation), Sections 28-101 (Required Noise Mitigation Measures for General Construction)
- The Contractor shall carry workman's compensation insurance and disability benefits.
- The Contractor shall visit the project site to familiarize himself with existing conditions and to verify all dimensions and conditions of existing buildings and site. Although all necessary work may not be itemized in the drawings and specifications, the Contractor will become familiar with existing conditions and include all work specified or implied for the complete renovation of the spaces. In case of discrepancies between the contract documents and actual field conditions, they shall be reported to Authority's Representative in writing prior to commencement of work. Work done after the discovery of discrepancies and prior to receipt of writing approval for correction shall be at the Contractor's oversight in verification of existing conditions.
- Contingency work can be allocated on any building in the scope of work.
- The Contractor shall cooperate with any other contractors, working in the same development, and shall lay, cut, and install his work at such a time and in such a manner as not to delay or interfere with the carrying forward of the work of this contract.
- The Contractor shall perform his work so that a minimum of disruption is caused to those portions of the building where there is no new work to be done under this contract.
- Construction operations and access to all areas of the building shall be coordinated at all times with the Development Management and Authority's Representative.
- All exits shall be kept readily accessible and unobstructed at all times.
- All construction debris and refuse shall be removed from the building at the end of each work day and legally disposed of off the property.

No burning of debris or refuse is permitted.

- Do not leave building or portion thereof open to weather nor inadequately protected when work is not actually in progress.
- All work shall be executed in accordance with best accepted trade practices and as per Manufacturers' recommendations.
- Authority's Representative shall be notified of all Special Inspections and testing at least 72 hours in advance.
- All workers of the Contractor and Sub-contractors shall wear the identification badge all the times.
- The Contractor and Sub-Contractors may use the elevators to transport personnel only with the approval of NYCHA Representative. In this case the contractor shall protect the elevator from any harm and shall keep it clean all the times.

### PROTECTION OF PEDESTRIANS / SIDEWALK SHEDS

- Pedestrians shall be protected during construction, alteration, remodeling, or demolition activities as required by Section BC 3307 (PROTECTION OF PEDESTRIANS) and Section BC 3301.10 (Obscured Lawful Signs), and by the rules of the Department of Transportation. Signs shall be provided to direct pedestrian traffic.
- Sidewalk sheds shall be erected when required by Section BC 3307.6 (Sidewalk Sheds).
- All required sidewalk sheds are to be filed under a Separate Application.
- The sidewalk shed installer shall obtain all required permits and pay all fees required by governing agencies prior to erecting sidewalk shed.
- A sidewalk shed shall be erected at areas required, prior to start of construction. Sidewalk sheds shall remain in place until completion of the Work.
- The design and construction of required sidewalk sheds shall comply with the requirements of Section BC 3307.6.4 (Design and construction of sidewalk sheds)
- Sidewalk shed permit holder shall post a sign that shall comply with Section BC 3301.9.2 (Sidewalk shed parapet panel) which shall include the name, address and telephone number of the permit holder, the permit number and the expiration date of the permit.
- The use and maintenance of sidewalk sheds shall comply with the requirements of Section BC 3307.6.5 (Installation, adjustment, maintenance, repair, use, inspection, and removal of sidewalk sheds): Material and debris shall not be stored on sidewalk sheds unless the shed has been so designed in accordance with rules promulgated by the commissioner per Section 3307.6.5.4 (Storage and placement of items) and 3307.6.4.2.2 (Storage). The underside of sidewalk sheds shall be lighted at all times either by natural or artificial light conforming to the requirements of Section BC 3307.6.4.8 (Lighting).

### PROTECTION OF EXISTING PROPERTY

- All adjoining property affected by any operations shall be protected per the requirements of Title 27 (Building Code) Chapter 33 (SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION) of the NYC Building Code and Section BC 3309 (PROTECTION OF ADJOINING PROPERTY).
- The Contractor shall provide, erect and maintain all temporary barriers and guards, and all temporary shoring and bracing, as required by DOB rules and regulations.
- The Contractor shall be solely responsible for the protection of conditions and materials within, and adjacent to the proposed construction area. The Contractor shall design and install adequate shoring and bracing for all construction or removal tasks. The Contractor shall have sole responsibility for any damage or injuries caused by, or during the execution of the Work.
- Contractor to protect the following items during construction.
  - Security Cameras
  - Window screens
  - Lights / Lamp posts
  - Wiring
  - Existing walkways / Drive ways / Landscaping
  - Fire Hydrant
  - Protruded air conditioners
  - Signs
  - Fencing / Barriers
- Any damaged to the existing property, in vicinity of the work areas, should be brought to the attention of Construction Manager / NYCHA prior to starting work.

### SITE SAFETY

- Site Safety Plan: Contractor shall prepare, file, obtain and pay for required approval of a Site Safety Plan meeting the requirements of Title 28 (Administrative Code) Chapter 1 Article 110 (SITE SAFETY PLAN). Filing of Site Safety Plan is required prior to the issuance of a Work Permit, pursuant to Section BC 3310.3 (Site Safety Plan).
- Site Safety Monitoring Program: Contractor shall provide the presence on site of a Site Safety Manager certified by the DOB in accordance with the requirements of Title 28 (Administrative Code) Chapter 4 Article 402 (Site Safety Manager Certificate). Designation of Site Safety Manager is required prior to issuance of a Work Permit, pursuant to Section BC 3310.5 (Safety Manager Or Coordinator To Be Designated) and Section BC 3310.4 (Site Safety Monitoring Program).
- Contractor shall expeditiously obtain, from the DOB, all available waivers and/or reductions in the amount of presence on site of the Site Safety Manager, based on the limited scale and scope of the project, as permitted by Section BC 3310.11 (Modifications To The Site Safety Monitoring Program).

- Site Safety Managers shall comply with the requirements of Section BC 3310.8 (Site Safety Manager's and Coordinator's Duties).
- Contractor shall comply with the requirements of Section BC 3310.7 (Contractor Shall Inform Personnel).

### TENANT PROTECTION PLAN

#### TPP - Contractor Requirements

- Statement of Compliance and TPP1 form: The Contractor shall prepare a detailed project specific statement of compliance with applicable provisions of law relating to lead, asbestos, and respirable silica crystalline silica, describing what means and methods are being undertaken to meet such compliance, per the requirements of Sec 28-104.8.4.3.1 AC. The Contractor shall prepare and file a TPP1 form covering the statement of compliance under the seal and signature of a PE/RA retained by the Contractor, describing such means and methods.
- General: All Work shall be done in accordance with Section 28-104.8.4 AC (Tenant Protection Plan) and regulations of all other agencies having jurisdiction.
- Occupied Dwelling Units: The building contains dwelling units that will be occupied during construction. The Contractor shall provide the means and methods required to safeguard the safety and health of the occupants, including, where applicable, details such as temporary fire-rated assemblies, opening protectives, and/or dust containment procedures.
- Egress: At all times in the course of construction, provision shall be made for adequate egress as required by this code, and the tenant plan shall identify the egress that will be provided. Required egress shall not be obstructed at any time except where approved by the commissioner. All existing means of egress for occupants of the building shall be maintained clear and free of all obstructions such as building materials, tools, etc.
- Fire Safety: All necessary laws and controls, including those with respect to occupied dwellings, as well as safety measures necessitated by the construction, shall be strictly observed. The Contractor shall take all necessary steps to both use and store all materials in such a way that insures the fire safety of the building and its inhabitants. All building materials stored in construction area, and/or in any area of the building shall be secured in a safe manner. Access to such areas to be controlled by Owner and/or Contractor.

Health requirements: (Part 1/2): The Contractor shall take all required steps to control dust, dispose of construction debris, institute any required pest control, maintain sanitary facilities, and limit construction-related noise to acceptable levels. Debris, dirt and dust shall be kept to a minimum, be confined to the immediate construction area, and be cleaned up and cleared from building periodically to avoid excessive accumulation.

- Health requirements: (Part 2/2): The Contractor shall be responsible for compliance with applicable provisions of law relating to dust (including crystalline silica), lead, asbestos, and noise. The following are in addition to applicable State and Federal regulations, as well as applicable Standards and Guidance Documents.

Dust (Respirable Crystalline Silica): For projects involving exposure to respirable crystalline silica, the Contractor shall comply with the dust control requirements of "Table 1: Specified Exposure Control Methods When Working with Materials Containing Crystalline Silica" contained in OSHA 3902-07R "Small Entity Compliance Guide for Respirable Crystalline Silica Standard for Construction" as applicable for the equipment used and tasks involved in the Work.

Lead: For projects involving abatement of lead, the Contractor shall comply with the applicable requirements of Section 11-06(d) Work Methods (and other applicable sections) of HPD Rules pertaining to Local Law #1 of 2004, Title 28, Chapter 11 RCNY.

Asbestos: For any projects involving abatement or encapsulation of asbestos or asbestos containing material (ACM), the Contractor shall comply with "Abatement Procedures" contained in Part 4 (and other applicable sections), of the NYC DEP Bureau of Environmental Compliance Asbestos Rules and Regulations as described in the latest version of Title 15, Chapter 1 RCNY Asbestos Control Program.

Construction Noise Management: Contractor shall comply with Noise Mitigation Rules for "power tools" and other construction devices employed in the work pursuant to Section 24-219 Administrative Code.

- Structural safety: No structural Work shall be done that may endanger the occupants. Contractor shall provide adequate temporary bracing and shoring wherever any structural Work is involved.
- Noise restrictions: Where hours of the day or the days of the week in which construction Work may be limited pursuant to the NYC Noise Control Code, such limitations shall be stated. Pursuant to Section 24-224 (Construction activities) of the NYC Noise Code (Local Law 113 of 2005), construction activities will be confined to weekdays (Mondays through Fridays) unless an After Hours Work Permit has been obtained from the Department of Buildings.

Compliance with housing standards: The requirements of the NYC Housing Maintenance Code, and, where applicable, the NY State Multiple Dwelling Law shall be strictly observed.

#### TPP - Owner Requirements

- Provision of copy of Tenant Protection Plan: The Owner shall, upon request from an occupant of a dwelling unit within a building undergoing work for which a tenant protection plan is required, provide such occupant with a paper copy of the tenant protection plan approved by the department.
- Notice to Occupants: Upon issuance of a permit for work containing a tenant protection plan, the Owner shall provide a notice regarding such plan to each occupied dwelling unit in a form and location acceptable to the DOB pursuant to the requirements of Section 28-104.8.4.3 of the

Administrative Code.

- Notice to DOB: The Owner shall notify the DOB 72 hours before beginning work in a building with a Tenant protection Plan. Notice shall be given by means of the DOB's online notification form

### AFTER HOURS WORK PERMITS

- The Contractor shall apply for and obtain After Hours Work Permits from the Department of Buildings for any Work that shall occur outside normal working hours: weekdays pursuant to DOB procedures.
- For regulations relating to the safety of persons employed in such construction operations, the provisions of Subchapter 10 of the Labor Law as implemented by the industrial code of The State of New York, Rule no. 23, and OSHA, shall apply.
- Provide all equipment and temporary construction necessary to safeguard all persons and property and adjacent property.
- Persons superintending work shall inspect all devices for adequate safety.
- Determine location, protect and safeguard all utilities on and adjacent to site. Notify utility companies affected by work at least 72 hours before commencement.
- The location of all existing utilities and service lines shall be determined and adequate measures taken, or devices provided, to safeguard the public and property before such utilities are disturbed. If any utility is to be removed, relocated or have its service interrupted, the New York City Housing Authority's Representative and the utility company or city agency affected shall be notified in a timely fashion so that work is not delayed.
- All machinery, tools, service lines and conduits shall be guarded, shielded or barricaded to provide safety to the public.
- Areas used by the public including required means of egress shall be maintained free from all new & existing materials, ice, snow, grease, debris, and equipment.

- Building material, equipment, and tools are to be kept at least 10ft. back from building perimeter, where no walls have been installed.
- Fire prevention, sanitary or other facilities that have been provided for the protection of life, health and property shall be continuously maintained and protected unless authorization is obtained from the agency having jurisdiction to temporarily or permanently disconnect such facility.
- All flammable materials shall be kept sealed in the Manufacturer's containers, such materials are to be kept away from heat.

- All flammable materials shall be used and stored in an adequately ventilated space.
- The Contractor shall regularly verify that there is no leakage of natural gas or any flammable gas used in construction.

- All electrical equipment and wiring shall meet the requirements of the Electrical Code of the City of New York, and shall be maintained to meet such requirements. Portions of permanent electrical installations may be used for temporary operations provided the requirements of the electrical code are met. At least 72 hours before work is begun that may affect a power line, above or below ground, the contractor shall notify the utility company affected.

- All electrical power on the construction site shall be shut off after working hours.

- Construction operations will not block hallways or means of egress for the residents and NYCHA employees.

- The Contractor shall institute and maintain safety measures and provide all equipment or temporary construction necessary to safeguard all persons and property affected by the contractor's operation.

### CONFLICTING REQUIREMENTS

- In the event of repetitions, variations or discrepancy conflicts between or among parts of the Contract Documents, the more expensive way of doing the Work, the better quality or greater quantity of material shall govern. If the interpretation or determination is doubtful, it is distinctly understood that the Architect / Engineer may adopt the interpretation or construction which shall secure in all cases the most substantial and complete performance of the work and be most favorable to the Owner and secure it to the most ample protection, to which the Contractor shall abide. Refer all such conflicts to the Architect / Engineer for a decision before proceeding.

### ENVIRONMENTAL NOTES

- Prior to beginning asbestos abatement the Contractor shall file and receive approval from all required city, state and federal governmental and regulatory agencies including but not limited to the NYC D.E.P.
- Temporary barriers, decontamination enclosures, air monitoring and clean up will all be performed by the Contractors certified asbestos handlers & monitored by the environmental inspection unit of the technical service department of the NEW YORK CITY HOUSING AUTHORITY and the NYC D.E.P.
- The Contractor shall remove asbestos debris from the premises prior to the end of the work day and transferred to a legal disposal site.
- Any ACM flashing/sealant sticking to back of masonry shall be removed as ACM.
- The abatement of the asbestos containing material and lead based paints shall be performed in accordance with the "Work Procedures", prepared by NYCHA. Any technical questions pertaining to the abatement of the asbestos containing material and lead based paints

shall be directed to NYCHA. Superstructures has neither prepared nor reviewed technically the contents of "Work Procedures". Asbestos and lead abatement quantities are based upon the test results provided by NYCHA to Superstructures.

### PRODUCT SUBSTITUTION

- All products specified on the drawings /specifications may be substituted with an Approved Equal, subject to the Submittal process and approval from NYCHA or its Authorized Representative as indicated in specification Section 012500. All substitutions requested by the Contractor shall be supported by comparison sheets for both the specified item and the proposed substitution, showing all necessary equivalent information for both.

### BRICK REMOVAL AND REPLACEMENT

- Brick bond pattern shown on detailed drawings are schematic. Contractor to verify and match the bond pattern on the building.
- Brick masonry construction shall conform to the requirements of Chapter 21 of the New York City Building Code.
- Minimum compressive strength of brick units shall be 6000 psi.
- Metal anchors and ties shall be corrosion-resistant and shall conform to the provisions of Section 2103.11.7.
- Contractor shall carefully remove, at locations indicated, any bricks which are damaged, spalled or deteriorated, cutting out full units from joint to joint and in a manner to permit replacement with full size units.
- Contractor shall support and protect masonry indicated to remain which surrounds removal area.
- Masonry contractor will be responsible for removing exterior wythe brick masonry to facilitate the Asbestos / Lead abatement work. Asbestos / Lead Abatement contractor will use masonry contractor's scaffolding to perform the work. Coordination between masonry contractor and Asbestos / Lead contractor is required.

### ROOF RECOVERING AND REPLACEMENTS

- Roof recovering and replacements shall comply with the following, per AC 28-101.4.3 (Optional Use Of The 1968 Building Code For Work On Prior Code Buildings)
- Installation and Materials: Work involving the recovering or replacement of an existing roof covering shall comply with the requirements of Section BC 1510 (Reroofing) and Section 1510.1 (General) per AC 28-101.4.3 Item 12.1. Exception: The area to be recovered or replaced is less than fifty percent of the roof area and less than 500 sf.
- Cool Roofs: Work involving the recovering or replacing of an existing roof covering shall comply with the requirements of BC 1504.9, unless the area to be recovered or replaced is less than fifty percent of the roof area and less than 500 sf. per AC 28-101.4.3 Item 12.2.
- Green Roofs: Notwithstanding the applicant's election to use the 1968 building code, or prior code, work involving green roof systems and container gardens shall be permitted pursuant to Chapter 15 (Roof assemblies and rooftop structures) BC 1507.16 (Green roof systems), per AC 28-101.4.3 Item 12.3.

### GUARDS (PURSUANT TO AC 28-101.4.3 ITEM 14)

- Where the alteration or repair of a building involves the addition or replacement of guards, such guards shall comply with Sections BC 1013 (Guards) and BC 1607.7 (Loads on handrails, guards, etc.).

### ENERGY CONSERVATION

- For NYC Energy Conservation Code Notes, see sheet G002.00.

### NYC FIRE CODE

- Design Architect/Engineer shall comply with the requirements of NYC Fire Code section 504.4 - Rooftop Access and Obstructions



CAPITAL PROJECTS DIVISION  
90 Church Street, New York, New York 10007

PROGRAM UNIT:

Project Management Team 1

Date: Revision:

Date: Submissions:

## NEW YORK CITY HOUSING AUTHORITY DESIGN DEPARTMENT

90 Church Street 10th floor, New York, NY 10007  
Tel 212 306-3000 Fax (call)

Development: VARIOUS  
Bldg. Addresses:  
Building No: Oracle No:  
Borough of: CITYWIDE



Key/ Location plan

Zoning Map: Zone:  
Block No.: Lot No.:  
Development No.: VARIOUS E.D.P No.:

## Contract Title: ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT

Contract No.: RF 1805337

Drawing Title: General Notes  
(2 of 2)

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: G002.00
Sheet 3 of 64	

DOB BSCAN STICKER

DOB Employee Stamps and Signatures



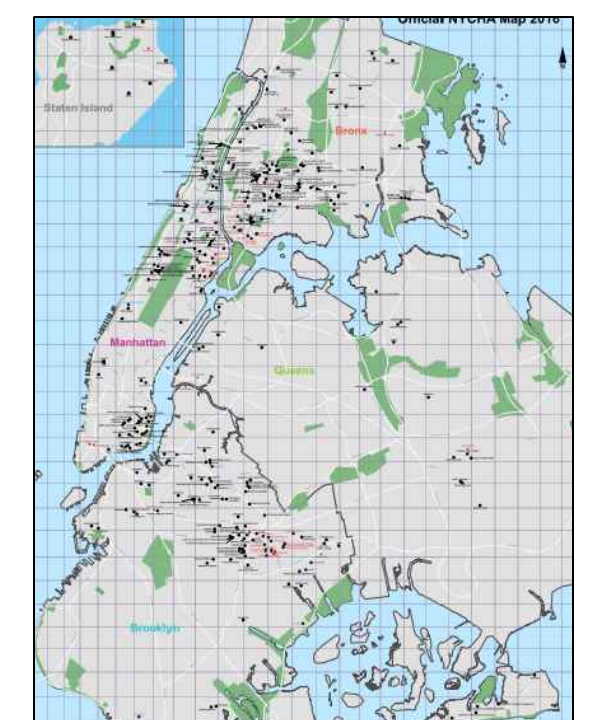
PROGRAM UNIT:  
 Project Management Team 1

Date: Revision:

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Contract Title:  
**ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

Drawing Title: General Restoration Summary

Seal / Signature: Issue Date: 12.04.2018  
 Scale: AS NOTED  
 Drawn By: AO / YZ / VP  
 Checked By: NS / VS  
 Drawing No.:  
**G004.00**  
 Sheet 5 of 64

DOB BSCAN STICKER

DOB Employee Stamps and Signatures

RESTORATION SUMMARY				
Development: Citywide				
#	Code	Description	Unit	Qty
<b>DIVISION 02 - SITE PROTECTION</b>				
109	FLA 16	Perimeter Flashing at Low Parapet	LF	2000
110	FLA 17	Perimeter Flashing at Canopy to Parapet Connection	LF	250
111	FLA 18	Perimeter Flashing at Entrance Canopy Parapet	LF	300
112	FLA 19	Perimeter Flashing at Concrete Wall / Column	LF	30
113	FLA 20	Perimeter Flashing at Parapet Wall (Wood Deck)	LF	400
114	FLA 21	Perimeter Flashing at Chimney Base	LF	1180
115	FLA 22	Chimney Flashing at Water Tower Roof	LF	150
116	FLA 23	Perimeter Flashing at Canopy to Wall	LF	200
117	FLA 24	Flashing at Brick Wall to Slab Connection	LF	250
118	FLA 25	Flashing at Brick Wall to Canopy	LF	830
119	FLA 26	Penetration Flashing - HVAC Unit Curb	LF	200
120	FLA 27	Canopy Perimeter Flashing at Window	LF	119
121	FLA 28	Penetration Flashing - Hatch (Liquid)	EA	4
122	FLA 29	Penetration Flashing - Hatch	EA	4
123	FLA 30	Abandoned Curb Closure and Flashing	EA	60
124	FLA 31	Expansion Joint Flashing	LF	1200
125	FLA 32	Penetration Flashing - Fan Curb	EA	70
126	FLA 33	Penetration Flashing - Fan Curb (Inclined)	EA	20
127	FLA 34	Penetration Flashing - Fan Curb (Inclined, Wood Deck)	EA	20
128	FLA 35	Penetration Flashing - Pipe	EA	160
129	FLA 36	Penetration Flashing - Pipe (Liquid)	EA	200
130	FLA 37	Penetration Flashing - Pipe (Wood Deck)	EA	100
131	FLA 38	Penetration Flashing - Insulated Pipe	EA	75
132	FLA 39	Penetration Flashing - Large Pipe	EA	60
133	FLA 40	Penetration Flashing - Ductwork	LF	60
134	FLA 41	Penetration Flashing - Irregularly Shaped / Conduit	EA	50
135	FLA 42	Penetration Flashing - Flexible Conduit	EA	40
136	FLA 43	Dunnage Support Wide Flange Flashing	EA	240
137	FLA 44	Stair Support Flashing	EA	240
138	FLA 45	Ladder Penetration Flashing	EA	240
139	FLA 46	Duct Support Angle Flashing	EA	75
140	FLA 47	Diverter Replacement	EA	10
141	FLA 48	Scupper Flashing at Water Tower	EA	10
142	LDR 01	Scupper Leader	EA	110
143	LDR 02	Scupper Leader at Projecting Slab	EA	70
144	MEM 01	Liquid Applied Membrane System	SF	500000
145	MEM 02	Liquid Applied Membrane	SF	10000
146	MEM 03	Liquid Applied Membrane System at Wood Deck	SF	4000
147	SCU 01	Bulkhead Roof Edge Scupper and Flashing	EA	200
<b>DIVISION 08 - EXTERIOR METAL DOORS, FRAMES &amp; HARDWARE</b>				
148	DOR 01	Bulkhead Door, Frame and Hardware Replacement	EA	180
149	DOR 02	Raised Bulkhead Door Saddle and Flashing Replacement	EA	180
150	DOR 03	Raised Bulkhead Door Saddle and Flashing with Metal Landing Replacement	EA	180
151	WIN 01	Bulkhead Stairwell Window Replacement	EA	180
152	LOU 01	Bulkhead Stairwell Louver Replacement	EA	180
<b>DIVISION 08 - SEALANT</b>				
153	JNT 01	Joint Sealant at Window / Louver Perimeter	LF	1200
154	JNT 02	Expansion Joint	LF	1200
<b>DIVISION 09 - FINISHES</b>				
155	COA 01	Steel Coating of Exposed Shelf Angle / Lintel	LF	50000

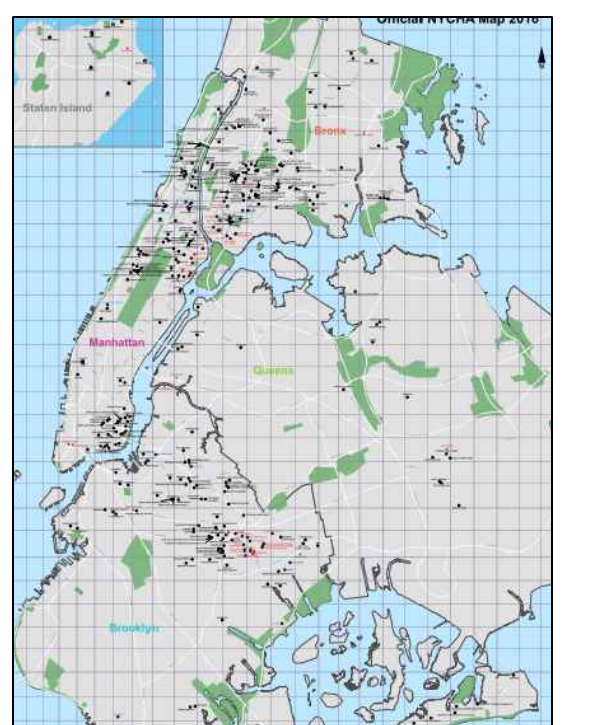
**DESIGNATION OF UNITS:**

SF: SQUARE FOOT  
 LF: LINEAR FOOT  
 EA: EACH

RESTORATION SUMMARY				
Development: Citywide				
#	Code	Description	Unit	Qty
49	DEM 01	Demolition: Existing Built-up Roof Membrane with Insulation	SF	500000
50	DEM 02	Demolition: Existing Built-up Roof Membrane without Insulation	SF	10000
51	DEM 03	Demolition: Existing SPFF Roofing System	SF	4000
52	DEM 04	Demolition: Existing Built-up Roof Membrane with Insulation at Wood Deck	SF	4000
53	DEM 05	Demolition: Existing Roof Railings Including Posts and All Attachments (Non-Lead)	LF	6250
54	DEM 06	Demolition: Existing Parapet Wall as Non-ACM (3 wythe)	SF	6250
55	DEM 07	Demolition: Existing Parapet Wall as Non-ACM (2 wythe)	SF	6250
<b>LEAD-BASE SAFE WORK PRACTICE</b>				
56	LBP 01	Remove Lead-Based Paint from All Exposed Metal Surfaces	SF	55000
<b>DIVISION 03 - CONCRETE</b>				
57	CON 01	Concrete Spall Repair At Overhead Slab Surface	SF	1440
58	CON 02	Concrete Spall Repair At Vertical Surface	SF	1080
59	CON 03	Concrete Crack Restoration	LF	2400
60	CON 04	Concrete Slab Opening Repair: Full Depth	SF	1200
61	SLB 01	"Flash Patch" Concrete Deck	SF	25000
62	COP 01	Terra Cotta Coping Replacement at Brick Parapet (3 wythe)	LF	600
63	COP 02	Precast Concrete Coping Replacement at Brick Parapet (3 wythe)	LF	600
64	COP 03	Terra Cotta Coping Installation at Brick Parapet (3 wythe)	LF	600
65	COP 04	Precast Concrete Coping Installation at Brick Parapet (3 wythe)	LF	600
66	COP 05	Terra Cotta Coping Replacement at Brick Parapet (2 wythe)	LF	600
67	COP 06	Precast Concrete Coping Replacement at Brick Parapet (2 wythe)	LF	600
68	COP 07	Terra Cotta Coping Installation at Brick Parapet (2 wythe)	LF	600
69	COP 08	Precast Concrete Coping Installation at Brick Parapet (2 wythe)	LF	600
<b>DIVISION 04 - MASONRY</b>				
70	CHM 01	Height Reduction of Compactor Stack (Stand-Alone)	EA	150
71	CHM 02	Height Reduction of Compactor Stack (Adjacent to Bulkhead)	EA	15
72	CHM 03	Removal of Ash Setting Chamber (approx. size 8.5'W x 8.5'L x 8'H), including slab, walls, flooring, etc	EA	150
73	COR 01	Corner Restoration: Brick Cavity Wall	SF	1200
74	COR 02	Corner Restoration: Brick Solid Wall	SF	1200
75	LTL 01	Provide Loose Lintel: Brick Masonry Cavity Wall	LF	2880
76	MAS 01	Cracked / Spalled Brick Masonry Replacement at Solid Wall	SF	3600
77	MAS 02	Cracked / Spalled Brick Masonry Replacement at Cavity Wall	SF	3600
78	PNT 01	Brick Re-pointing	SF	10800
79	SIL 01	Slate Sill Replacement: Brick Masonry Cavity Wall	LF	144
80	SIL 02	Slate Sill Replacement: Brick Masonry Solid Wall	LF	144
81	SIL 03	Sheet Metal Sill Replacement: Brick Masonry Cavity Wall	LF	144
82	SIL 04	Sheet Metal Sill Replacement: Brick Masonry Solid Wall	LF	144
83	PPT 01	Parapet Reconstruction - 3 wythe	LF	1080
84	PPT 02	Parapet Reconstruction Over Wood Deck - 3 wythe	LF	720
<b>DIVISION 05 - METALS</b>				
85	EXT 01	Existing Railing Extension	LF	75000
86	RAL 01	Side Mounted Railing Installation	LF	3000
87	RAL 02	Railing Replacement with Secondary Posts (Option 1)	LF	2500
88	RAL 02	Railing Replacement with Frame/Mesh Panels (Option 2)	LF	2500
89	RAL 03	Rail Post Sleeve Repair	EA	7000
90	STR 01	Bulkhead Steel Ladder	EA	60
<b>DIVISION 07 - THERMAL &amp; MOISTURE PROTECTION</b>				
91	DRN 01	Roof Drain Retrofit - Liquid Applied Membrane System	EA	200
92	DRN 02	Roof Drain Replacement at Main/Bulkhead Roof	EA	30
93	DRN 03	Roof Drain Scupper Replacement	EA	240
94	FLA 01	Perimeter Flashing at Raised Curb w/ Railing	LF	10000
95	FLA 02	Perimeter Flashing at Roof Edge - Raised Perimeter	LF	10000
96	FLA 03	Perimeter Flashing at Flat Concrete Edge w/ Railing	LF	5000
97	FLA 04	Perimeter Flashing at High Parapet	LF	10000
98	FLA 05	Perimeter Flashing at Bulkhead / Building Wall	LF	10000
99	FLA 06	Perimeter Flashing at Flat Concrete Edge	LF	1500
100	FLA 07	Perimeter Flashing at Sunk Slab	LF	500
101	FLA 08	Edge Flashing at Canopy at Raised Concrete Edge	LF	200
102	FLA 09	Edge Flashing at Canopy at Flat Concrete Edge	LF	250
103	FLA 10	Edge Flashing at Projecting Slab	LF	1700
104	FLA 11	Edge Flashing at Projecting Slab (Liquid)	LF	1050
105	FLA 12	Edge Flashing at Canopy (Metal Deck Substrate)	LF	400
106	FLA 13	Flashing at Roof to Projecting Slab Connection w/ Railing (Liquid)	LF	300
107	FLA 14	Flashing at Roof to Projecting Slab Connection w/ Railing	LF	500
108	FLA 15	Perimeter Flashing at Elevated Platform	LF	300

RESTORATION SUMMARY				
Development: Citywide				
#	Code	Description	Unit	Qty
<b>DIVISION 02 - SITE PROTECTION</b>				
1	PRO 01	Provide Sidewalk Shed Protection - 6' wide 8' high, erection, light, including 3 months rental, maintenance and cleaning	LF	8000
2	PRO 02	Provide Sidewalk Shed Protection - 6' wide 10' high, erection, light, including 3 months rental, maintenance and cleaning	LF	2000
3	PRO 03	Provide Sidewalk Shed Protection - 6' wide 12' high, erection, light, including 3 months rental, maintenance and cleaning	LF	2000
4	PRO 04	Provide Sidewalk Shed Protection - 6' wide 14' high, erection, light, including 3 months rental, maintenance and cleaning	LF	2000
5	PRO 05	Provide Sidewalk Shed Protection - 6' wide 16' high, erection, light, including 3 months rental, maintenance and cleaning	LF	2000
6	PRO 06	Provide Sidewalk Shed Protection - 8' wide 8' high, erection, light, including 3 months rental, maintenance and cleaning	LF	8000
7	PRO 07	Provide Sidewalk Shed Protection - 8' wide 10' high, erection, light, including 3 months rental, maintenance and cleaning	LF	2000
8	PRO 08	Provide Sidewalk Shed Protection - 8' wide 12' high, erection, light, including 3 months rental, maintenance and cleaning	LF	2000
9	PRO 09	Provide Sidewalk Shed Protection - 8' wide 14' high, erection, light, including 3 months rental, maintenance and cleaning	LF	2000
10	PRO 10	Provide Sidewalk Shed Protection - 8' wide 16' high, erection, light, including 3 months rental, maintenance and cleaning	LF	2000
11	PRO 11	Provide Sidewalk Shed Protection - 10' wide 8' high, erection, light, including 3 months rental, maintenance and cleaning	LF	8000
12	PRO 12	Provide Sidewalk Shed Protection - 10' wide 10' high, erection, light, including 3 months rental, maintenance and cleaning	LF	2000
13	PRO 13	Provide Sidewalk Shed Protection - 10' wide 12' high, erection, light, including 3 months rental, maintenance and cleaning	LF	2000
14	PRO 14	Provide Sidewalk Shed Protection - 10' wide 14' high, erection, light, including 3 months rental, maintenance and cleaning	LF	2000
15	PRO 15	Provide Sidewalk Shed Protection - 10' wide 16' high, erection, light, including 3 months rental, maintenance and cleaning	LF	2000
16	PRO 16	Provide Sidewalk Shed Protection - 12' wide 8' high, erection, light, including 3 months rental, maintenance and cleaning	LF	8000
17	PRO 17	Provide Sidewalk Shed Protection - 12' wide 10' high, erection, light, including 3 months rental, maintenance and cleaning	LF	2000
18	PRO 18	Provide Sidewalk Shed Protection - 12' wide 12' high, erection, light, including 3 months rental, maintenance and cleaning	LF	2000
19	PRO 19	Provide Sidewalk Shed Protection - 12' wide 14' high, erection, light, including 3 months rental, maintenance and cleaning	LF	2000
20	PRO 20	Provide Sidewalk Shed Protection - 12' wide 16' high, erection, light, including 3 months rental, maintenance and cleaning	LF	8000
21	PRO 21	Additional rental, maintenance and cleaning of sidewalk sheds	LF/Month	280000
22	PRO 22	Provide Tree Protection	EA	500
23	PRO 23	Provide CCTV Camera Protection	EA	500
24	PRO 24	Dismantling and Removal of Any Type of Sidewalk Shed	LF	70000
25	FNC 01	Provide Temporary Chain Link Fence: 8' High	LF	40000
<b>DIVISION 02 - EXISTING CONDITIONS</b>				
26	ACM 01	ACM Removal at Main Roof Assembly	SF	50000
27	ACM 02	ACM Removal at Canopy/Bulkhead/Water Tower Roof	SF	8000
28	ACM 03	ACM Removal at Roof Drain Flashing	SF	700
29	ACM 04	ACM Removal at Roof Perimeter Base Flashing - Parapet	SF	12500
30	ACM 05	ACM Removal at Roof Perimeter Flashing - Railing / Concrete Slab	SF	12500
31	ACM 06	ACM Removal at Railing Pitch Pockets	EA	5000
32	ACM 07	ACM Removal at Parapet Wall Waterproofing	SF	22500
33	ACM 08	ACM Removal at Edge Metal Flashing/Fascia	SF	15000
34	ACM 09	ACM Removal at Bulkhead Base In-Wall Metal Flashing and Brickwork	SF	15000
35	ACM 10	ACM Removal at Chimney Base / Compactor Stack Flashing	SF	2500
36	ACM 11	ACM Removal at Door Saddle Flashing	SF	375
37	ACM 12	ACM Removal at Vent Fan Curb	SF	560
38	ACM 13	ACM Removal at Vent Pipe Penetration	SF	250
39	ACM 14	ACM Removal at Ladder Pitch Pockets	EA	100
40	ACM 15	ACM Removal at Roof Hatch at Bulkhead Roof	SF	350
41	ACM 16	ACM Removal of Parapet Wall - 3 wythe	SF	12500
42	ACM 17	ACM Removal of Parapet Wall - 2 wythe	SF	12500
43	ACM 18	ACM Removal at Coping Stone Joints	LF	6250
44	ACM 19	ACM Removal at Bulkhead Door/Window/Louver Perimeter Sealant	LF	1250
45	ACM 20	ACM Removal of Caulking Around Incinerator Room Access Door	LF	625
46	ACM 21	ACM Removal of Existing Flooring at Incinerator Room	SF	875
47	ACM 22	ACM Removal of Expansion Joint Between Incinerator Stack and Bulkhead Wall	LF	310
48	ACM 23	ACM Removal of Coping Stone, Flashing and One Top Course of Brickwork at Parapet Wall	LF	750





Key/ Location plan

**Contract Title:  
 ROOF REPLACEMENT AND  
 ROOFTOP STRUCTURE RENOVATION  
 REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

Drawing Title: Sidewalk Shed Protection:  
 PRO 01 - PRO 20 (1 OF 2)

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>G005.00</b>
Sheet 6 of 64	

**SIDEWALK SHED GENERAL NOTES:**

- ALL WORK OF THIS SECTION SHALL COMPLY WITH THE REQUIREMENTS AND THE CONDITIONS OF THE CONTRACT (GENERAL, SUPPLEMENTARY AND SPECIAL), WITH ALL SECTIONS OF DIVISION I, WITH THE DRAWINGS AND WITH ALL OTHER CONTRACT DOCUMENTS.
- THE WORK MUST BE PERFORMED IN COMPLIANCE WITH ALL THE SAFETY REGULATIONS OF NEW YORK CITY BUILDING CODE, OSHA AND ANY GOVERNMENTAL AGENCIES HAVING THEIR JURISDICTION.
- THE CONTRACTOR SHALL HIRE A PROFESSIONAL ENGINEER LICENSED IN NYC TO DESIGN THE SIDEWALK SHEDS AS PER NYC BC LOADING CRITERIA AND PROVIDE A LAYOUT THAT SATISFIES ALL CODE REQUIREMENTS. THE CONTRACTOR SHALL SUBMIT THEIR PROPOSED SIDEWALK SHOP DRAWINGS TO DESIGNER OF RECORD (DOR) AND NYCHA FOR REVIEW.
- THE REVIEW CARRIED OUT BY THE NYCHA REPRESENTATIVE AND DOR IS CURSORY ONLY AND SHALL NOT RELIEVE THE CONTRACTOR OF ANY LIABILITY FOR THE SUBMITTED SIDEWALK SHED DESIGN.
- THE CONTRACTOR IS REQUIRED TO SUBMIT A CERTIFICATE SIGNED BY THEIR LICENSED ENGINEER ATTESTING THAT THE INSTALLATION HAS BEEN INSPECTED AND CONFORMS TO THE REQUIREMENTS OF THEIR DESIGN AND SHOP DRAWINGS.

**TECHNICAL NOTES:**

- SIDEWALK SHEDS ARE TO BE ERRECTED AT BUILDING ENTRANCE AND EXIT INCLUDING EXIT RAMPS.
- SIDEWALK SHEDS SHALL EXTEND A MINIMUM OF HALF THE HEIGHT OF BUILDING AWAY FROM AND IN ALL DIRECTIONS ALONG THE FACADES OF THE BUILDING. SEE SCHEMATIC PLAN OF ZONE REQUIRING SHEDDING.
- ALL OTHER ENTRANCES AND EXITS TO A BUILDING, AS DIRECTED BY MANAGEMENT, SHALL BE FENCED OFF FOR THE PERIOD OF CONSTRUCTION WITH CHAIN-LINK FENCING AND PROVIDE SIGNAGE TO ALTERNATE EXIT AND ENTRANCE LOCATIONS IS TO BE PROVIDED.
- THE SIDE OF THE SHED NEAREST THE BUILDING AND NOT BUILT SOLIDLY AGAINST THE BUILDING FACE SHALL BE SEALED OFF WITH FULL HEIGHT 1/2" MESH CONSTRUCTION NETTING AS WELL AS MIN. 6 FEET HIGH, 11 GAUGE, 2" X 2" CHAIN LINK FENCE. ADDITIONALLY, SEAL OFF BOTH SIDES OF SHEDS WITHIN 30' RADIUS OF BUILDING ENTRANCES WITH SAME MATERIALS.
- FOR CHANNELS, ANGLES, PLATES AND S-SECTIONS PROVIDE MIN. GRADE A36 STEEL. FOR W SECTIONS GRADE A992 IS PREFERRED. FOR PIPE USE MIN. GRADE A53B. FOR ROUND AND RECTANGULAR HSS SECTIONS USE MIN. GRADE A500B.
- FIRST TWO (2) BAYS MUST BE FULLY INSTALLED COMPLETE WITH CROSS AND HORIZONTAL BRACING BEFORE SUBSEQUENT BAYS ARE INSTALLED. PROVIDE ADDITIONAL CROSS BRACING FOR STABILITY OF ALL POSTS/SHED, AS REQUIRED PER REVIEWED DESIGN CALCULATIONS.
- POSTS MUST BE SET ON A SURFACE LEVELED WITH WOOD BLOCKING. POSTS MUST BE PLUMB ON ALL SURFACES INCLUDING RAMPS. BLOCKING MUST BE MINIMUM 8" X 8" X 2" THICK. MAXIMUM BUILT UP HEIGHT SHALL BE 4" WITH STACKED PIECES NAILED TOGETHER. FOR INCREASED STABILITY OF STACKS HEIGHT MORE THAN 4", ENCASE THE BLOCKS WITH NAILED 3/4" THICK PLYWOOD OR WOOD PLANKS ON ALL FOUR SIDES. MAXIMUM HEIGHT OF STACKED BLOCKS NOT TO EXCEED 12".
- DIAGONAL BRACING MUST BE PROVIDED AT EVERY 4TH BAY, AT END BAYS, AND AT ELEVATION AND DIRECTION CHANGES ON BOTH SIDES.
- FIRE TRUCK ACCESS REQUIREMENT: WHERE THE AREA OF SIDEWALK SHED REQUIRES FIRE TRACKS TO PASS UNDERNEATH, THE SHED SHALL BE 16'-0" HIGH BY 12'-0" WIDE MIN. COORDINATE ACCESS AND SIDEWALK SHED WIDTH AND A HEIGHT WITH FDNY AND DEVELOPMENT MANAGEMENT.
- FOR LIGHT FIXTURE INSTALLATION AND HEIGHT, SEE DWG AND SPECIFICATIONS.

**LEGAL REQUIREMENTS:**

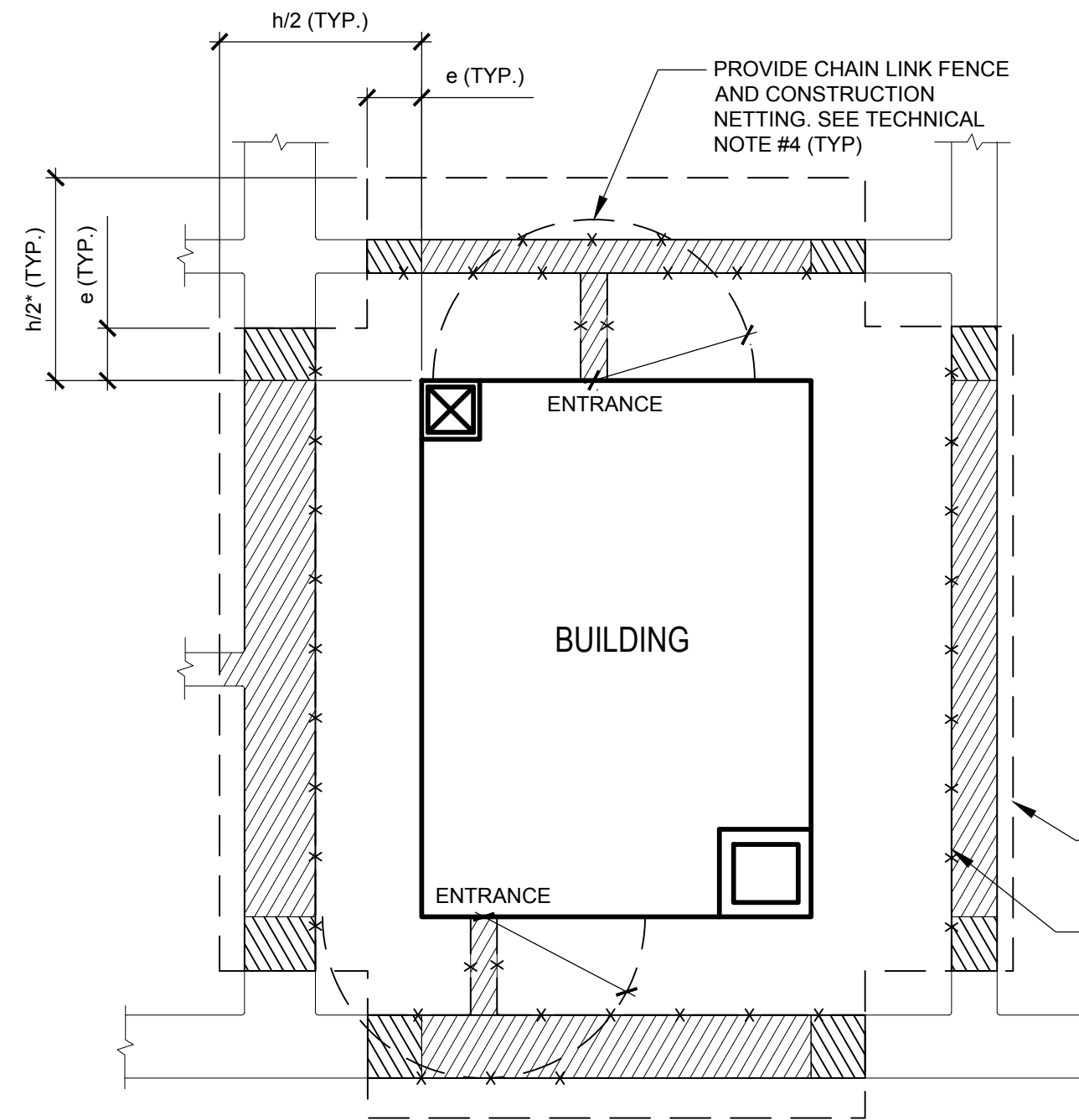
- THE CONTRACTOR SHALL PROVIDE A SCHEMATIC LAYOUT OF SIDEWALK SHED LIGHTING INCLUDING SOURCE OF LIGHTING.
- A SIGN MUST BE POSTED ON THE SIDEWALK SHED WITH THE FOLLOWING: CONTRACTOR'S ADDRESS, EMERGENCY CONTACT #, BUILDING ADDRESS, ETC., AS REQUIRED PER DOB.
- SIDEWALK SHED & TEMPORARY FENCE PROTECTION & PHASING FOLLOWING NYC BC AND NYCHA'S PROCEDURES. PEDESTRIAN AREAS, I.E. SIDEWALKS, RAMPS, SERVICE AREAS, PARKING LOTS, ETC. MUST BE PROTECTED FROM FALLING OBJECTS WITH A SIDEWALK SHED OR A TEMPORARY CHAIN LINK FENCE, IF THEY ARE WITHIN AN AREA THAT IS A HALF THE BUILDING HEIGHT OR LESS. FURTHERMORE, IN ORDER TO MINIMIZE THE IMPACT ON THE RESIDENT USE OF PUBLIC SPACES, THE WORK SHALL BE PHASED AND ADJACENT BUILDINGS SHALL BE GROUPED.

**SAFETY NOTES:**

- AREA OF ERECTION / DISMANTLING SHALL BE BARRICADED DURING WORK. CAUTION AND WARNING SIGNS SHALL BE POSTED.
- POSTS SHALL NOT REST DIRECTLY ON VAULTS OR GRATINGS.
- ALL WORK OPERATIONS, INCLUDING ERECTION/DISMANTLING SHALL BE UNDER THE SUPERVISION OF THE COMPETENT PERSON WITH A MINIMUM OF 5 YEARS OF EXPERIENCE IN CARPENTRY TRADE.
- SIDEWALK SHEDS SHALL NOT BE ATTACHED TO ANY BUILDING.
- CROSS-BRACING SHALL BE INSTALLED IN THE FIRST TWO (2) BAYS DURING INSTALLATION AND SHALL BE REMOVED LAST DURING DISMANTLING.
- PARAPETS MUST BE PROVIDED AT THE SIDEWALK SHED PERIMETER TO ARREST ANY FALLING DEBRIS AND OBJECTS ON TOP OF SHED.
- THE CORRUGATED DECKING IS PLACED UNDER THE WOODEN DECK TO PREVENT WATER LEAKS.
- ERECTION AND DISMANTLING OF THE SHED SHALL BE LIMITED TO THE HOURS OF 8:00AM-4:00PM, MONDAY THROUGH FRIDAY, UNLESS OTHERWISE DIRECTED. NOTE: A SEPARATE SIDEWALK SHED PERMIT IS REQUIRED FOR WEEKEND WORK EXCEPT FOR THAT DEEMED AN EMERGENCY BY THE NYC DEPARTMENT OF BUILDINGS.
- ERECTION AND DISMANTLING OF THE SHED SHALL NOT BLOCK WALKWAYS OR ANY MEANS OF RESIDENT EGRESS FROM THE BUILDING.
- FIRE HYDRANTS AND OTHER FIRE SAFETY FACILITIES SHALL NOT BE OBSTRUCTED BY THE SHED AT ANY TIME. SEE SPECIFICATIONS FOR ALL REQUIREMENTS.
- REMOVAL OF HAND RAILS OR PIPE GIRTS SHALL BE PROHIBITED EXCEPT FOR TEMPORARY REMOVAL DURING LOADING OPERATIONS.
- ELECTRICAL CONDUIT SHALL NOT BE ACCESSIBLE TO THE PUBLIC AND NO TEMPORARY OR "PIGTAIL" LIGHTING SHALL BE PERMITTED. POWER FOR LIGHTING SHALL BE PROVIDED BY INDIVIDUALLY ASSIGNED CIRCUITS AND NOT TAPPED FROM EXISTING FIXTURES.
- ALL CLAMPS, BOLTS, PINS AND CLIPS MUST BE SECURED AND TIGHT.
- ALL EXPOSED BOLTS OF SHED FRAMING SHALL BE COVERED WITH SAFETY CAPS AND DUCT TAPED, OR INSULATED AND DUCT TAPED AS PER SPECIFICATION REQUIREMENTS.
- SIDEWALK SHEDS AND ALL METALLIC COMPONENTS SHALL BE ELECTRICALLY GROUNDED.

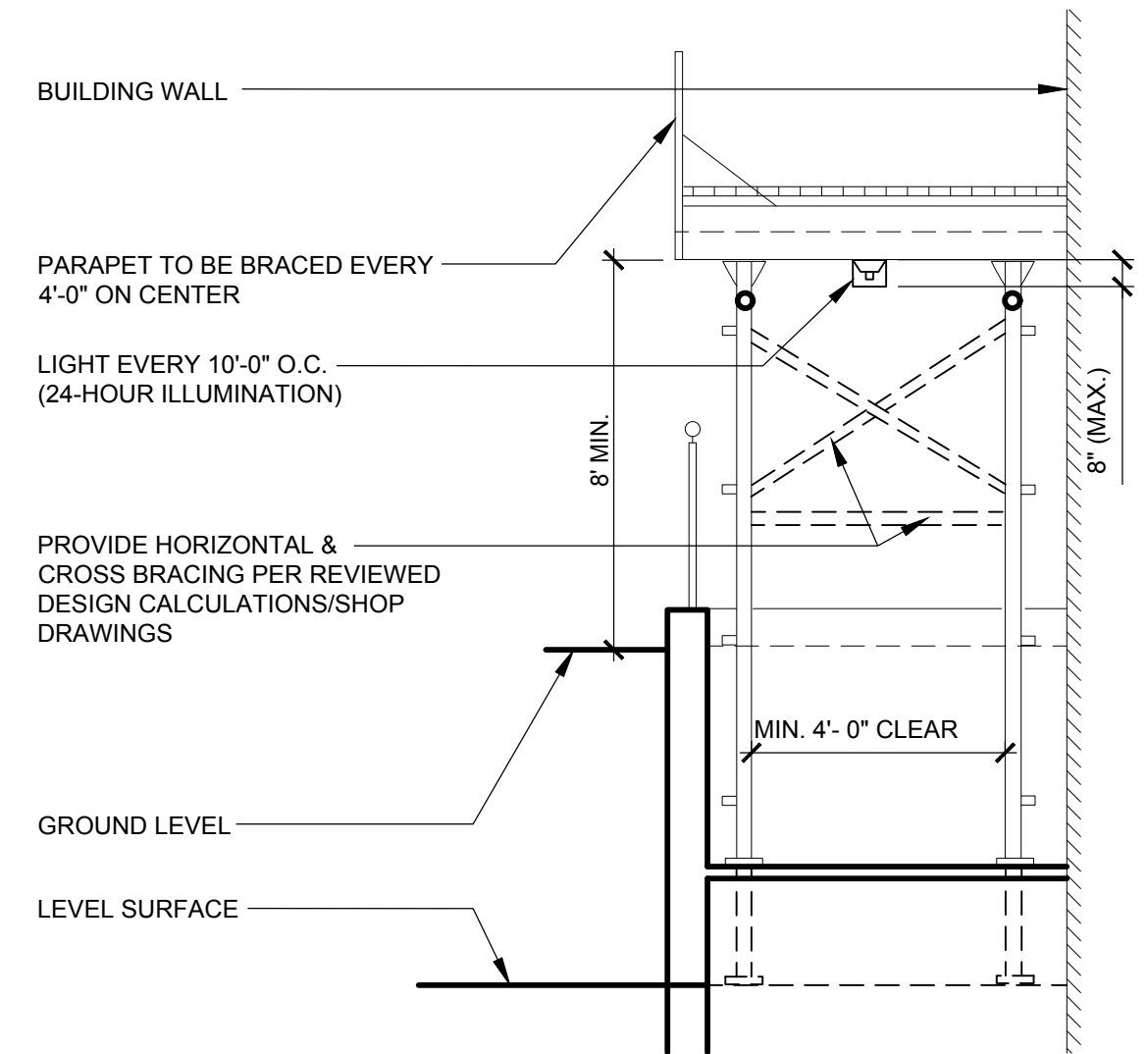
**ADDITIONAL NOTES:**

- FOR ALL SHED CONFIGURATIONS REQUIRED BY SITE CONDITIONS, CALCULATIONS SHOWING REQUIRE STEEL MEMBERS SHALL BE SUBMITTED TO NYCHA'S REPRESENTATIVE AND D.O.R. FOR REVIEW PRIOR TO FILING WITH D.O.B.
- MATCH WOOD BLOCKING SIZE TO FIT COLUMN BASE PLATE.
- SEE SPECIFICATION FOR LIGHTING AND GROUNDING REQUIREMENTS.
- FOR BRIDGE CROSSING 12'-0" AND WIDER, SIGNED AND SEALED DESIGN CALCULATION SHALL BE SUBMITTED TO NYCHA'S REPRESENTATIVE AND DOR FOR REVIEW PRIOR TO FILING WITH DOB.
- CATCHALL SHALL BE PROVIDED AT BOTH SHORT ENDS OF SHED WHEN BUILDING IS ABUTTING ADJOINING BUILDINGS AND WHERE REQUIRED BASED ON SITE CONDITIONS.
- AT ALL COLUMNS ADJACENT TO DRIVEWAYS, PARKING LOTS, AT STREET CORNERS, AND WHERE DIRECTED BY NYCHA'S REPRESENTATIVE, INSTALL 1.5" DIA. PIPE COLUMN BRACE BOLTED TO CONCRETE SIDEWALK (USE 5/8" ANCHOR BOLT).

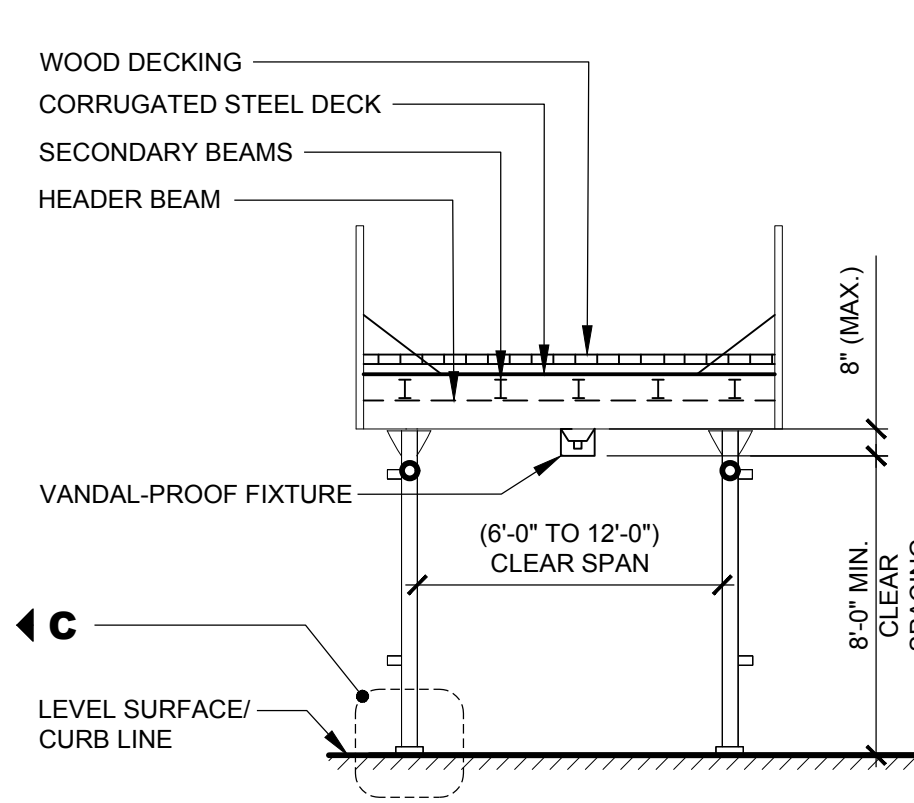


**SCHEMATIC PLAN OF ZONE REQUIRING SHEDDING**

\* FOR h > 40' ONLY. FOR h ≤ 40' PROTECT ALL SIDEWALKS, WALKWAYS, AND PATHWAYS WITHIN THE PROPERTY LINE AND ALL PUBLIC SIDEWALKS THAT ABUT THE PROPERTY.



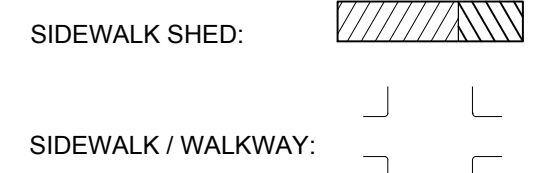
**SECTION 'B'  
 SIDEWALK SHED CROSS SECTION ON SLOPE / RAMP**



**SECTION 'A' (TYPICAL)**

**ABBREVIATIONS & LEGEND:**

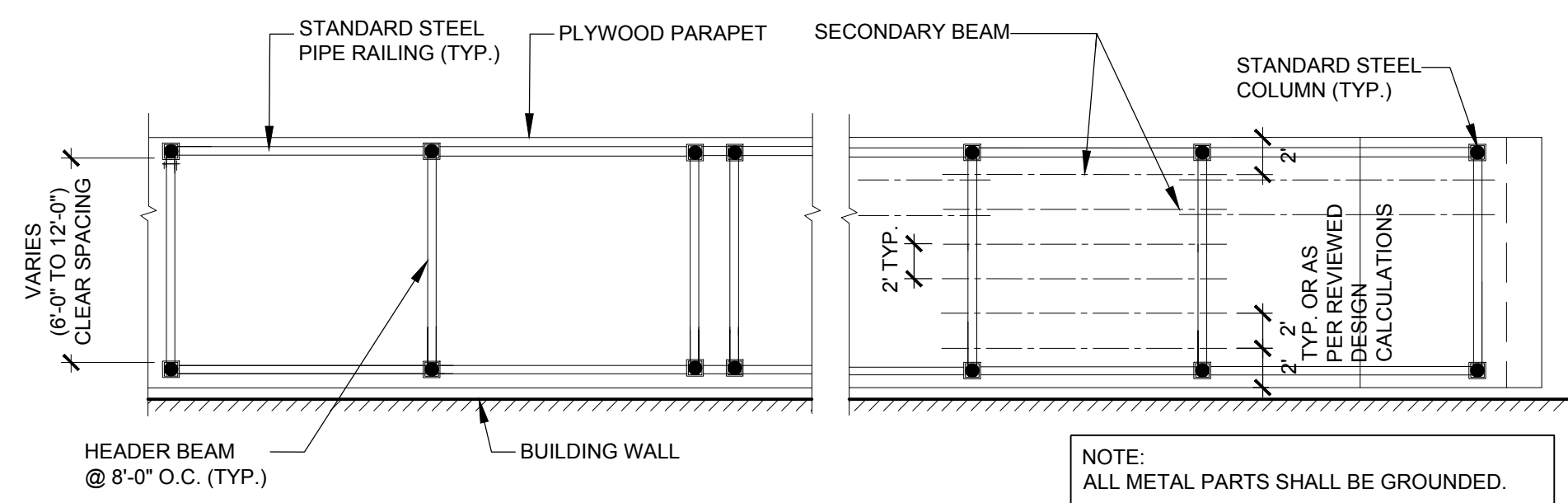
e - SIDEWALK SHED EXTENSION  
 h - BUILDING HEIGHT



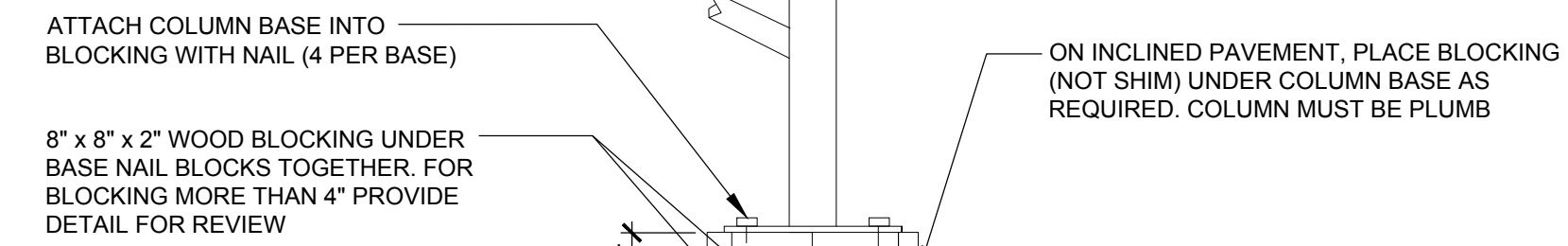
BLDG. HEIGHT (FT)	e (FT)	LIVE LOAD # / SF
h < 100	5'	150
h > 100	20'	300

NOTE: WALKWAYS REQUIRING SHEDDING MAY ALSO BE CLOSED BY TEMPORARY FENCING IN COORDINATION AND APPROVAL WITH NYCHA REPRESENTATIVE.

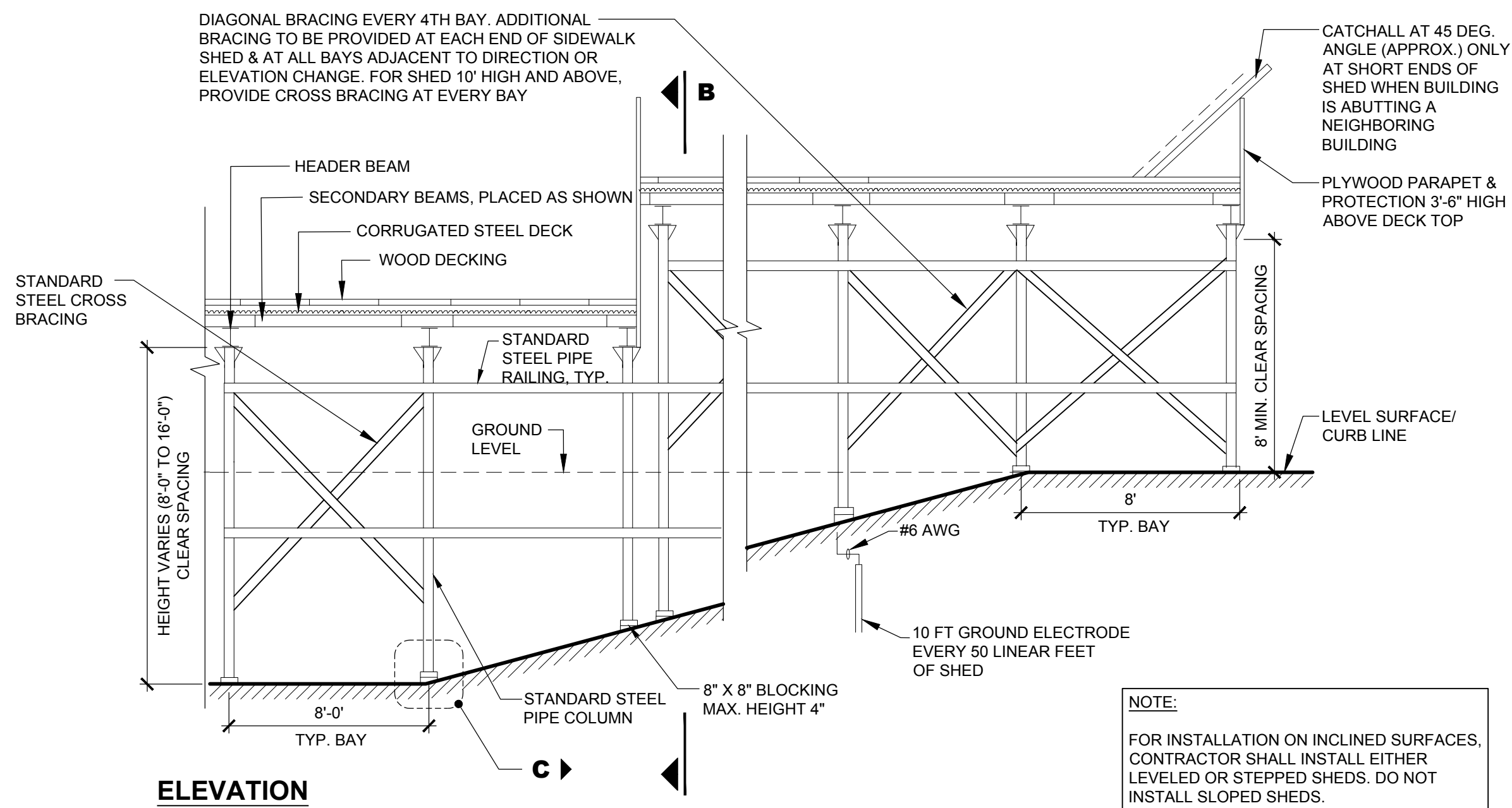
BOUNDARY WITHIN WHICH SWS ARE REQUIRED  
 PROVIDE CHAIN LINK FENCE AND CONSTRUCTION NETTING. SEE TECHNICAL NOTE #4 (TYP)



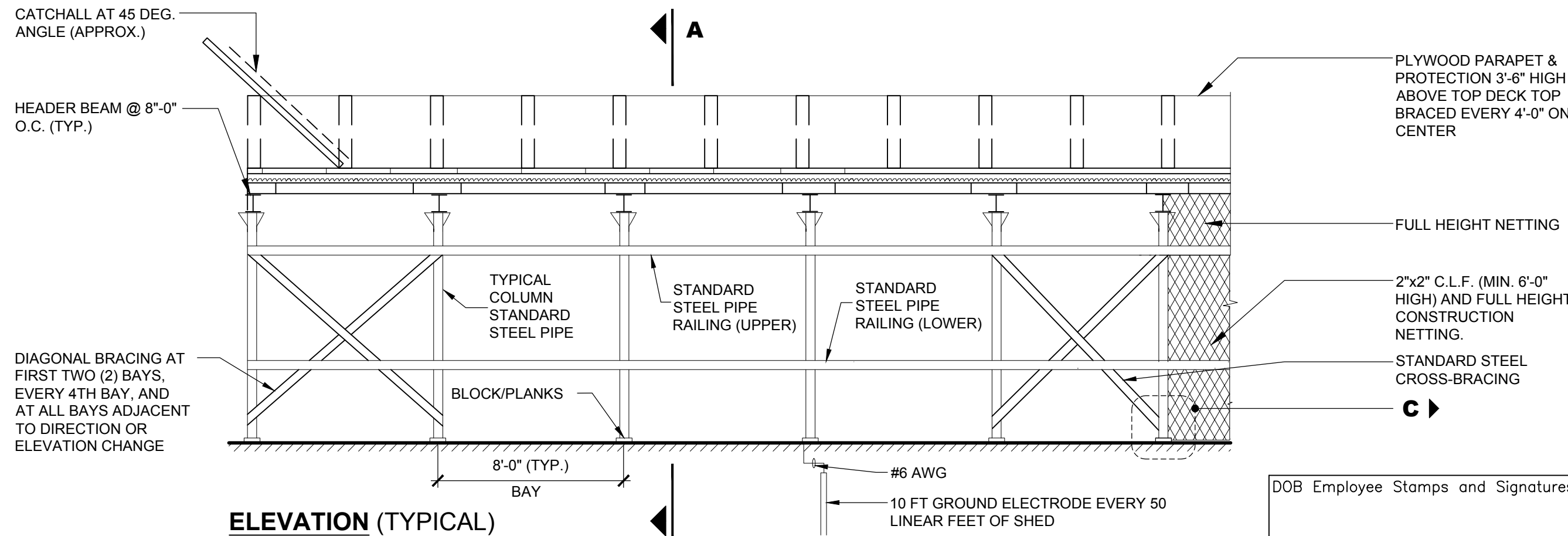
**PLAN (TYPICAL)**



**DETAIL 'C'  
 COLUMN BASE DETAIL**

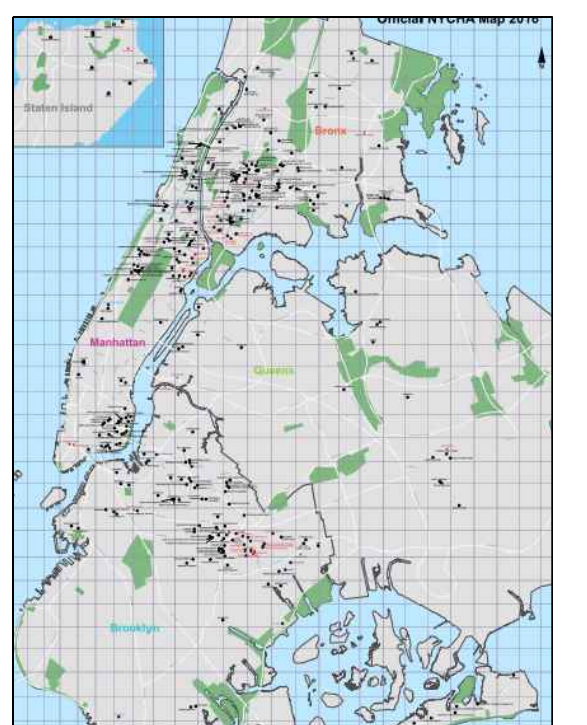


**ELEVATION  
 SIDEWALK SHED ELEVATION ON SLOPE / RAMP**



**ELEVATION (TYPICAL)**

DOB Employee Stamps and Signatures



Key/ Location plan

Contract Title:  
**ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

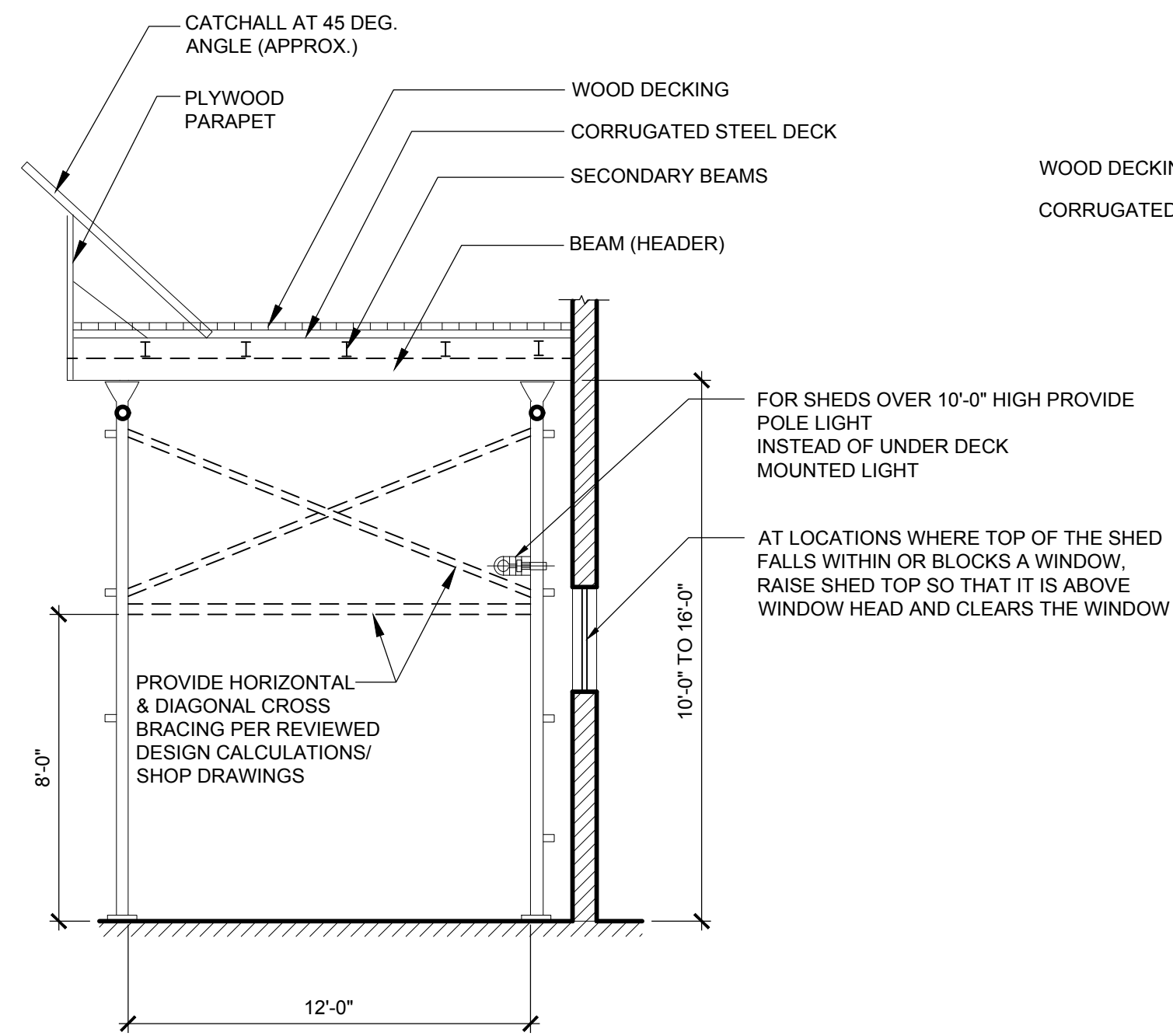
Drawing Title: Sidewalk Shed Protection:  
 PRO 01 - PRO 20 (2 OF 2)

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>G006.00</b>
	Sheet 7 of 64

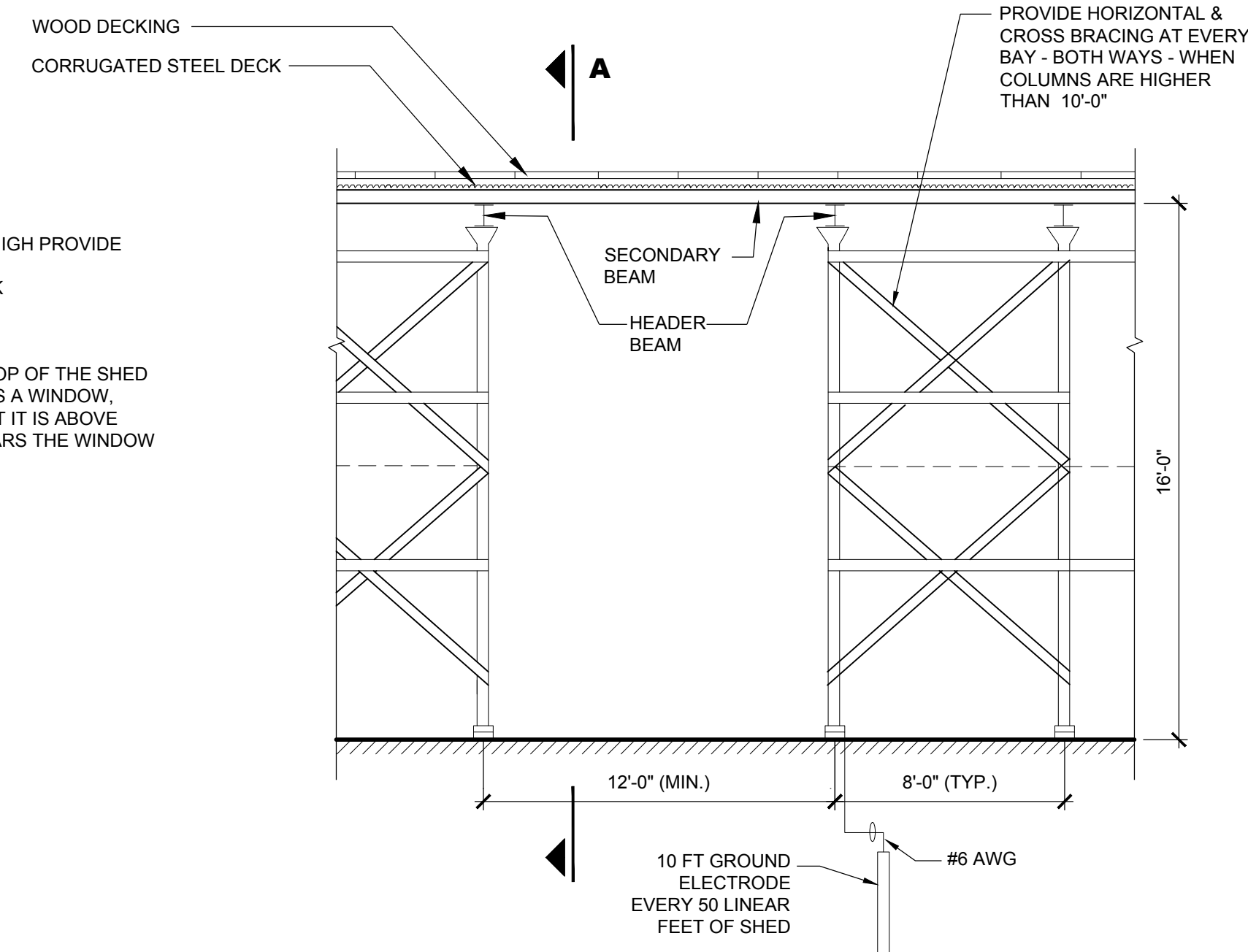
DOB BSCAN STICKER

**SIDEWALK SHED ELECTRICAL NOTES:**

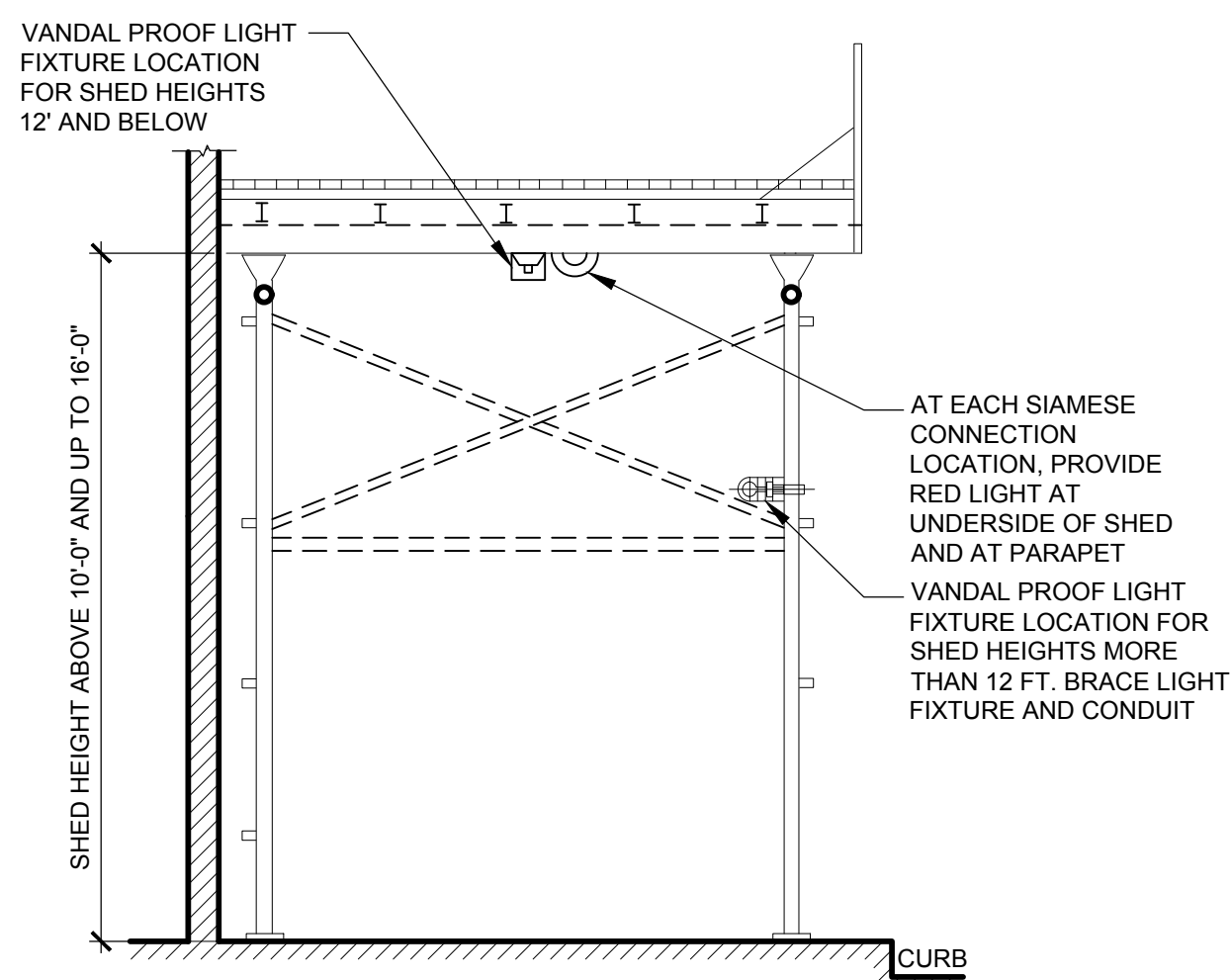
- USE GALVANIZED STEEL OR RIGID ALUMINUM RACEWAYS. MINIMUM SIZE CONDUIT SHOULD BE 3/4" DIA.
- ELECTRICAL METALLIC TUBING TYPE EMT IS NOT ACCEPTABLE (AS PER NEC NYC AMENDMENTS SECTION 358.12.7).
- TYPE NM (NONMETALLIC) CABLE (ROMEX) IS NOT ACCEPTABLE (AS PER NEC ARTICLE 334.12.B.4)
- JUNCTION BOXES MUST BE SUITABLE FOR DAMP OR WET LOCATIONS (AS PER NEC ARTICLE 314.15)
- MINIMUM WIRE SIZE REQUIRED IS NO. 12 (AS PER NYC AMENDMENTS SECTION 210.24). ALL WIRING METHODS ON A BUILDING MUST COMPLY WITH NEC ARTICLE 225.10. WIRE SIZE TO BE ADJUSTED FOR VOLTAGE DROP AS REQUIRES.
- ALL FIXTURES USED MUST BE SUITABLE FOR OUTDOOR LOCATIONS (AS PER NEC ARTICLE 410.10.A).
- ALL RECEPTACLES SHALL BE GFI TYPE.
- FIXTURE/LUMINAIRE SUPPORT AS PER NYC ELECTRICAL CODE ARTICLE 410.30 AND 410.36.
- THE INSTALLATION MUST BE PROPERLY GROUNDED AND BONDED (AS PER NEC ARTICLE 250, 250.18, & 250.122). "SINGLE GROUND ROD" INSTALLATIONS ARE ONLY ACCEPTABLE IF THE RESISTANCE TO EARTH OF THE GROUND ROD IS 25 OHMS OR LESS IF RESISTANCE GREATER THAN 25 OHMS IN THAT CASE PROVIDE GROUND ROD EVERY 50 FEET APART.
- POWER CAN BE FED FROM A PANEL OR A BRANCH CIRCUIT USING 20 AMP BRANCH CIRCUIT (AS PER NEC NYC AMENDMENTS SECTION 590.6 GROUND-FAULT PROTECTION SHALL BE PROVIDED).
- THE PANEL THAT IS SUPPLYING THE POWER TO THE SIDEWALK SHED LIGHTING MUST HAVE A DIRECTORY THAT INDICATES WHICH CIRCUIT IS BEING UTILIZED TO SUPPLY THE POWER (AS PER NEC ARTICLE 408.4).
- THE USE OF ENERGY EFFICIENT LIGHT BULBS AND FIXTURES ARE REQUIRED TO REDUCE ENERGY CONSUMPTION AND SAVE MONEY.
- ALL SIDEWALK SHED ELECTRICAL INSTALLATIONS MUST BE INSTALLED BY A NEW YORK CITY LICENSED ELECTRICIAN AND MUST BE DONE IN ACCORDANCE WITH NEC 2014, ELECTRICAL CODE AND THE NYC AMENDMENTS TO THE 2008 NEC (LOCAL LAW 39/2011) AND/OR LATEST NYC ELECTRICAL CODE IN EFFECT AT TIME OF INSTALLATION.
- SHED DESIGNS MUST MEET PERFORMANCE STANDARDS ESTABLISHED BY 3307.6.3 AND BE CONSISTENT WITH THE 2014 NYC ELECTRICAL CODE. THE APPLICANT OF RECORD MUST HAVE CALCULATIONS/SPECIFICATIONS THAT INDICATE THE DESIGN MEETS THOSE STANDARDS; THESE CALCULATIONS/SPECIFICATIONS MUST BE MADE AVAILABLE TO NYCHA UPON REQUEST.
- SIDEWALK SHED PLANS MUST DETAIL THE LIGHTING LAYOUT INCLUDING: TYPE OF FIXTURES; TYPE AND RATING OF LIGHT SOURCE; HORIZONTAL SPACING OF FIXTURES; VERTICAL HEIGHT OF FIXTURES ABOVE SIDEWALK LEVEL; AND TYPE OF CONDUIT.
- ELECTRICAL PERMITS ARE REQUIRED, AND ONLY A NYC-LICENSED ELECTRICIAN MAY INSTALL THE ELECTRICAL WORK.
- ALL TEMPORARY WALKWAYS SHALL BE ILLUMINATED AT ALL TIMES. THE LEVEL OF ILLUMINATION SHALL BE A MINIMUM FOUR (4) FOOT CANDLE MEASURED AT THE LEVEL OF THE WALKING SURFACE AS PER ELECTRICAL SPECIFICATION. ALL LAMPS SHALL BE ENCLOSED IN VANDAL-PROOF FIXTURES, HAVE A MINIMUM LUMINOUS EFFICIENCY OF 45 LUMENS PER WATT OR GREATER AND BE RATED TO OPERATE AT TEMPERATURES OF 5 DEGREES FAHRENHEIT AND HIGHER. [ARTIFICIAL] LIGHTING UNITS SHALL BE INSPECTED [NIGHTLY] DAILY, AND BURNED OUT OR INOPERATIVE UNITS SHALL BE REPLACED OR REPAIRED IMMEDIATELY.
- ALL POWER TO THE ELECTRICAL SHED INSTALLATION IS GROUND FAULT CIRCUIT INTERRUPTION (GFCI) PROTECTED AS PER NEC NYC AMENDED SECTION 590.6.
- ALL RACEWAYS ARE TERMINATED AND SUPPORTED PROPERLY AS PER NEC ARTICLE 300.
- ELECTRICAL INSTALLATION DOES NOT POSE A SAFETY HAZARD TO THE PUBLIC.
- BUILDING DEPT. BUREAU OF ELECTRICAL CONTROL (BEC) FILING, PERMITS AND SIGN-OFF SHALL BE OBTAINED BY A LICENSED ELECTRICIAN FOR EACH INSTALLATION.
- PROVIDE A RED BULB ADJACENT TO ALL SIAMESE CONNECTIONS AND SPRINKLER CONNECTIONS.
- FIELD CONDITIONS: MODIFY LAYOUT AS REQUIRED TO PROVIDE CODE COMPLAINT COVERAGE AT ALL AREAS BELOW SHED. DO NOT PERMIT BEAMS, COLUMNS, CANOPIES, SOFFITS AND WALL TO CREATE DARKENED AREAS.
- 2 #10, 1#10G IN 3/4" DIA. SHALL BE USED TO FEED RED LIGHT LOCATED NEAR SIAMESE CONNECTION.
- SEE SPECIFICATION FOR NUMBER OF LIGHTING FIXTURES REQUIRED PER SIDEWALK SHED HEIGHT.



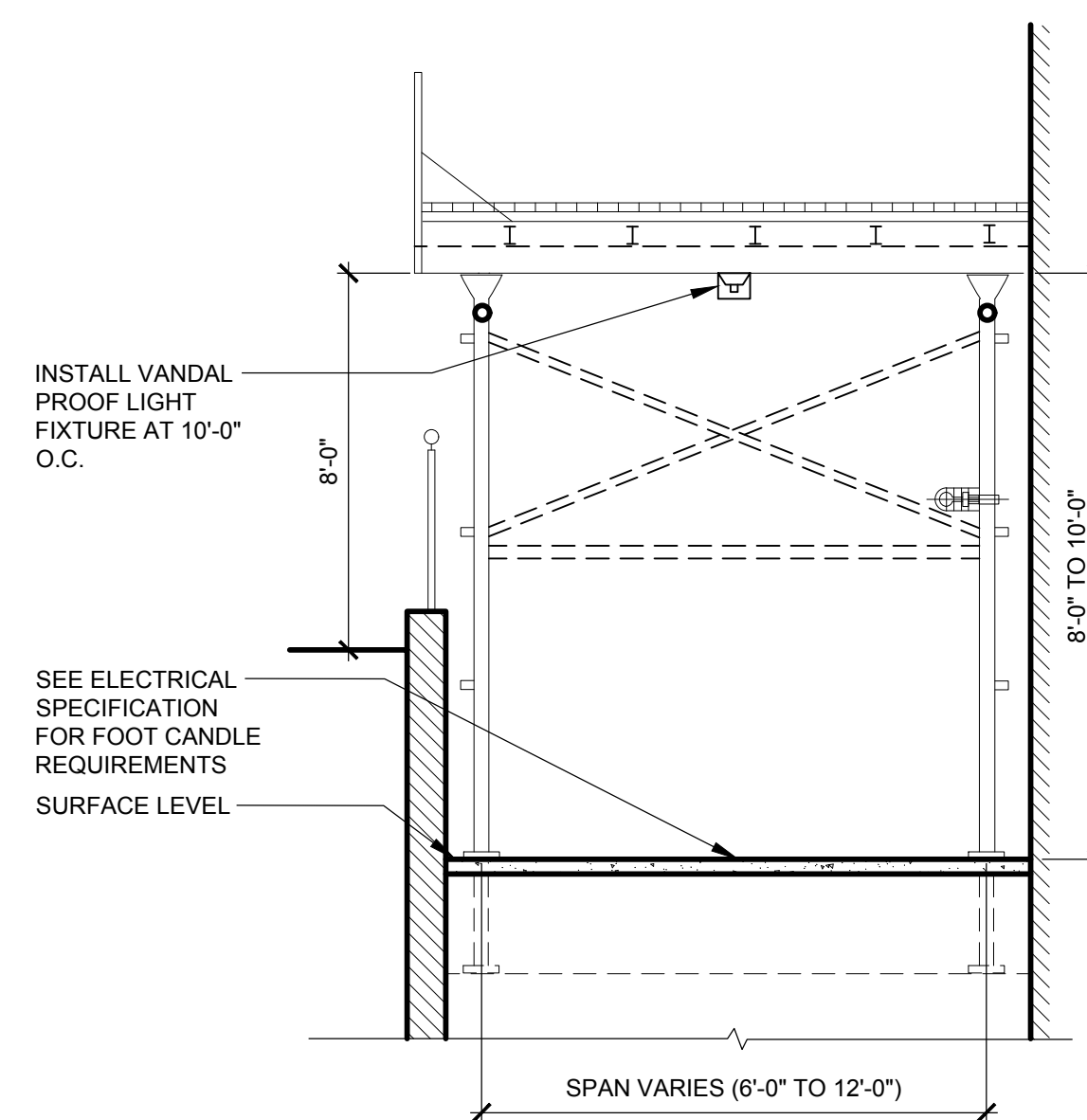
**SECTION 'A'**  
 SIDEWALK SHED W/ HEIGHT GREATER THAN 8'-0"



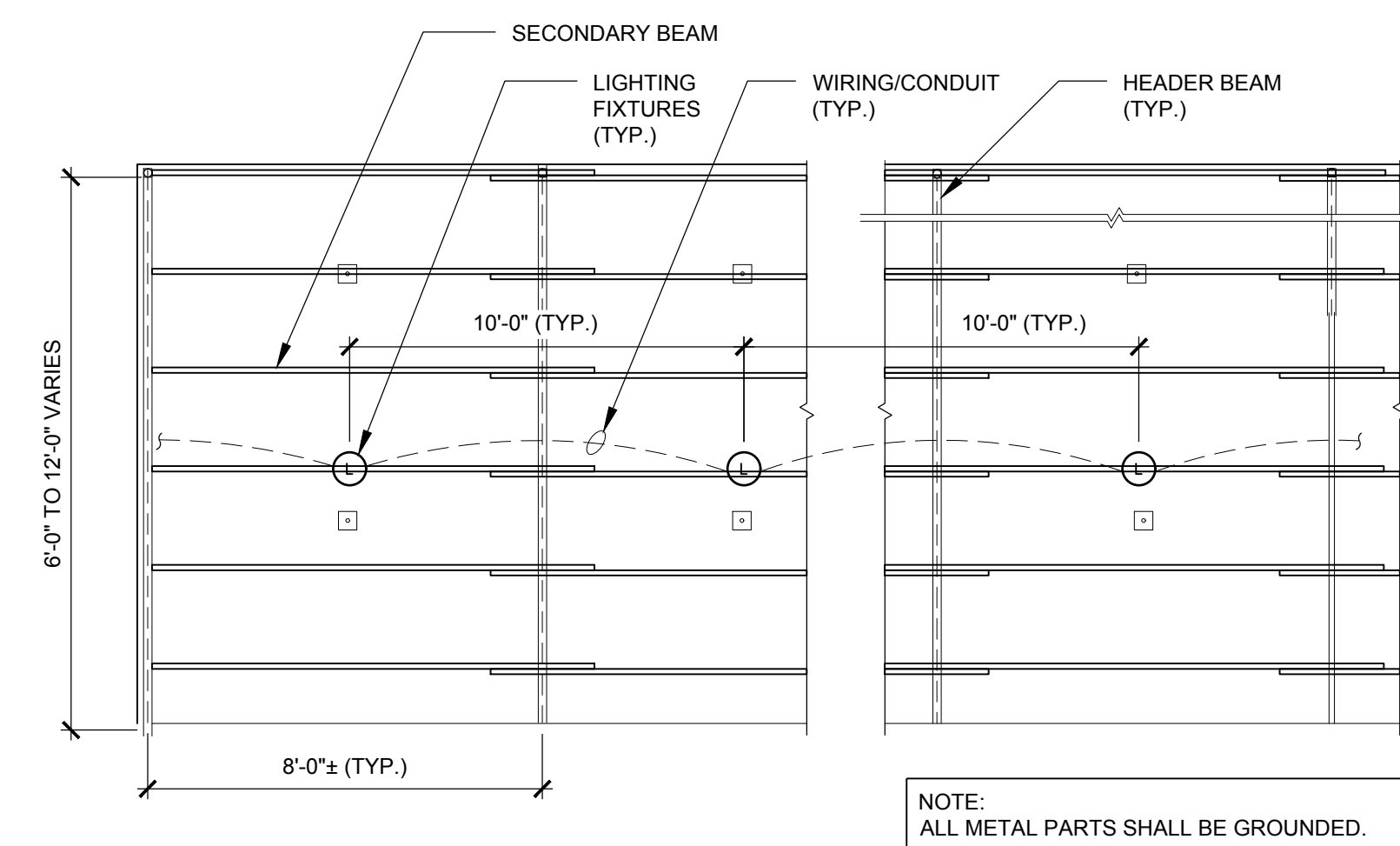
**ELEVATION**  
 SIDEWALK SHED WITH BRIDGE ELEVATION



**SECTION**  
 STANDARD SHED DETAILS

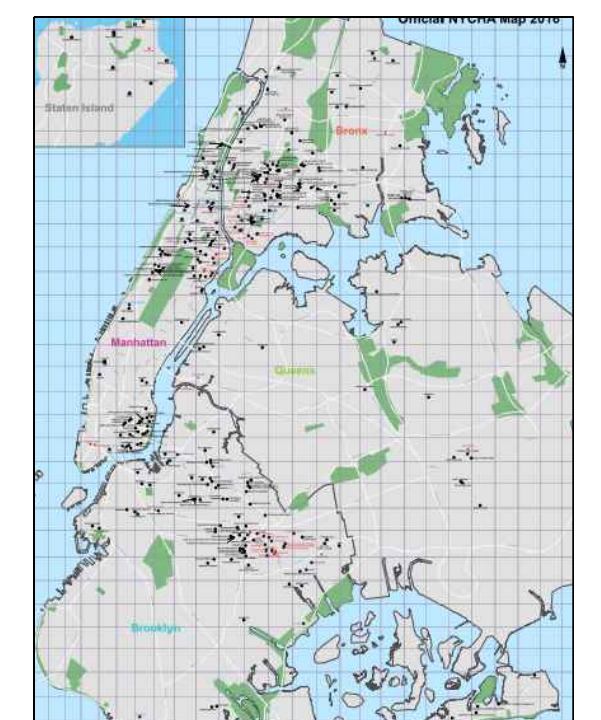


**SECTION**  
 SIDEWALK SHED CROSS SECTION FOR SLOPING SURFACE



**PLAN**  
 SIDEWALK SHED LIGHTING PLAN

DOB Employee Stamps and Signatures



Key/ Location plan

**Contract Title:**  
**ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT**

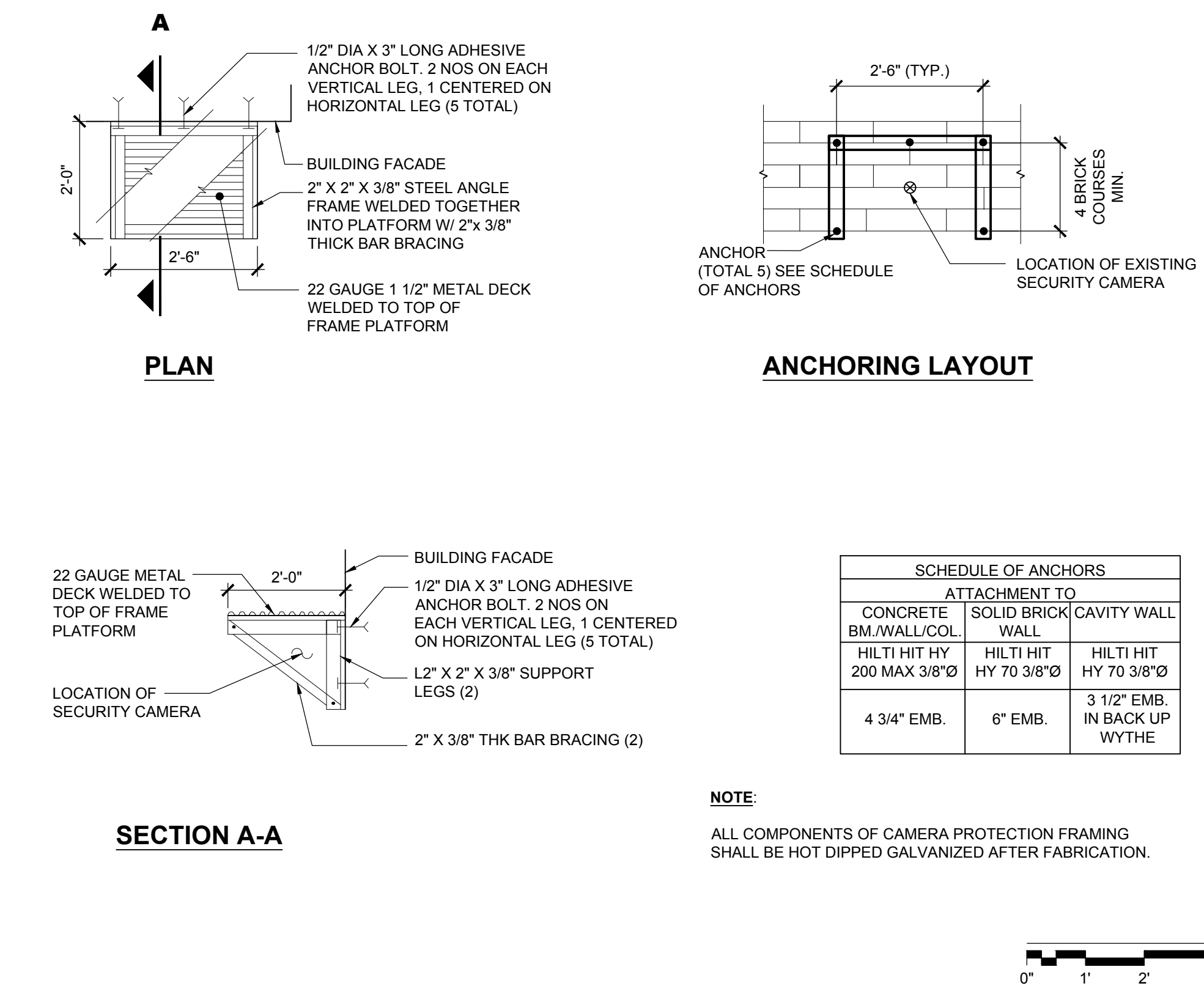
Contract No.:  
**RF 1805337**

Drawing Title: Temporary Protection Details:  
 FNC 01, PRO 22, PRO 23

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>G007.00</b>

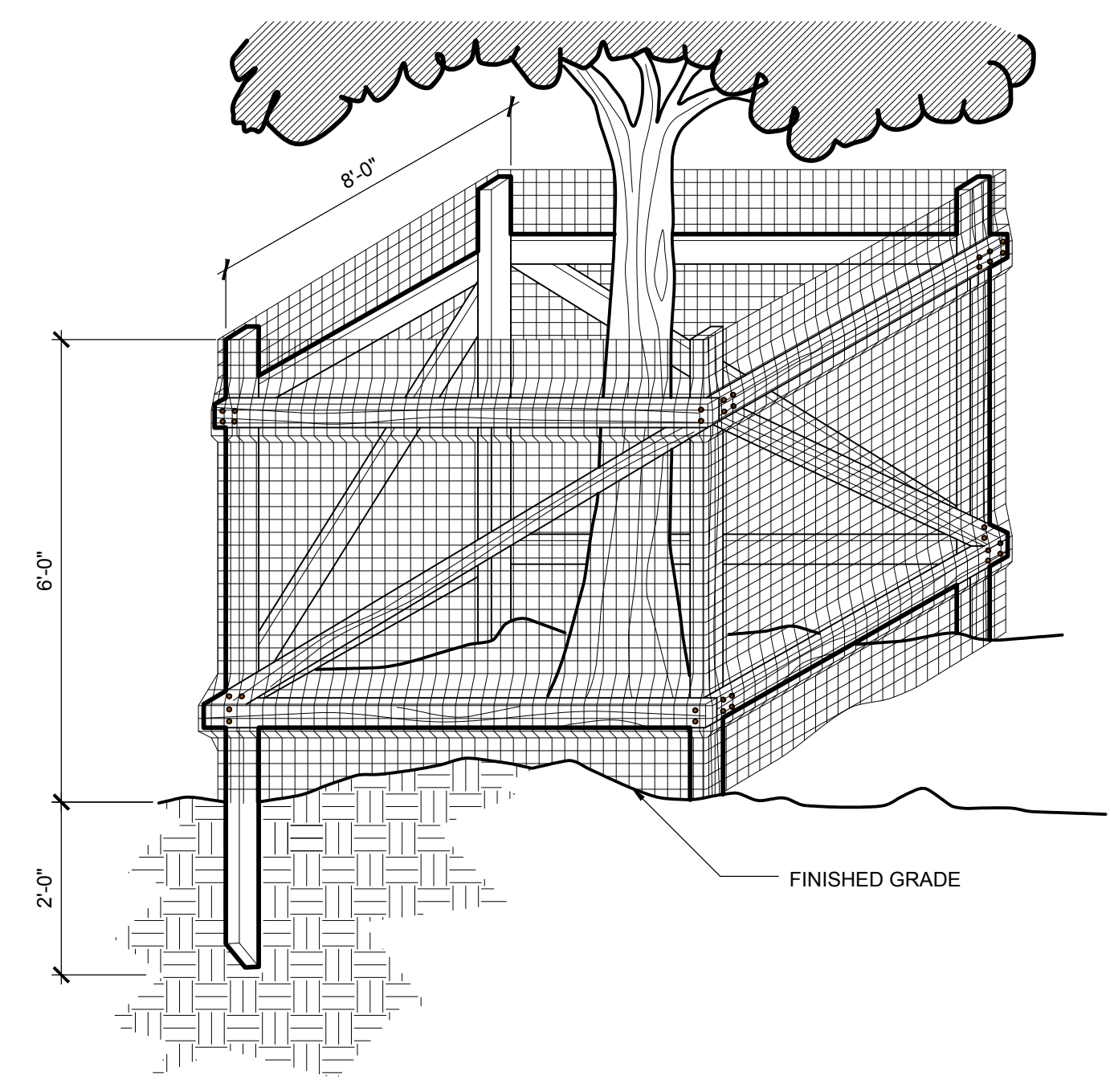
Sheet 8 of 64

DOB BSCAN STICKER



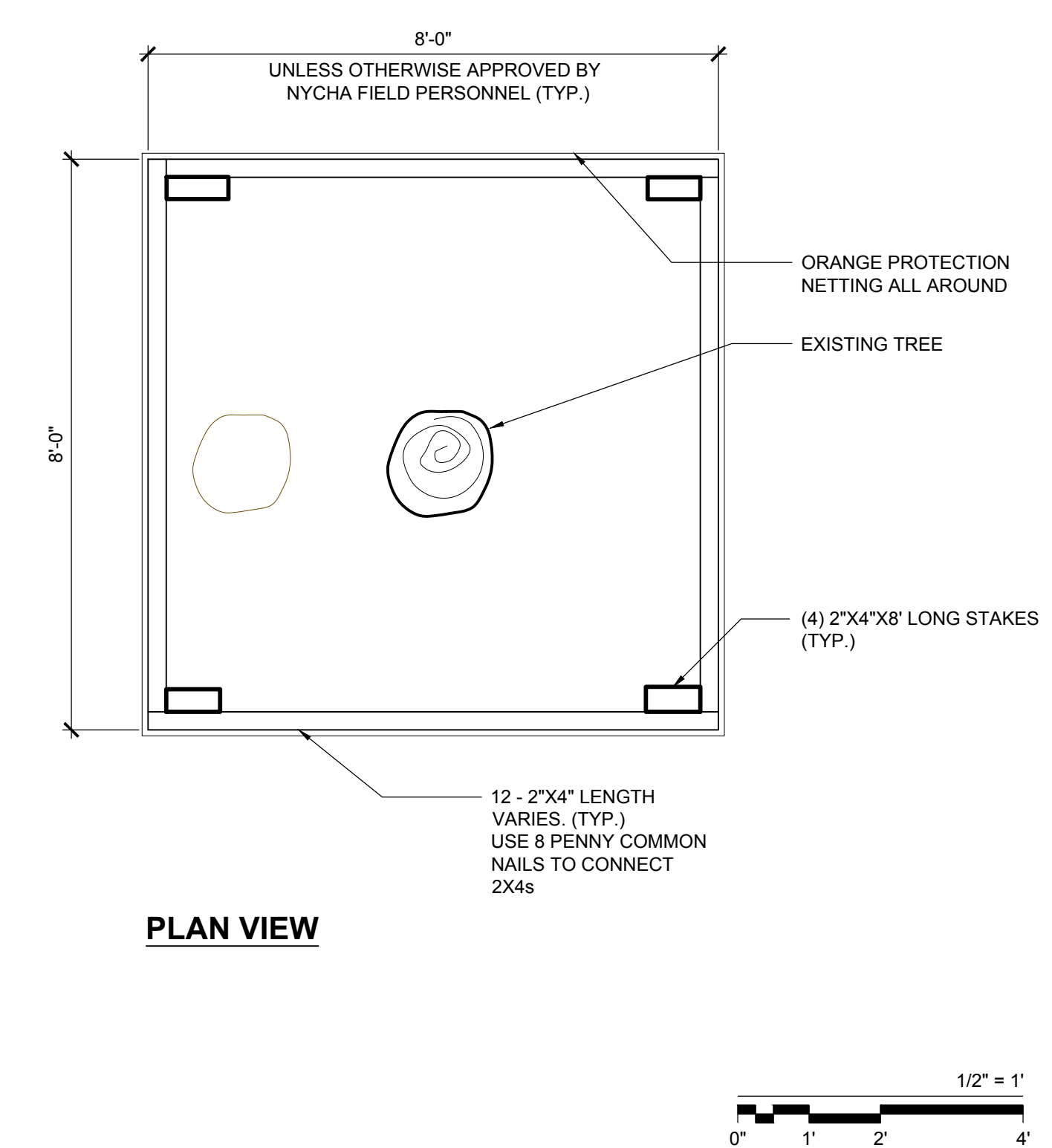
**PRO 23**

**CCTV CAMERA PROTECTION (EA)**



**PRO 22**

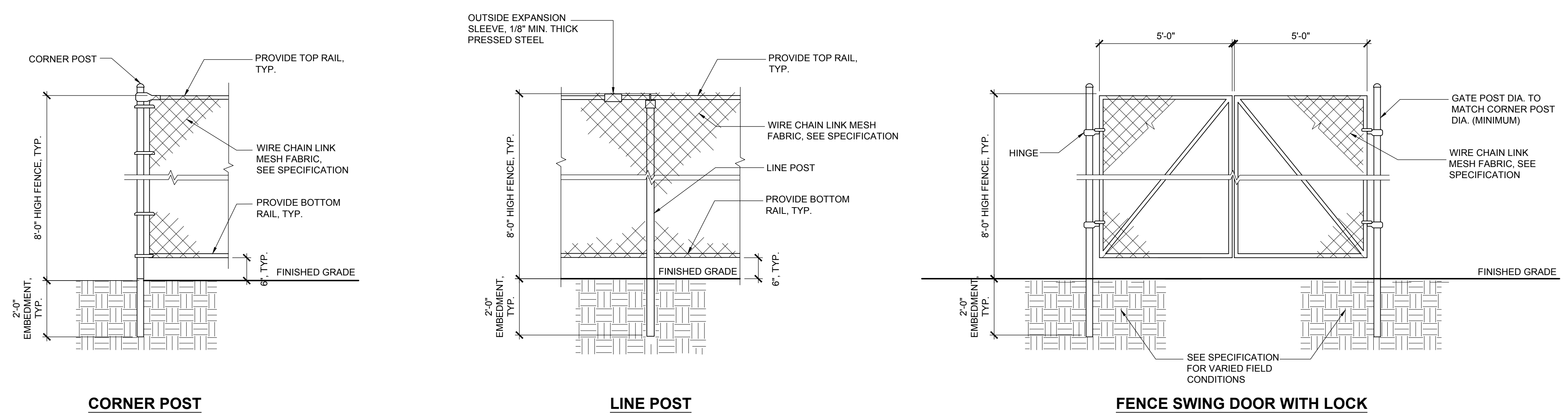
**TREE PROTECTION (EA)**



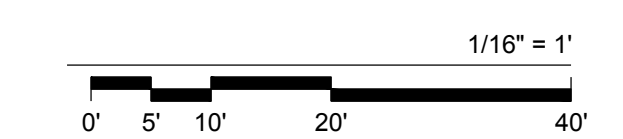
**FNC 01**

**TEMPORARY CHAIN LINK FENCE: 8' HIGH (LF)**

**NOTE:**  
 NYCHA TO PROVIDE LOCK FOR OPENING AND CLOSING OF GATE. CONTRACTOR TO COORDINATE WITH NYCHA'S REPRESENTATIVE.



- NOTES:**
- The Contractor shall hire a Professional Engineer licensed in New York City to design temporary fence as per NYC Building Code Loading Criteria and provide a layout that satisfies all code requirements. The Contractor shall submit their proposed fence shop drawings to Designer of Record (D.O.R.) and NYCHA for review.
  - Contractor may adjust fence to accommodate the construction site amenities, pavement, etc. The Contractor shall contact NYCHA's Representative for approval prior to making adjustments.
  - Unless otherwise noted, all C.L.F. mesh shall be 11 gauge, 2" square.
  - The Contractor shall perform lawn maintenance by cutting grass and cleaning trash from fenced area, on a weekly basis whether the project is active or not.
  - Where required, provide single gate for 4'-0" wide opening and double gate for 10'-0" wide opening.
  - Temporary fence shall not be attached or supported to any existing fence.



DOB Employee Stamps and Signatures



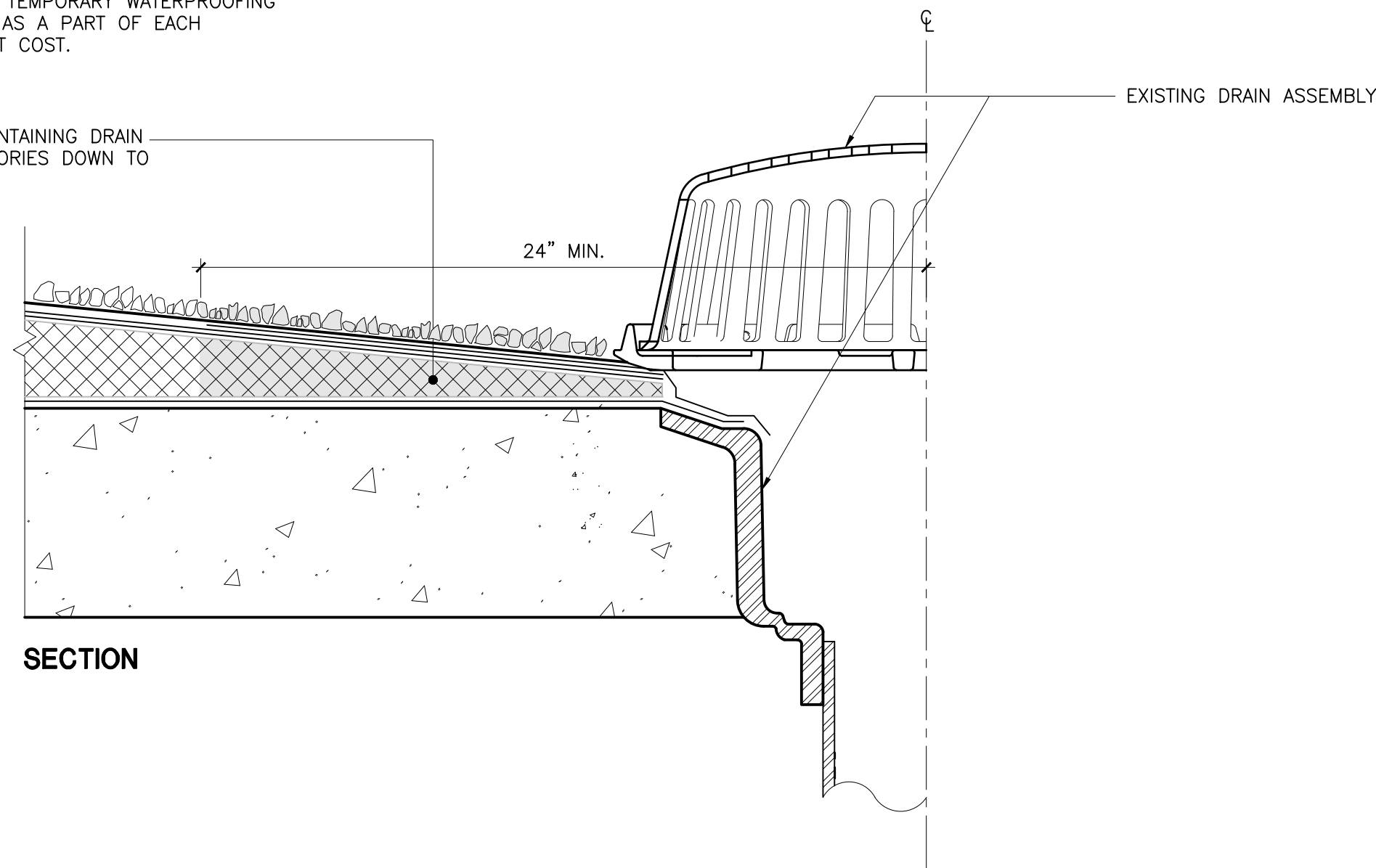
Key/ Location plan

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: NK
	Checked By: GA
	Drawing No.: <b>H001.00</b>
Sheet 9 of 64	

**NOTE:**

1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL. REFER TO DETAIL WEP-02 ON DRAWING H006.
2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.

028113 REMOVE ASBESTOS-CONTAINING DRAIN FLASHING AND ACCESSORIES DOWN TO CONCRETE DECK



SECTION

**ACM 03**

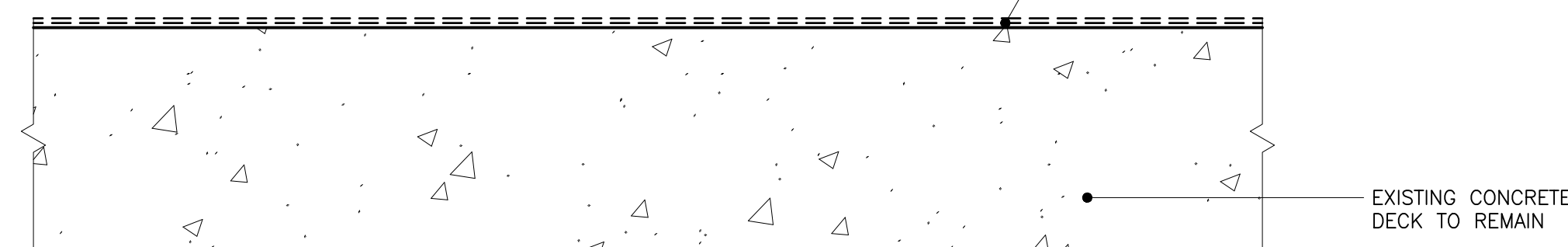
ACM REMOVAL AT ROOF DRAIN FLASHING (UOM: SF)

NTS

**NOTE:**

1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL. REFER TO DETAIL WEP-01 ON DRAWING H006.
2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.

028213 REMOVE AND DISPOSE OF ASBESTOS-CONTAINING ROOFING MEMBRANES AND OVERBURDEN (SURFACING, FILL, ETC) TO EXISTING CONCRETE DECK



SECTION

**ACM 02**

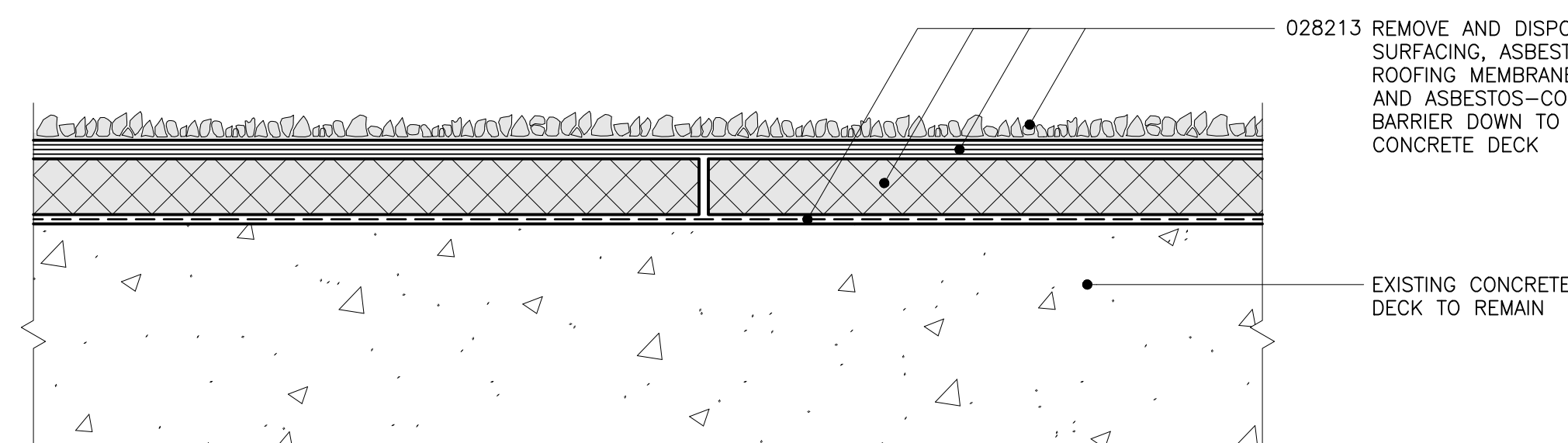
ACM REMOVAL AT CANOPY/BULKHEAD/WATER TOWER ROOF ASSEMBLY (UOM: SF)

NTS

**NOTE:**

1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL. REFER TO DETAIL WEP-01 ON DRAWING H006.
2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.

028213 REMOVE AND DISPOSE OF GRAVEL SURFACING, ASBESTOS-CONTAINING ROOFING MEMBRANES, INSULATION, AND ASBESTOS-CONTAINING VAPOR BARRIER DOWN TO EXISTING CONCRETE DECK



SECTION

**ACM 01**

ACM REMOVAL AT MAIN ROOF ASSEMBLY (UOM: SF)

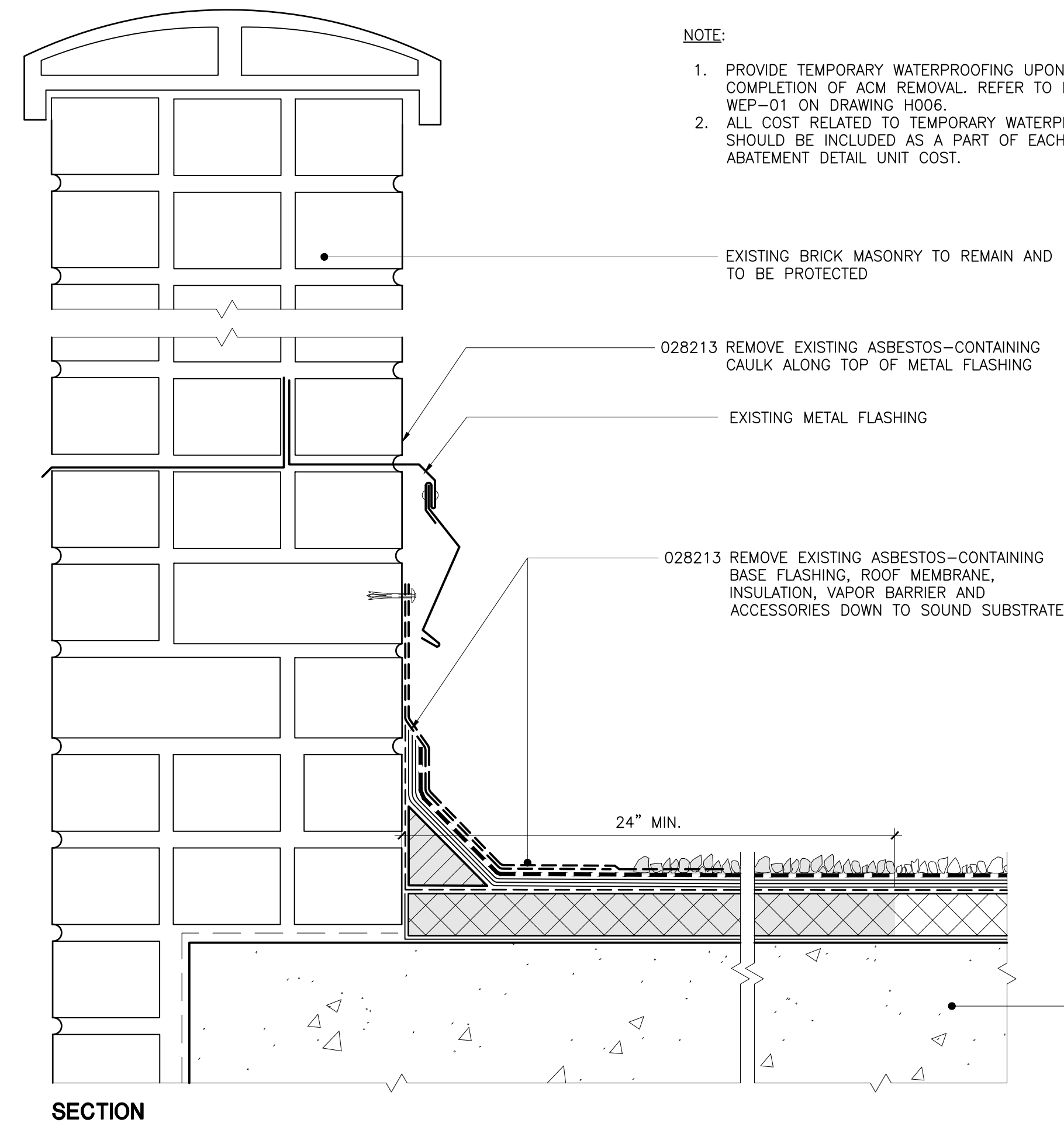
NTS

**ACM 04**

ACM REMOVAL AT ROOF PERIMETER BASE FLASHING - PARAPET (UOM: SF) NTS

**NOTE:**

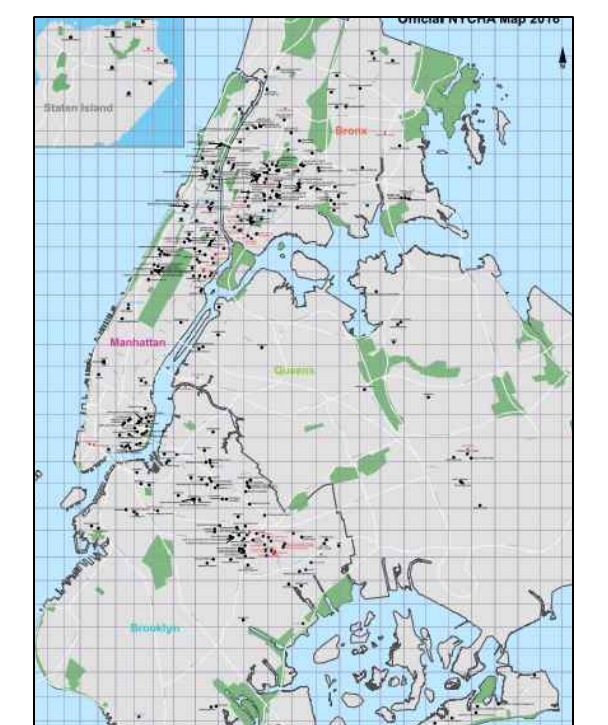
1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL. REFER TO DETAIL WEP-01 ON DRAWING H006.
2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.



SECTION

EXISTING CONCRETE SLAB TO REMAIN

DOB Employee Stamps and Signatures

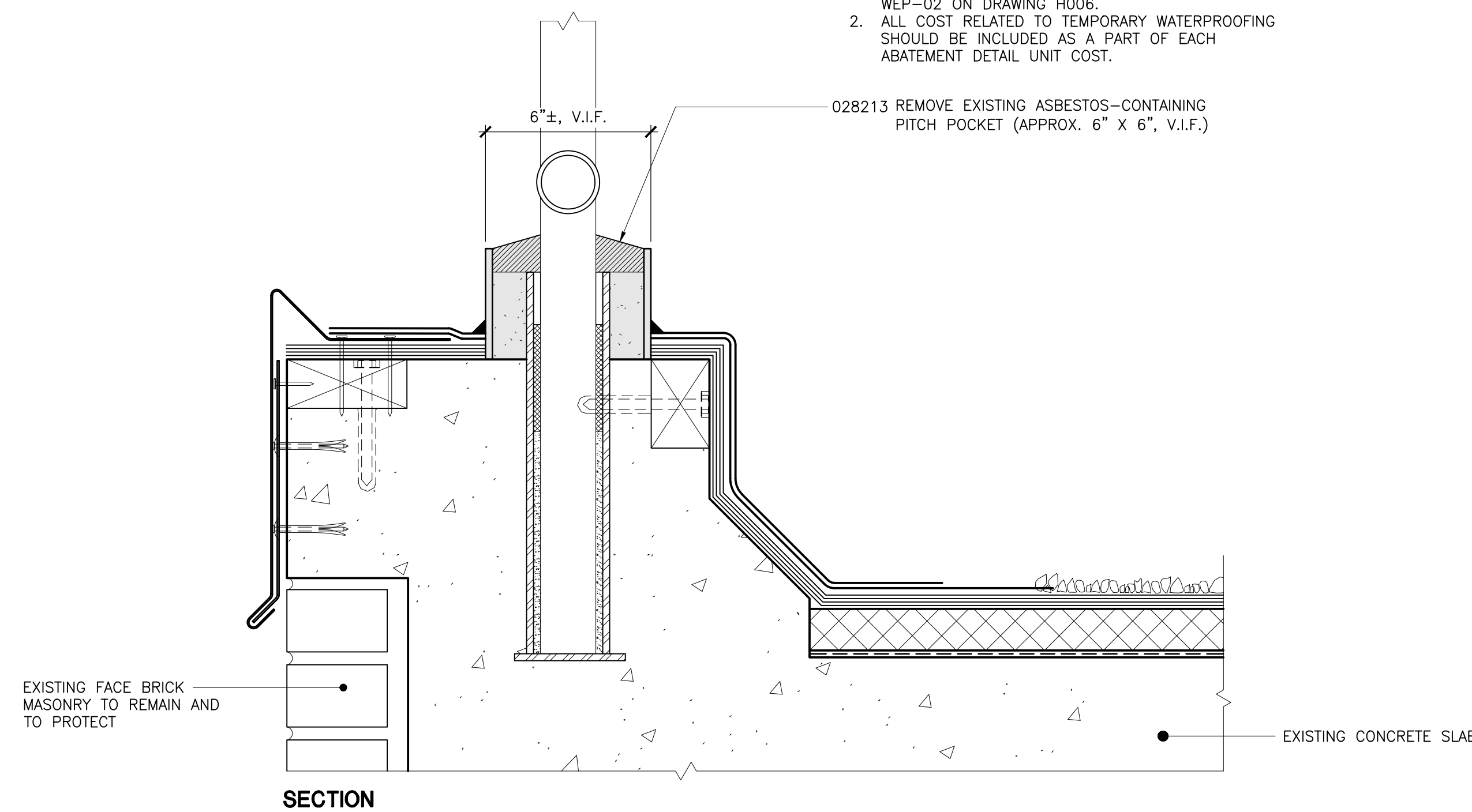


Key/ Location plan

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: NK
	Checked By: GA
	Drawing No.: <b>H002.00</b>
	Sheet 10 of 64

NOTE:

1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL. REFER TO DETAIL WEP-02 ON DRAWING H006.
2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.

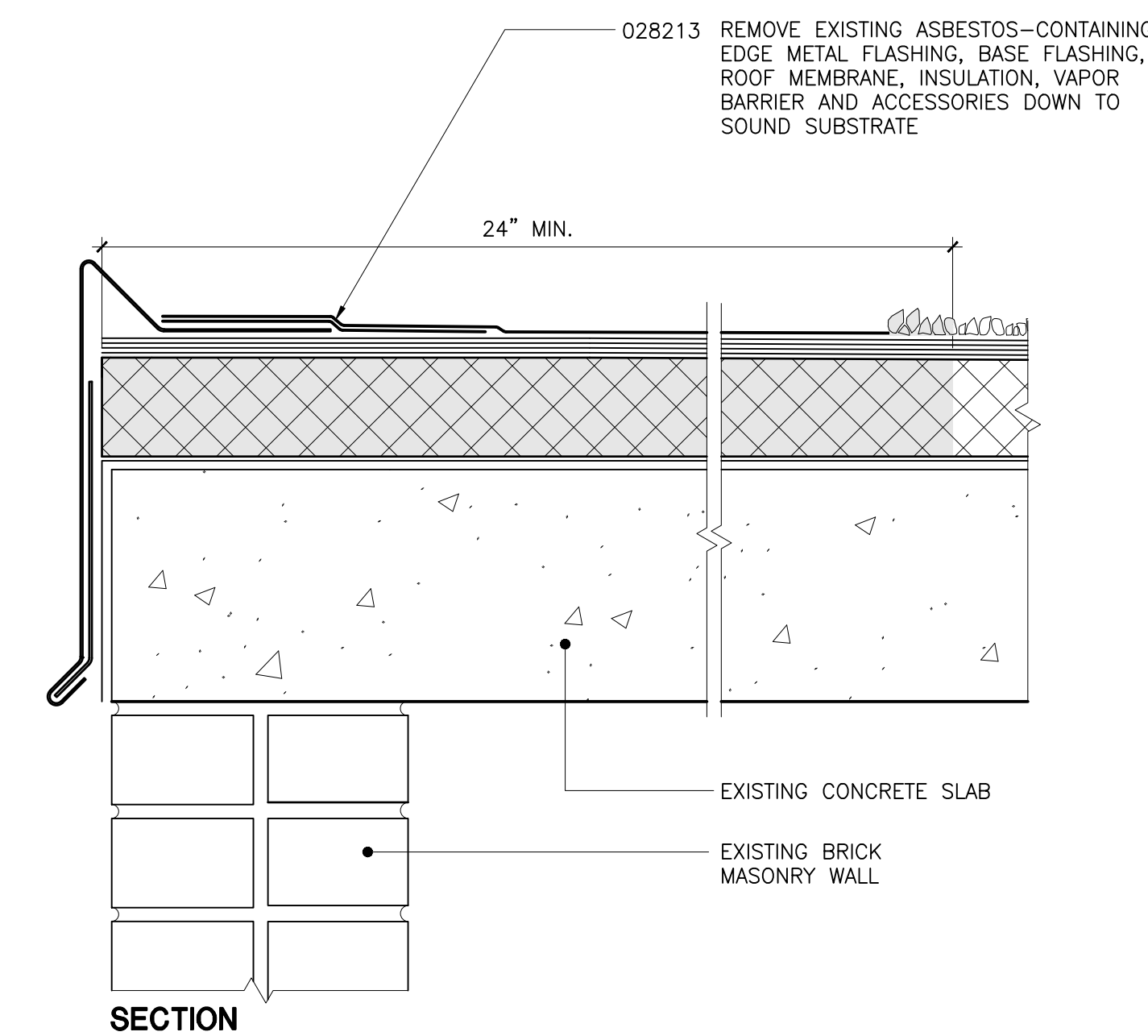


**ACM 06**

ACM REMOVAL AT RAILING PITCH POCKETS (UOM: EA) NTS

NOTE:

1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL. REFER TO DETAIL WEP-01 ON DRAWING H006.
2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.

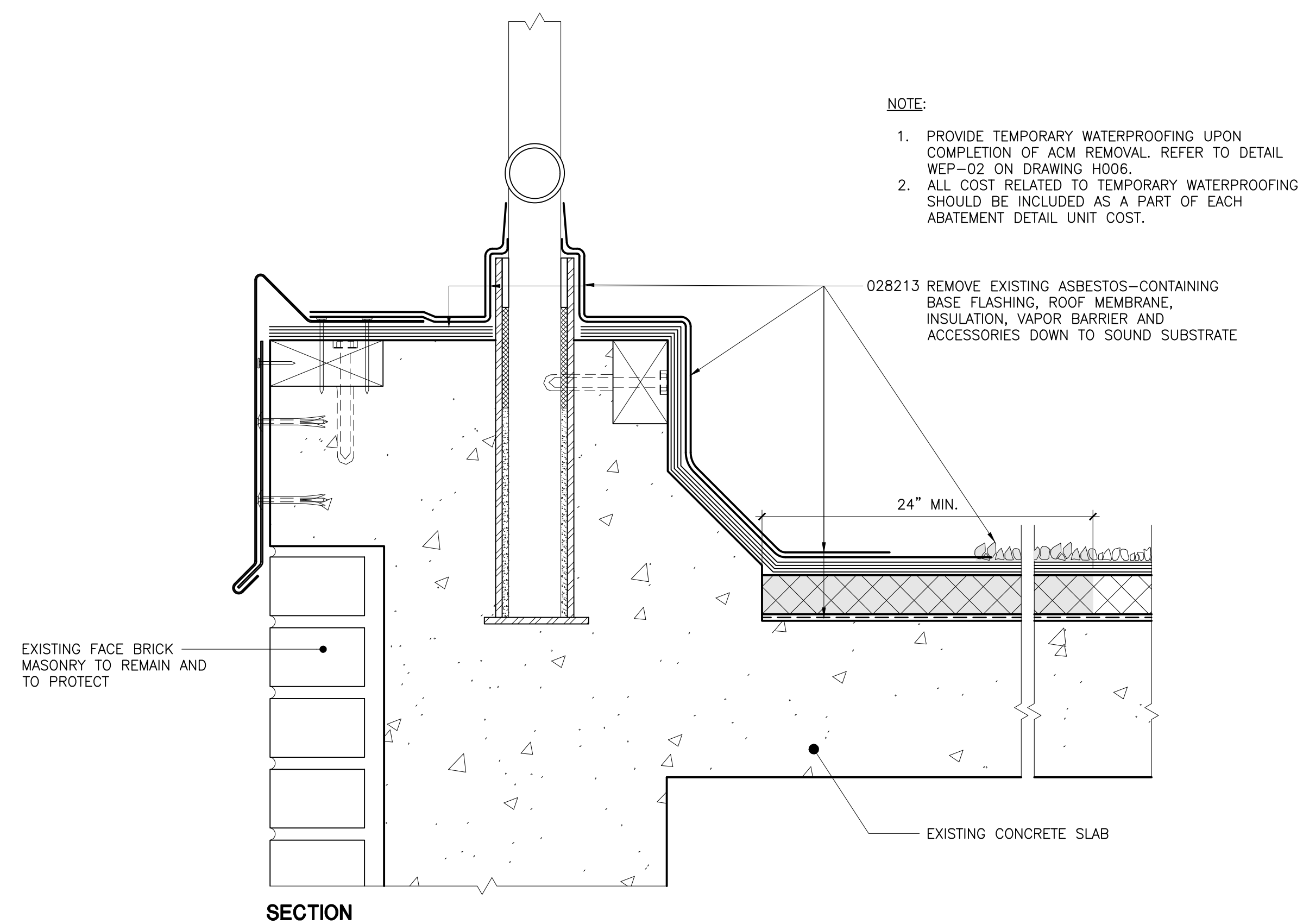


**ACM 08**

ACM REMOVAL AT EDGE METAL FLASHING/FASCIA (UOM: SF) NTS

NOTE:

1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL. REFER TO DETAIL WEP-02 ON DRAWING H006.
2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.



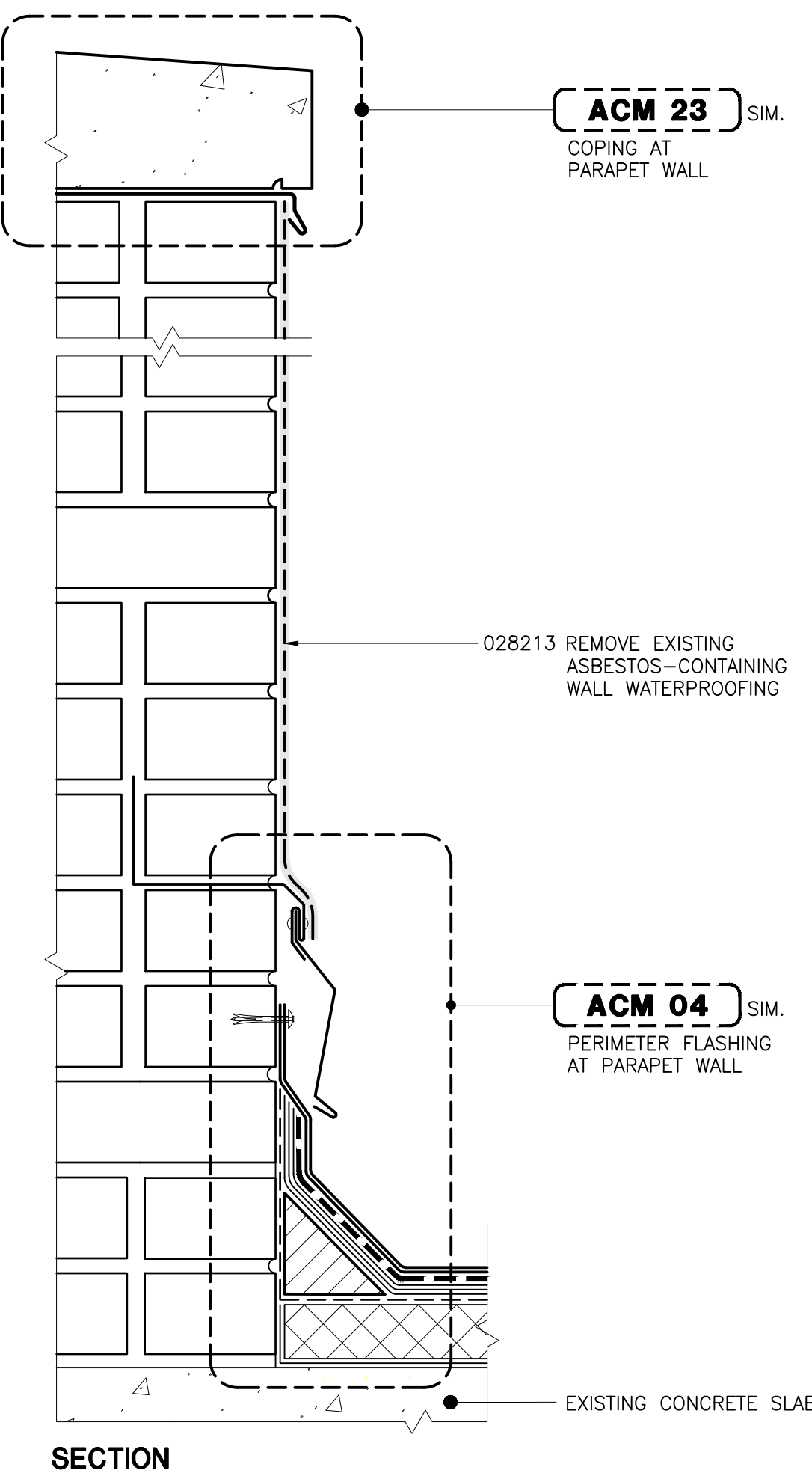
**ACM 05**

ACM REMOVAL AT ROOF PERIMETER FLASHING - RAILING / CONCRETE SLAB (UOM: SF) NTS

**ACM 23** SIM.  
 COPING AT PARAPET WALL

028213 REMOVE EXISTING ASBESTOS-CONTAINING WALL WATERPROOFING

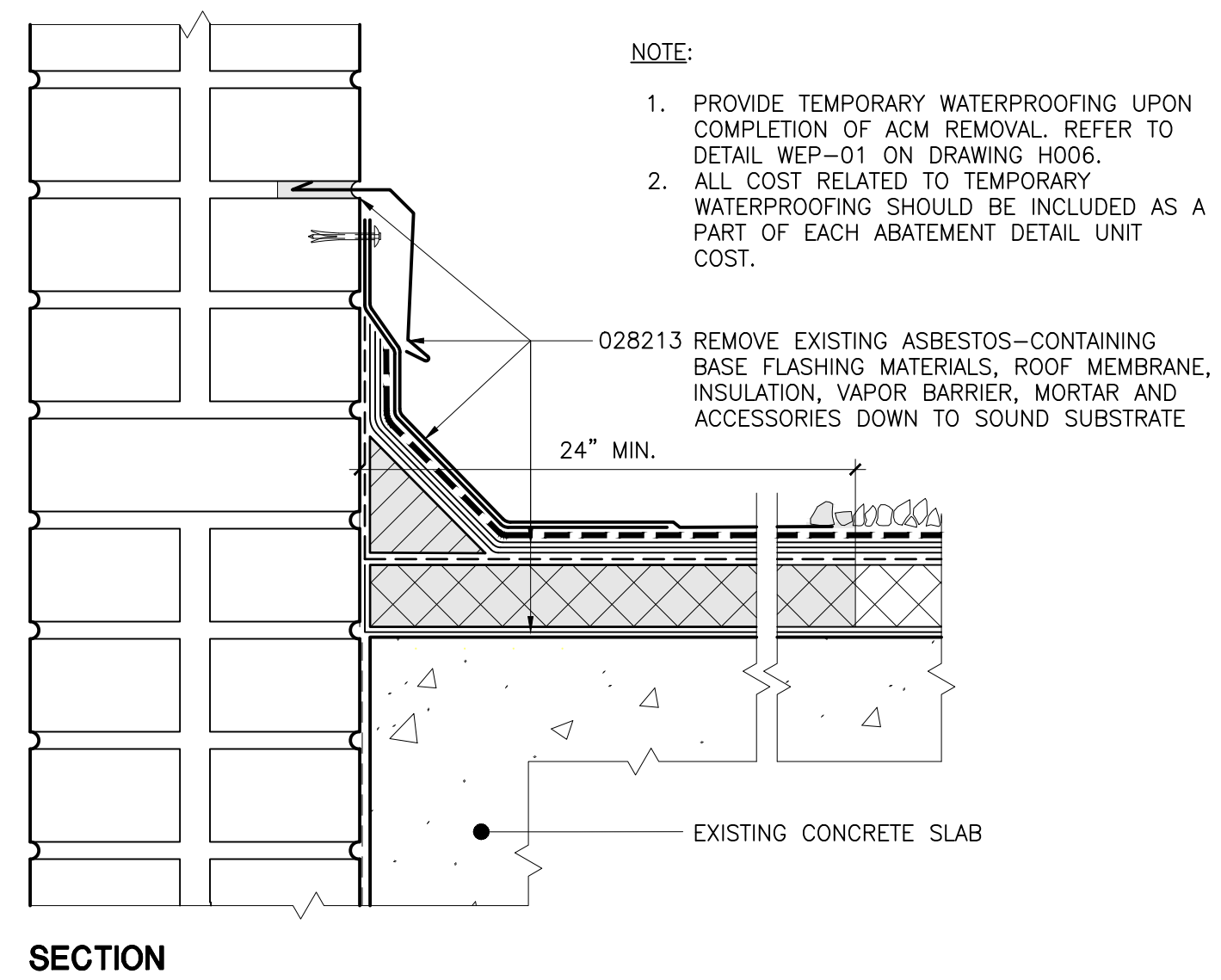
**ACM 04** SIM.  
 PERIMETER FLASHING AT PARAPET WALL



**ACM 07**

ACM REMOVAL AT PARAPET WALL WATERPROOFING (UOM: SF) NTS

DOB Employee Stamps and Signatures

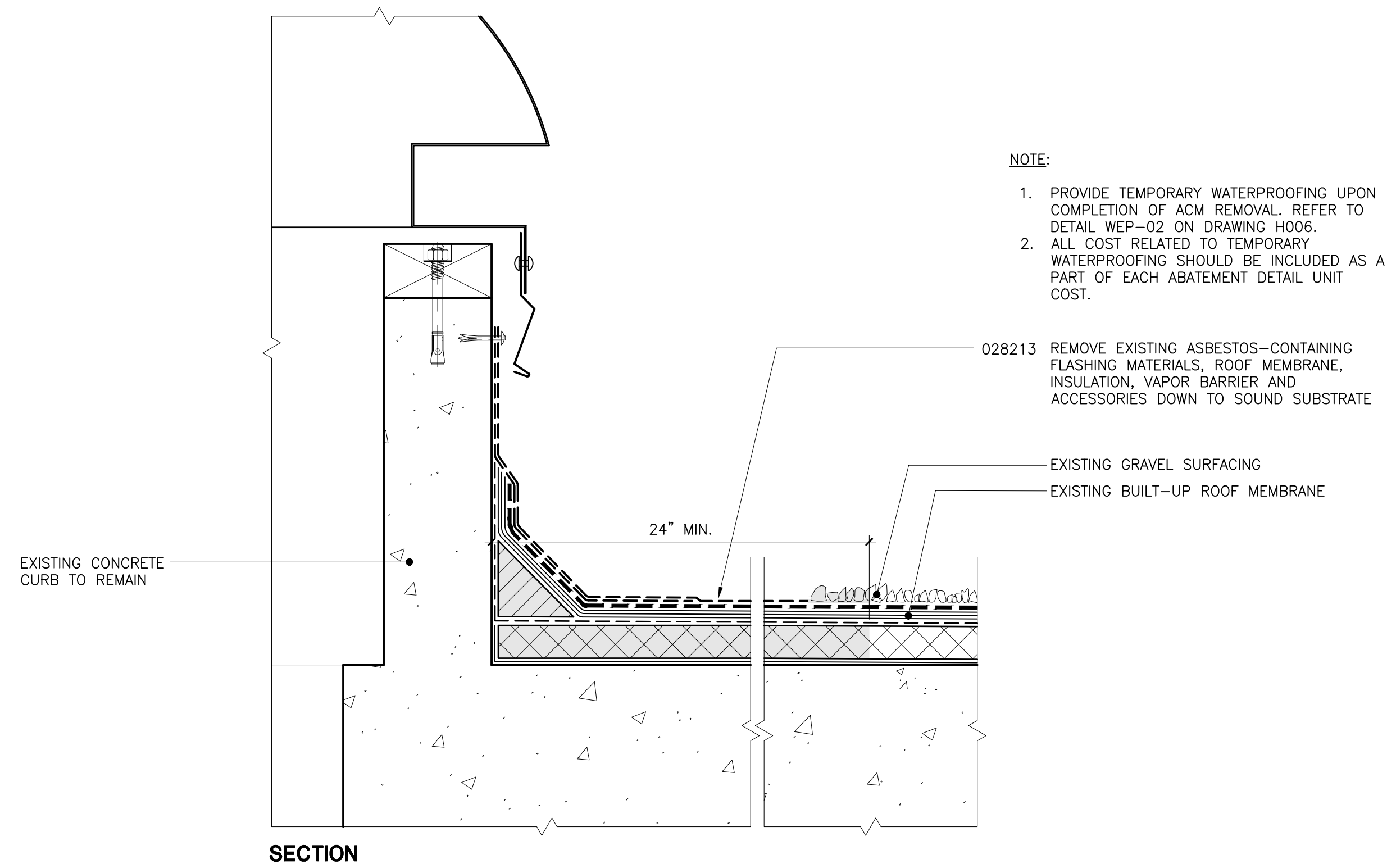


SECTION

**ACM 10**

ACM REMOVAL AT CHIMNEY BASE/COMPACTOR STACK FLASHING (UOM: SF)

NTS

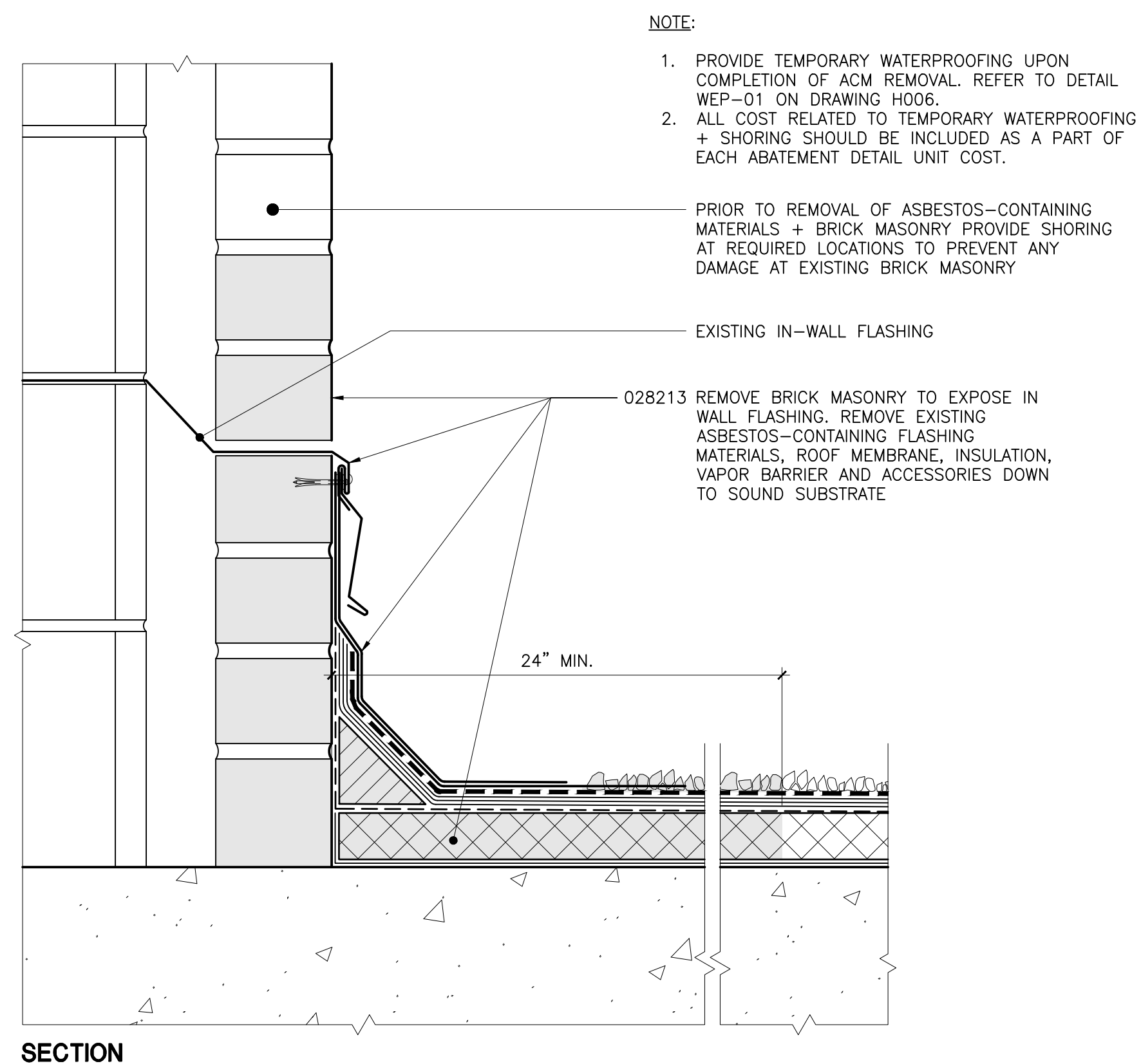


SECTION

**ACM 12**

ACM REMOVAL AT VENT FAN CURB (UOM: SF)

NTS

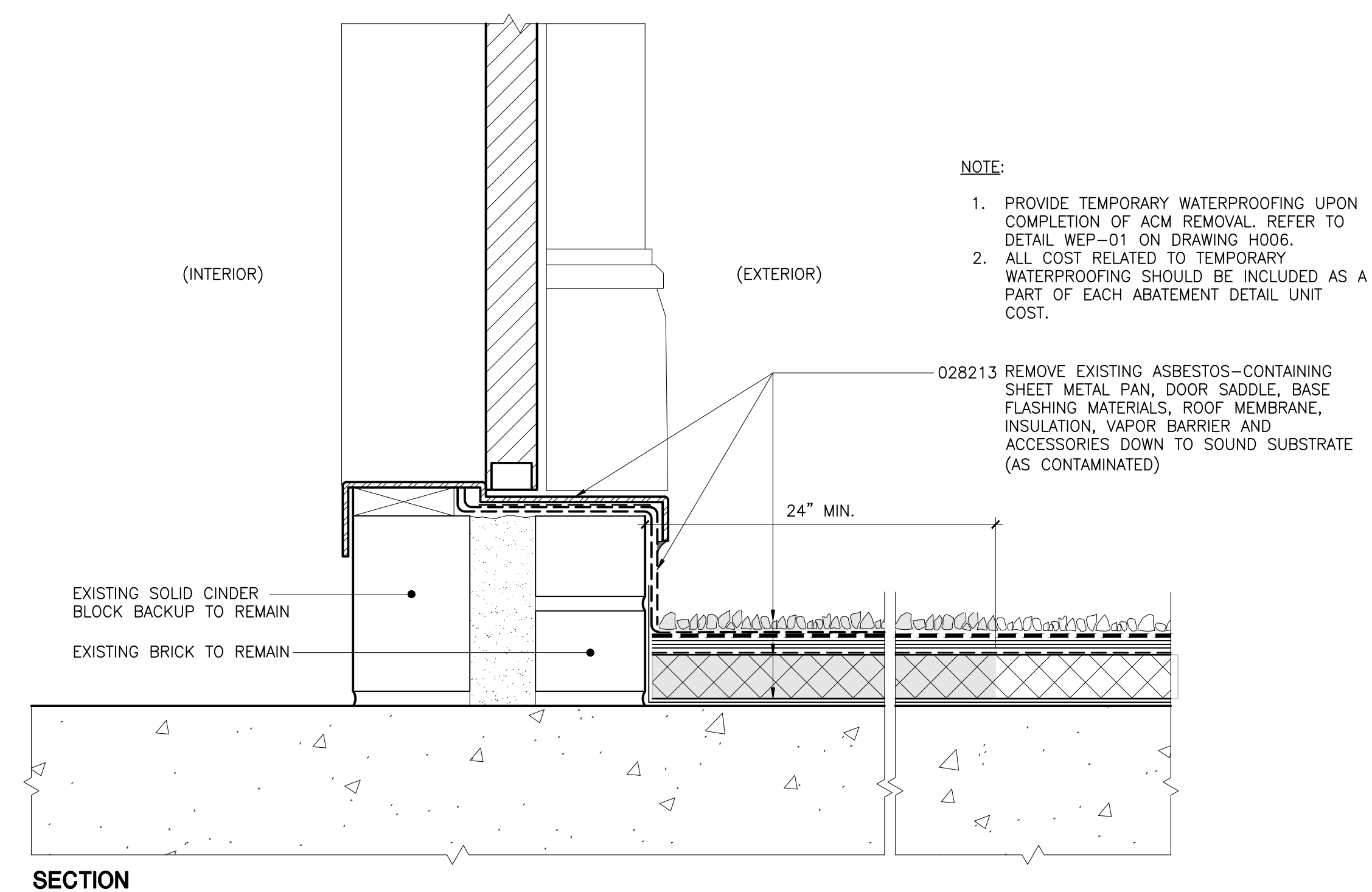


SECTION

**ACM 09**

ACM REMOVAL AT BULKHEAD BASE IN-WALL METAL FLASHING AND BRICKWORK (UOM: SF)

NTS



SECTION

**ACM 11**

ACM REMOVAL AT DOOR SADDLE FLASHING (UOM: SF)

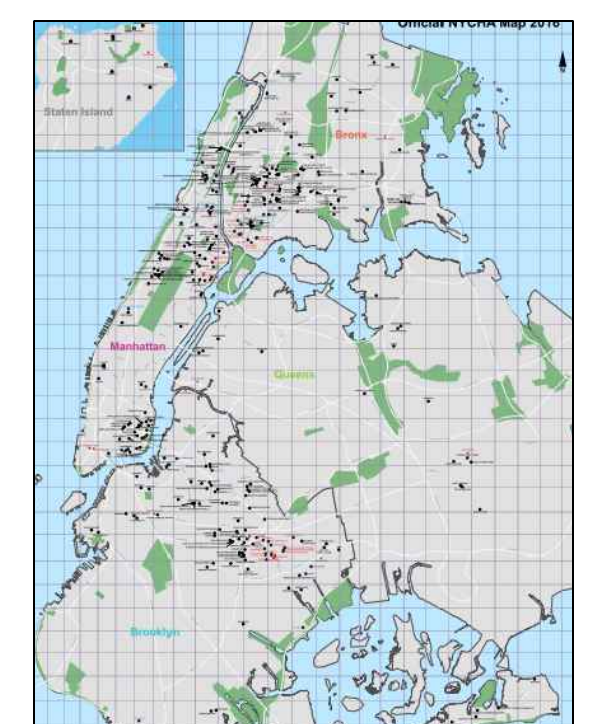
NTS

Date: Revision:

Date: Submissions:

**NEW YORK CITY HOUSING AUTHORITY**  
**DESIGN DEPARTMENT**  
 90 Church Street 10th floor, New York, NY 10007  
 Tel 212 306-3000 Fax (call)

Development: VARIOUS  
 Bldg. Addresses:  
 Building No: Oracle No:  
 Borough of: CITYWIDE



Key/ Location plan

Zoning Map: Zone:  
 Block No.: Lot No.:  
 Development No.: VARIOUS E.D.P No.:

Contract Title:  
**ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT**

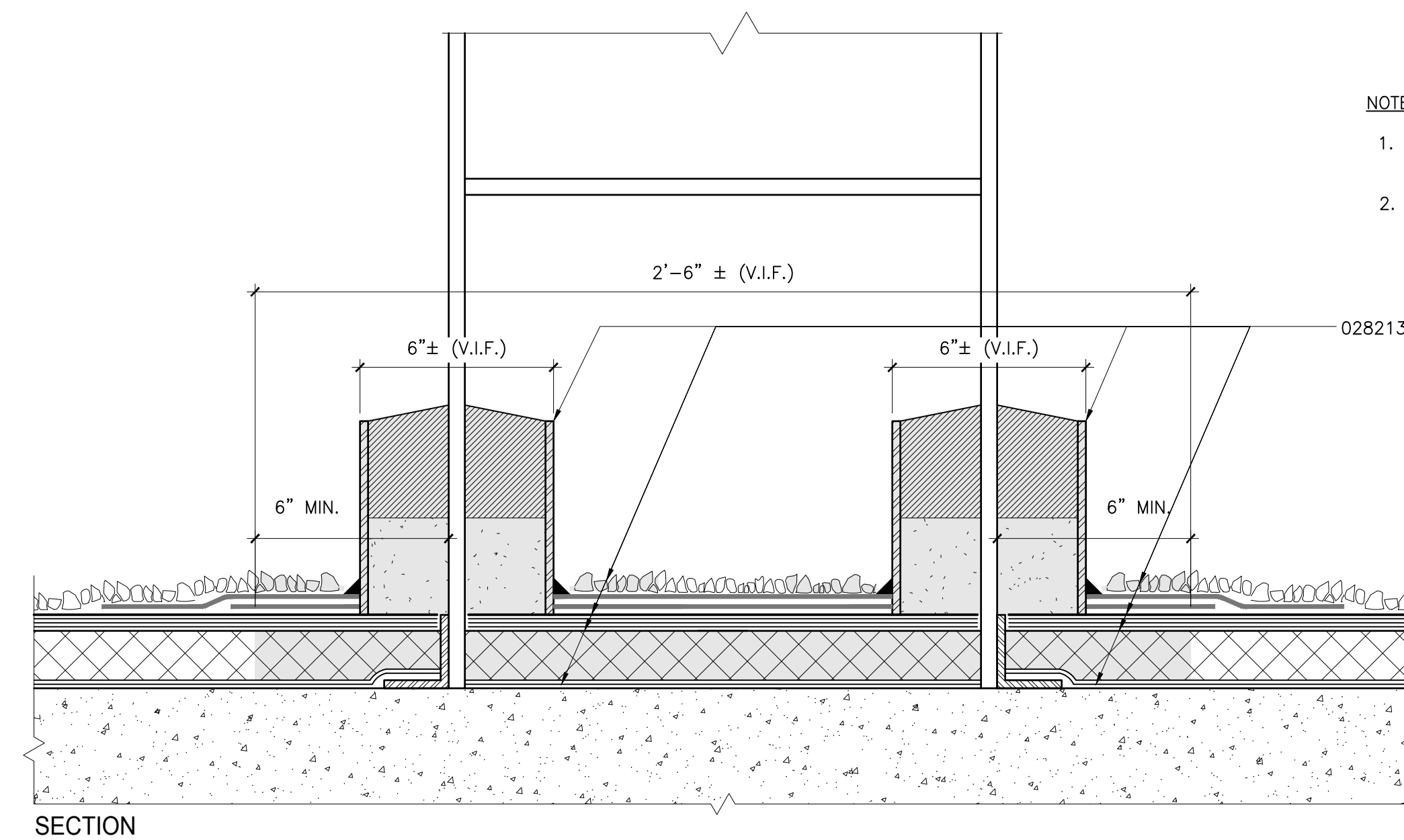
Contract No.:  
**RF 1805337**

Drawing Title: ACM Abatement Details:  
 ACM 09, ACM 10, ACM 11, ACM 12

DOB Employee Stamps and Signatures

Seal / Signature: Issue Date: 12.04.2018  
 Scale: AS NOTED  
 Drawn By: NK  
 Checked By: GA  
 Drawing No.:  
**H003.00**  
 Sheet 11 of 64

DOB BSCAN STICKER



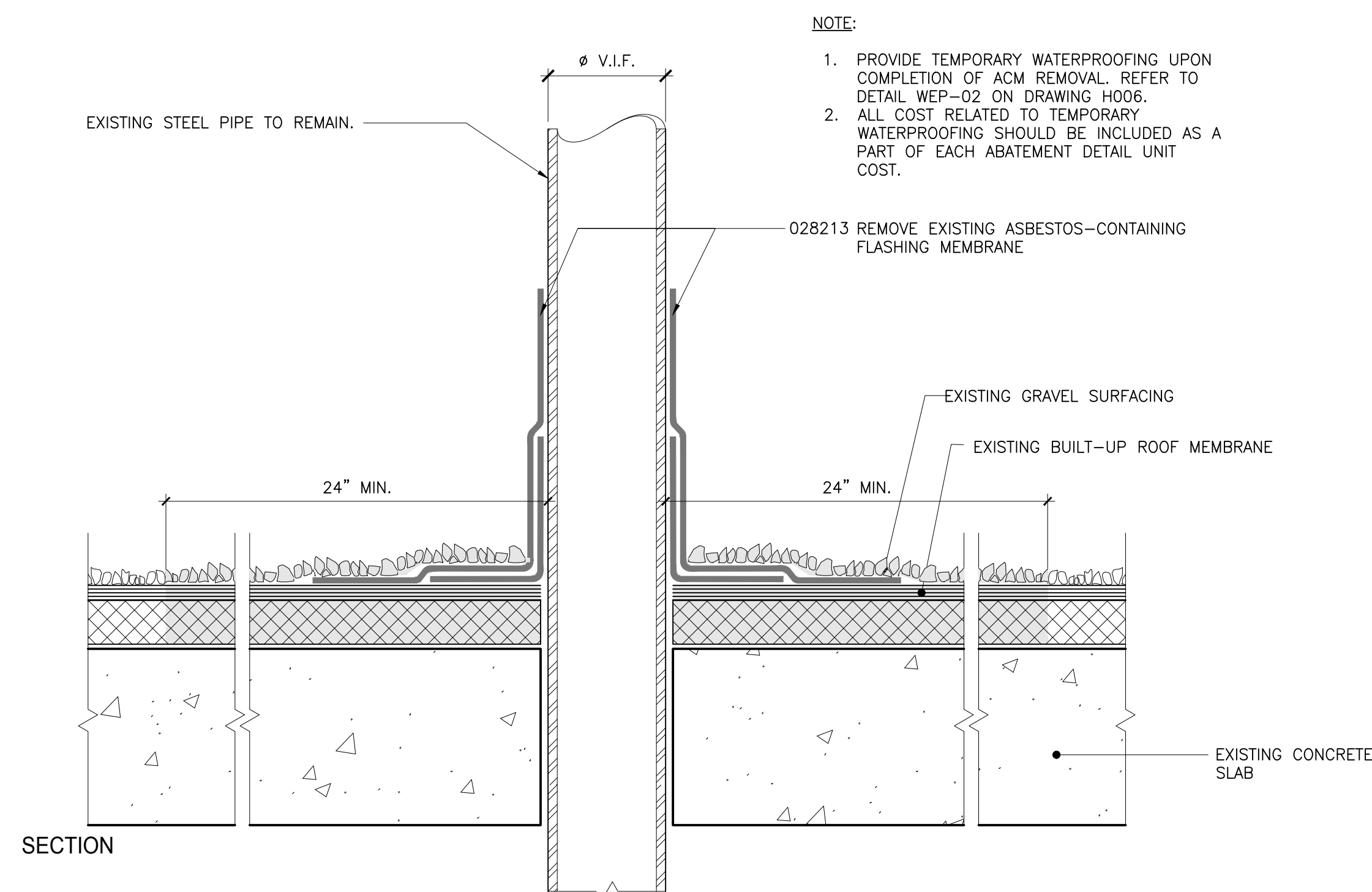
- NOTE:**
1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL. REFER TO DETAIL WEP-02 ON DRAWING H006.
  2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.
- 028213 REMOVE EXISTING ASBESTOS-CONTAINING PITCH POCKETS, BASE FLASHING, ROOF MEMBRANE, INSULATION, VAPOR BARRIER AND ACCESSORIES DOWN TO SOUND SUBSTRATE (APPROX. 12" X 30", V.I.F.)

SECTION

**ACM 14**

ACM REMOVAL AT LADDER PITCH POCKETS (UOM: EA)

NTS



- NOTE:**
1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL. REFER TO DETAIL WEP-02 ON DRAWING H006.
  2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.

028213 REMOVE EXISTING ASBESTOS-CONTAINING FLASHING MEMBRANE

EXISTING GRAVEL SURFACING  
 EXISTING BUILT-UP ROOF MEMBRANE

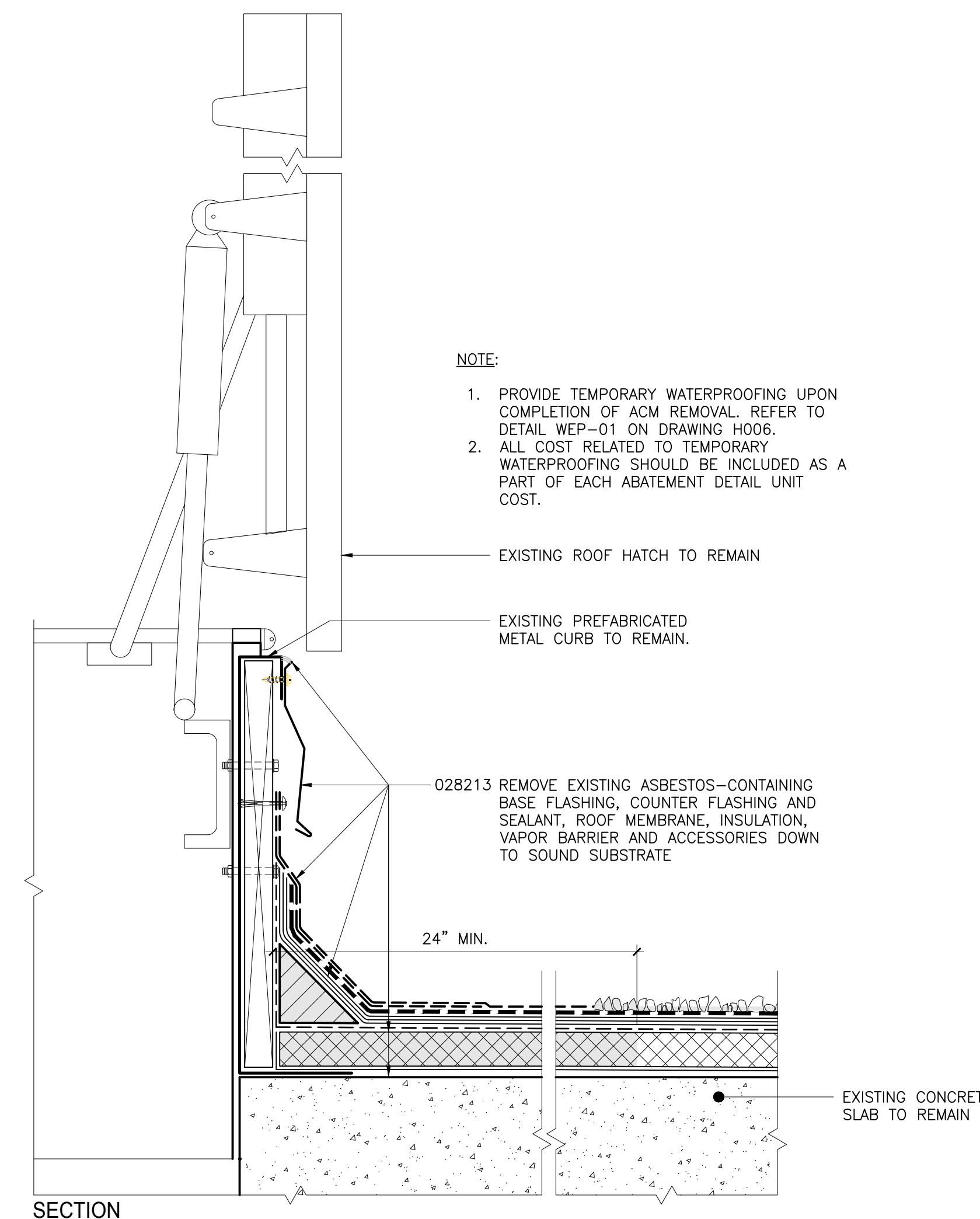
EXISTING CONCRETE SLAB

SECTION

**ACM 13**

ACM REMOVAL AT VENT PIPE PENETRATION (UOM: SF)

NTS



- NOTE:**
1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL. REFER TO DETAIL WEP-01 ON DRAWING H006.
  2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.

EXISTING ROOF HATCH TO REMAIN

EXISTING PREFABRICATED METAL CURB TO REMAIN.

028213 REMOVE EXISTING ASBESTOS-CONTAINING BASE FLASHING, COUNTER FLASHING AND SEALANT, ROOF MEMBRANE, INSULATION, VAPOR BARRIER AND ACCESSORIES DOWN TO SOUND SUBSTRATE

EXISTING CONCRETE SLAB TO REMAIN

SECTION

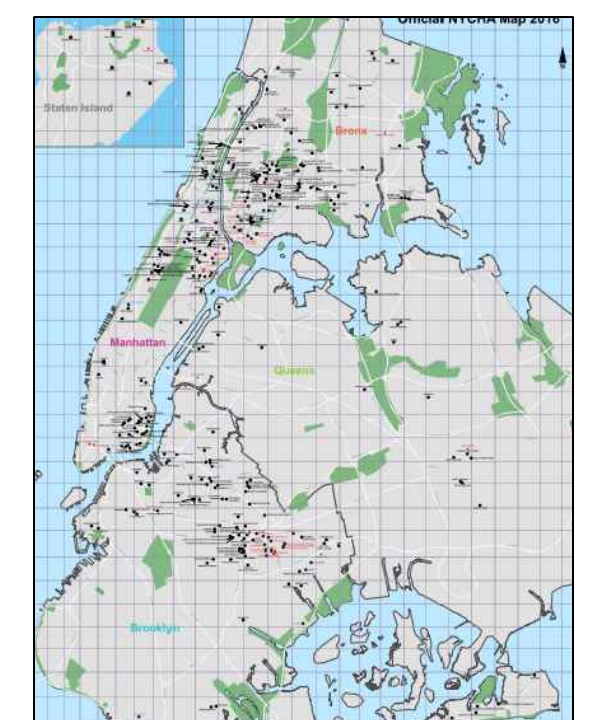
**ACM 15**

ACM REMOVAL AT ROOF HATCH AT BULKHEAD ROOF (UOM: SF)

NTS

**NEW YORK CITY HOUSING AUTHORITY**  
**DESIGN DEPARTMENT**  
 90 Church Street 10th floor, New York, NY 10007  
 Tel 212 306-3000 Fax (call)

Development: VARIOUS  
 Bldg. Addresses:  
 Building No.: Oracle No:  
 Borough of: CITYWIDE



Key/ Location plan

Zoning Map: Zone:  
 Block No.: Lot No.:  
 Development No.: VARIOUS E.D.P No.:

Contract Title:  
**ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

Drawing Title: ACM Abatement Details:  
 ACM 13, ACM 14, ACM 15

DOB Employee Stamps and Signatures

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
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	Checked By: GA
	Drawing No.: <b>H004.00</b>
	Sheet 12 of 64

DOB BSCAN STICKER

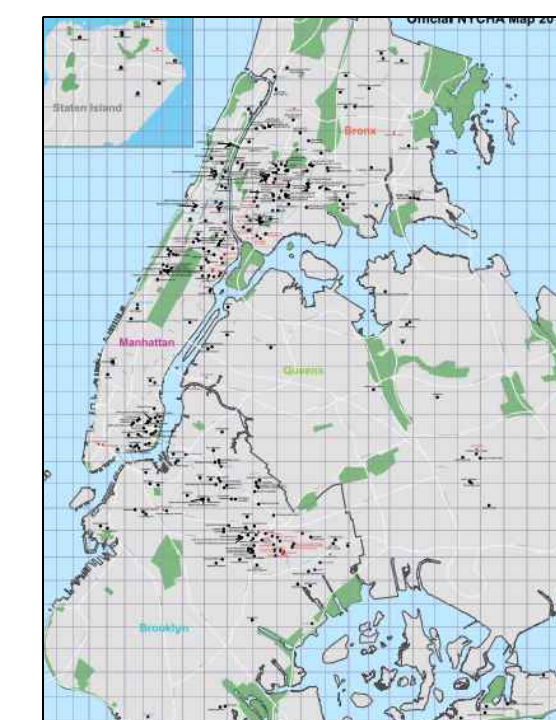
PROGRAM UNIT:  
 Project Management Team 1

Date: Revision:

Date: Submissions:

**NEW YORK CITY HOUSING AUTHORITY**  
**DESIGN DEPARTMENT**  
 90 Church Street 10th floor, New York, NY 10007  
 Tel 212 306-3000 Fax (call)

Development: VARIOUS  
 Bldg. Addresses:  
 Building No: Oracle No:  
 Borough of: CITYWIDE



Key/ Location plan

Zoning Map: Zone:  
 Block No.: Lot No.:  
 Development No.: VARIOUS E.D.P No.:

Contract Title:  
**ROOF REPLACEMENT AND  
 ROOFTOP STRUCTURE RENOVATION  
 REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

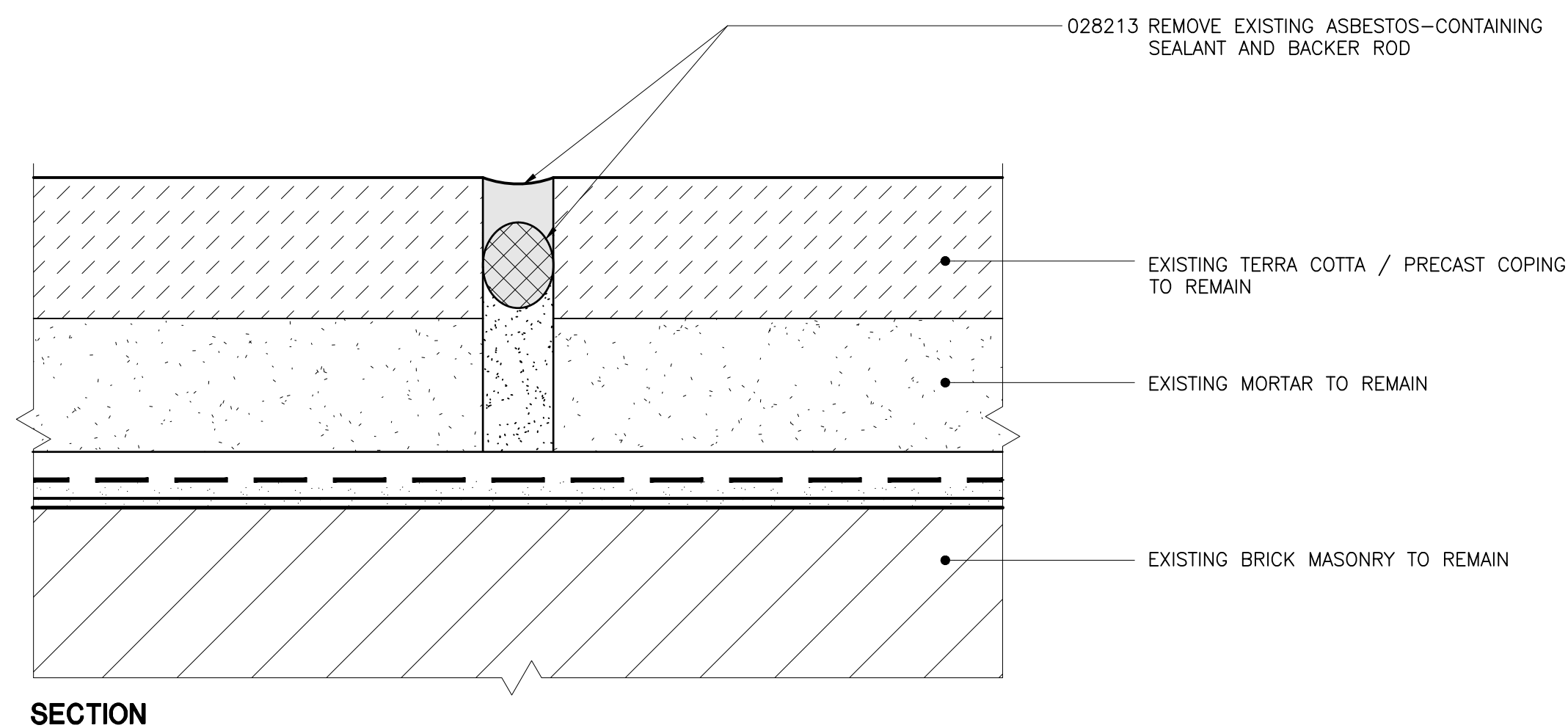
Drawing Title: ACM Abatement Details:  
 ACM 16, ACM 17, ACM 18, ACM 19  
 ACM 20

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: NK
	Checked By: GA
	Drawing No.:
	<b>H005.00</b>
	Sheet 13 of 64

DOB Employee Stamps and Signatures

DOB BSCAN STICKER

- NOTE:
1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL TO PREVENT WATER INFILTRATION.
  2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.

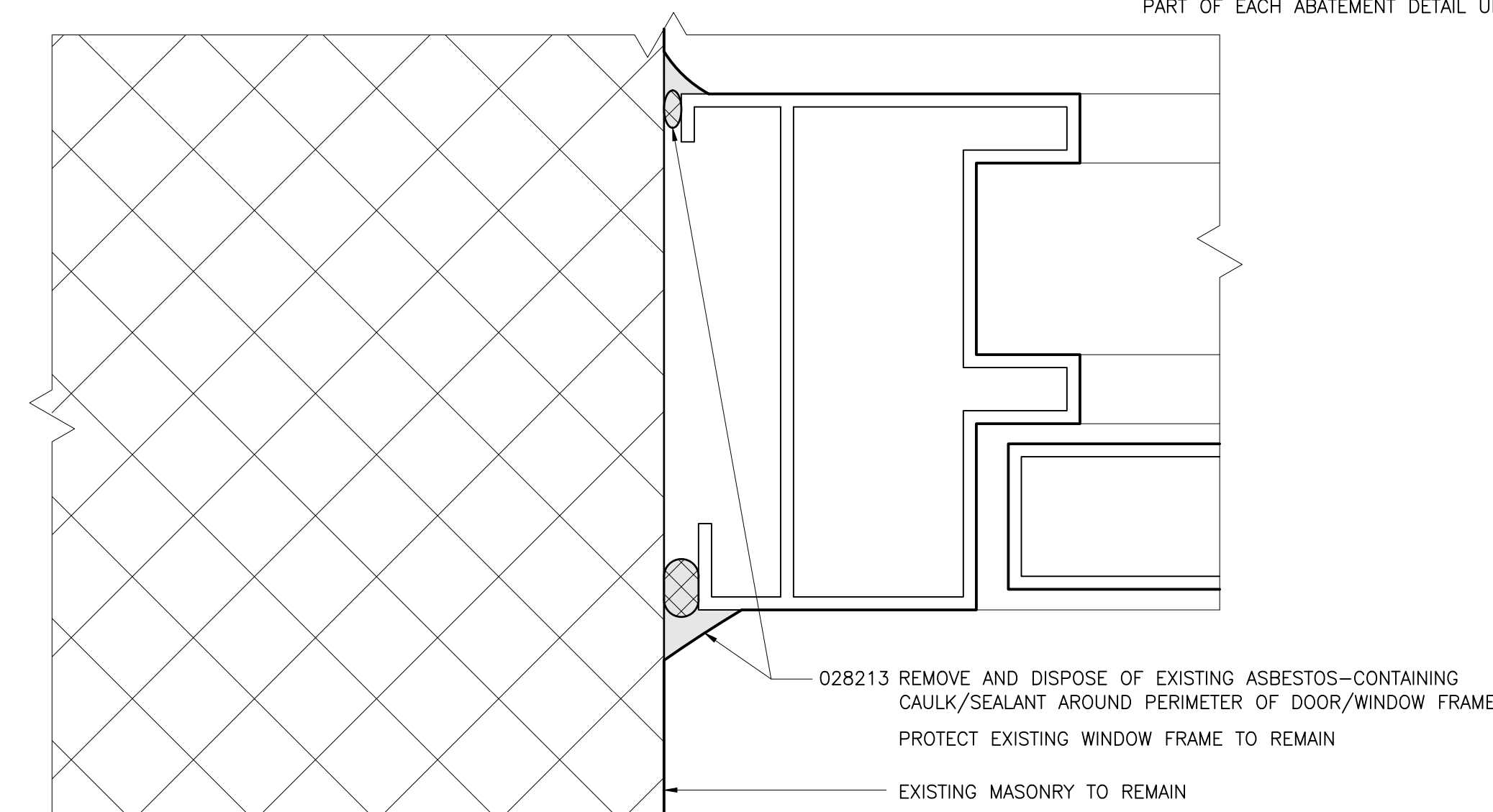


**ACM 18**

ACM REMOVAL AT COPING STONE JOINTS (UOM: LF)

NTS

- NOTE:
1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL TO PREVENT WATER INFILTRATION.
  2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.

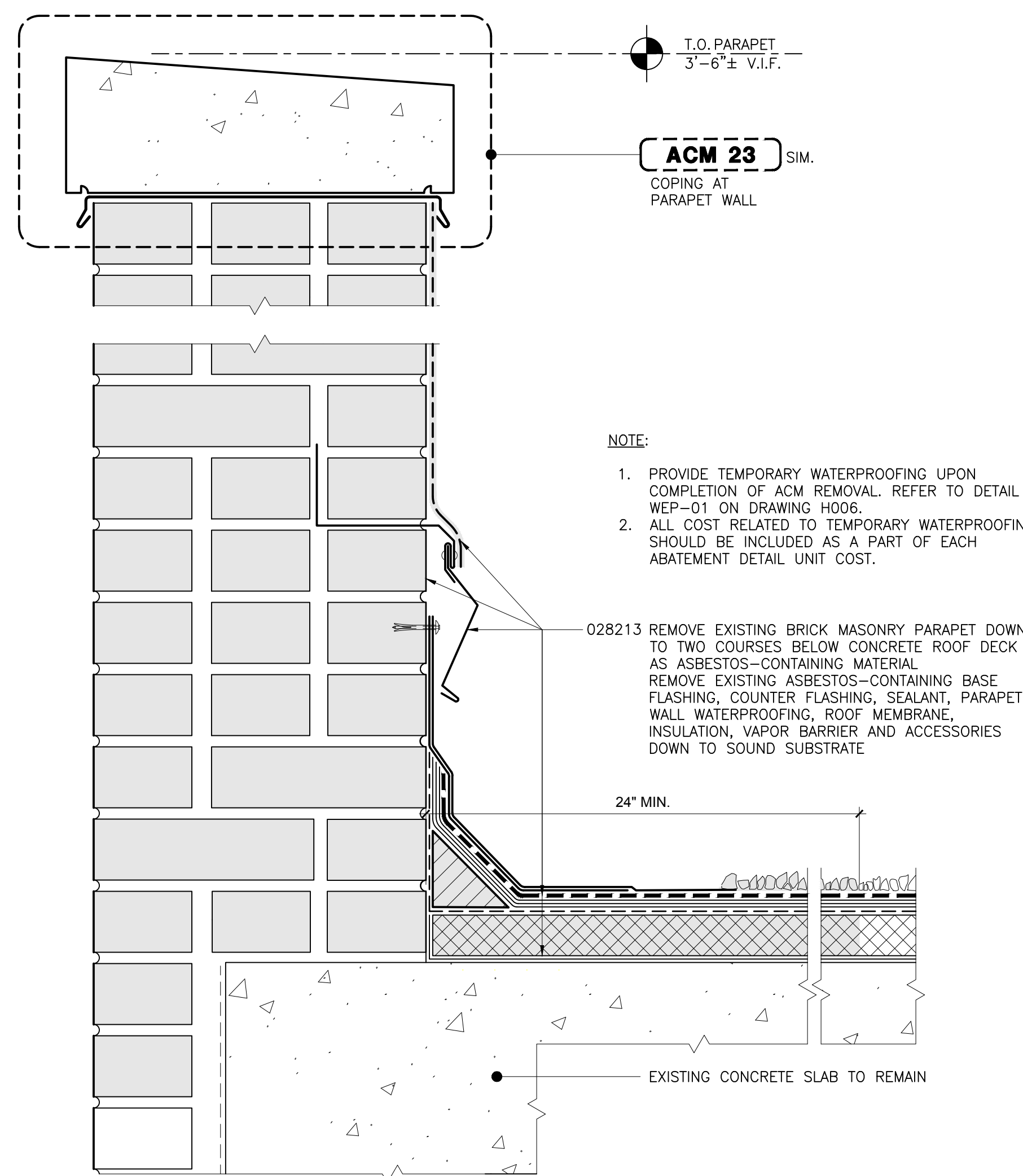


**ACM 19 / 20**

ACM REMOVAL AT BULKHEAD DOOR/WINDOW/LOUVER PERIMETER SEALANT (UOM: LF)  
 ACM REMOVAL OF CAULKING AROUND INCINERATOR ROOM ACCESS DOOR (UOM: LF)

NTS

- NOTE:
1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL. REFER TO DETAIL WEP-01 ON DRAWING HOOS.
  2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.

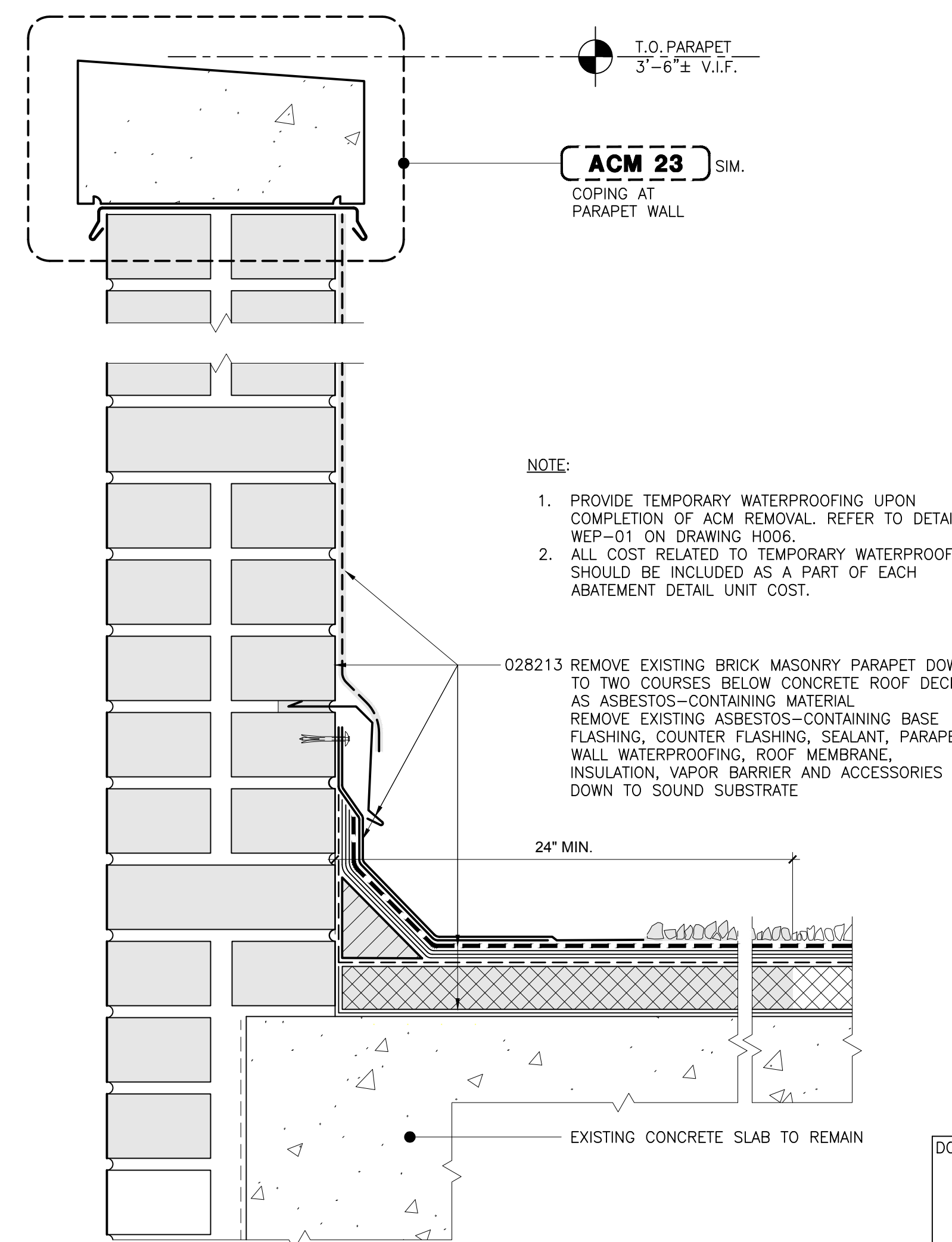


**ACM 16**

ACM REMOVAL OF PARAPET WALL - 3 WYTHER (UOM: SF)

NTS

- NOTE:
1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL. REFER TO DETAIL WEP-01 ON DRAWING HOOS.
  2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.

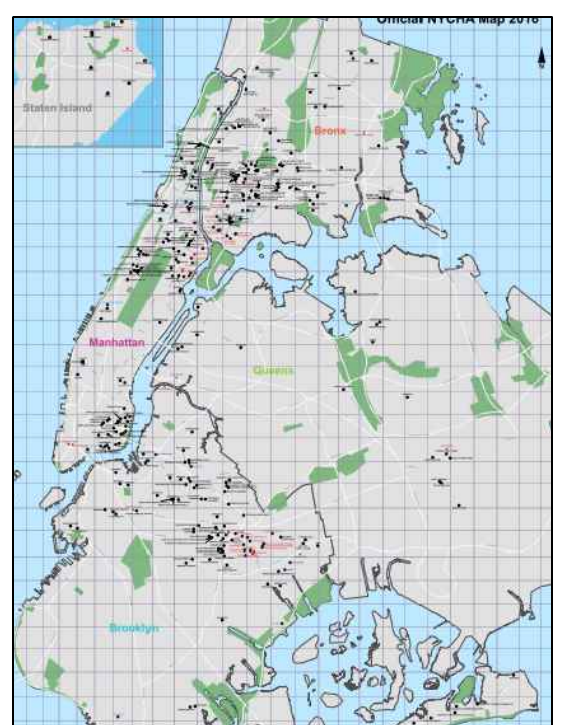


**ACM 17**

ACM REMOVAL OF PARAPET WALL - 2 WYTHER (UOM: SF)

NTS

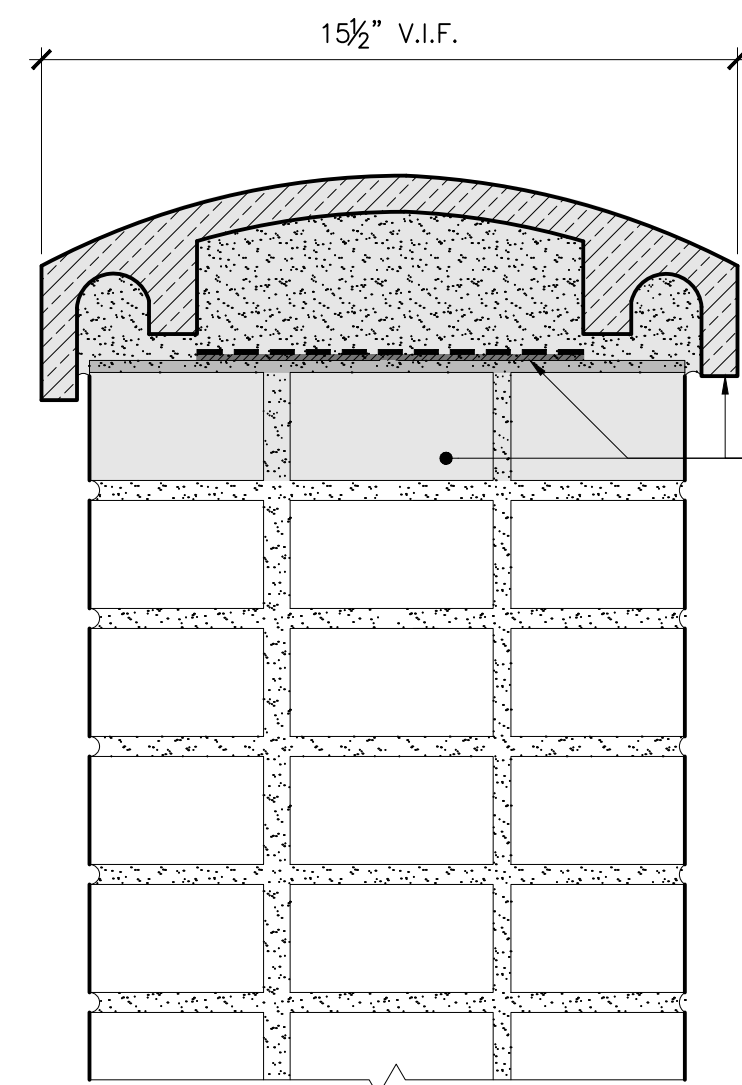




Key/ Location plan

**NOTE:**

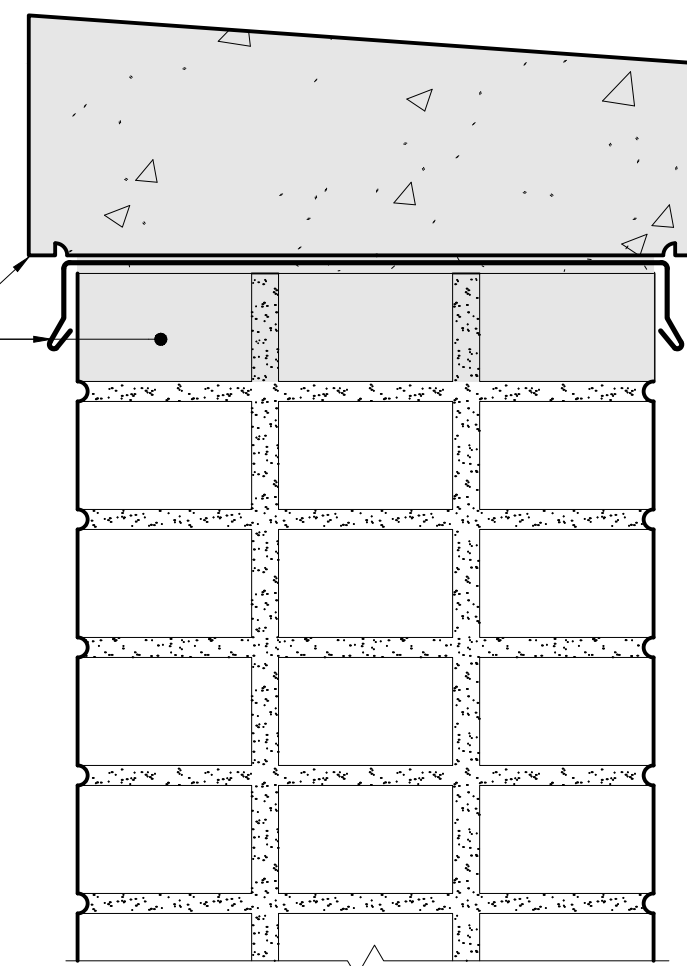
1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL TO PREVENT WATER INFILTRATION.
2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.



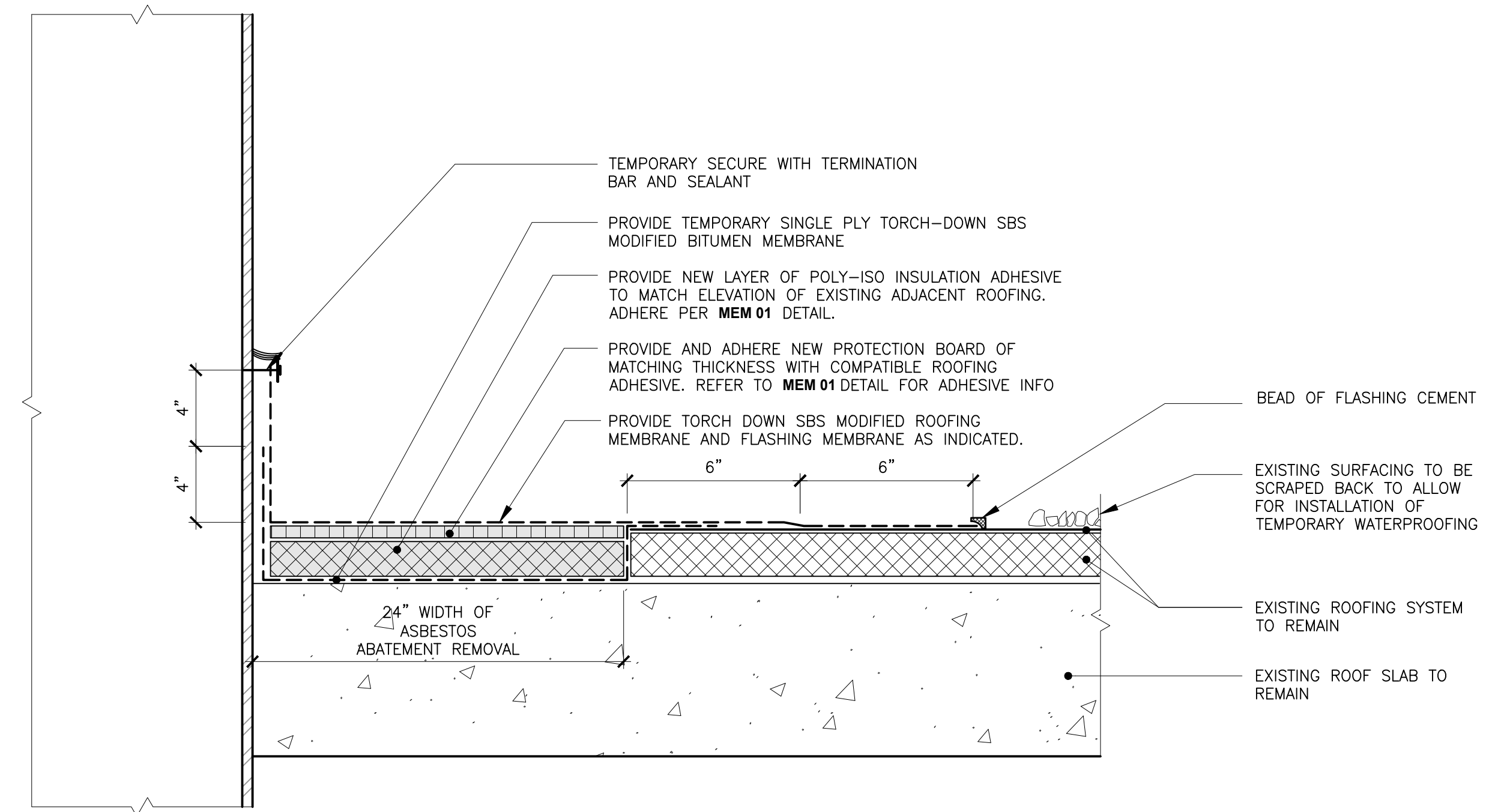
**CONDITION 1**  
 TERRA COTTA COPING

NOTE: EXISTING COPING STONE PROFILE AND LOCATION OF EXISTING FLASHING / ANCHORING SYSTEM MAY VARY. VERIFY IN FIELD.

028213 REMOVE EXISTING ASBESTOS-CONTAINING CAULK/SEALANT ON CAP FLASHING, COPING AND ONE COURSE OF BRICK



**CONDITION 2**  
 PRECAST CONCRETE COPING



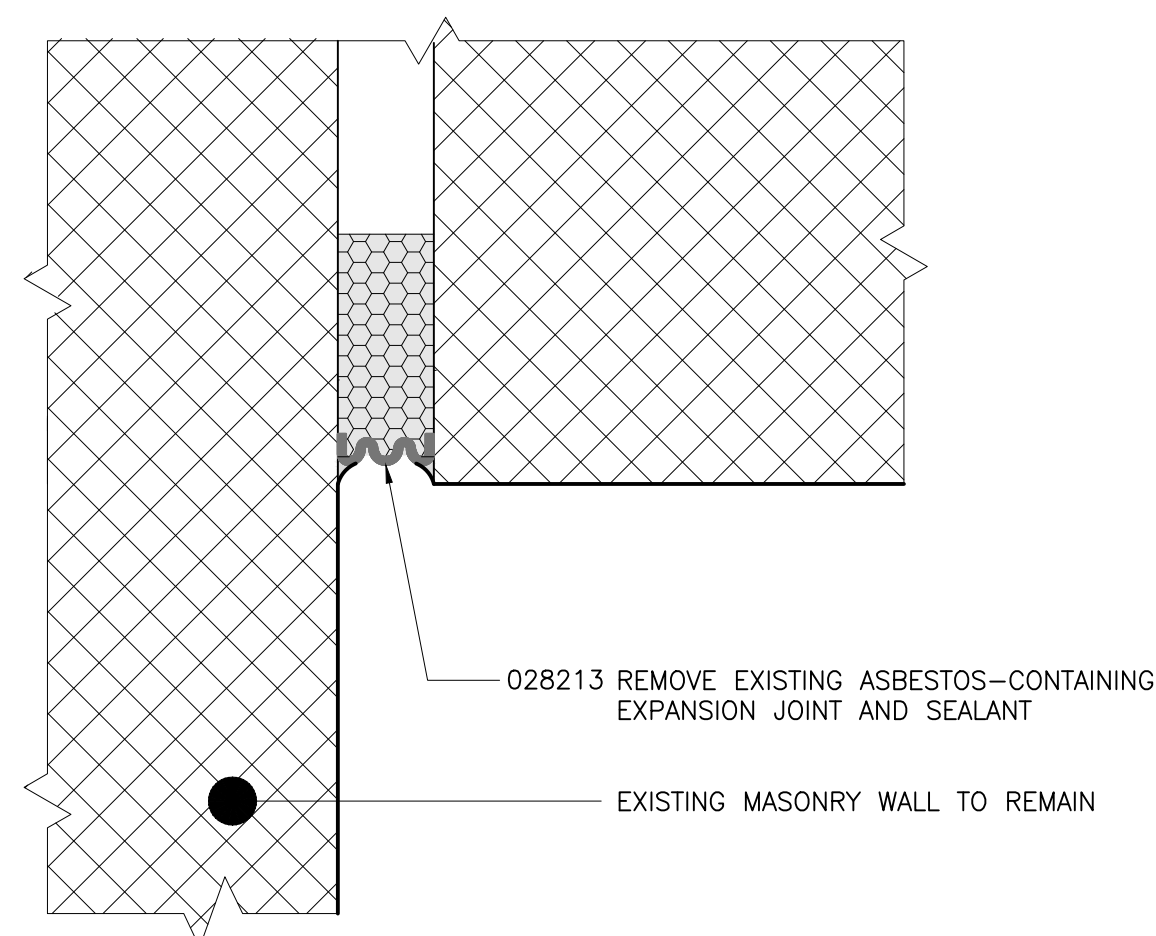
**WEP 02**

**TEMPORARY WATERPROOFING AT PENETRATION (UOM: SF)**

NTS

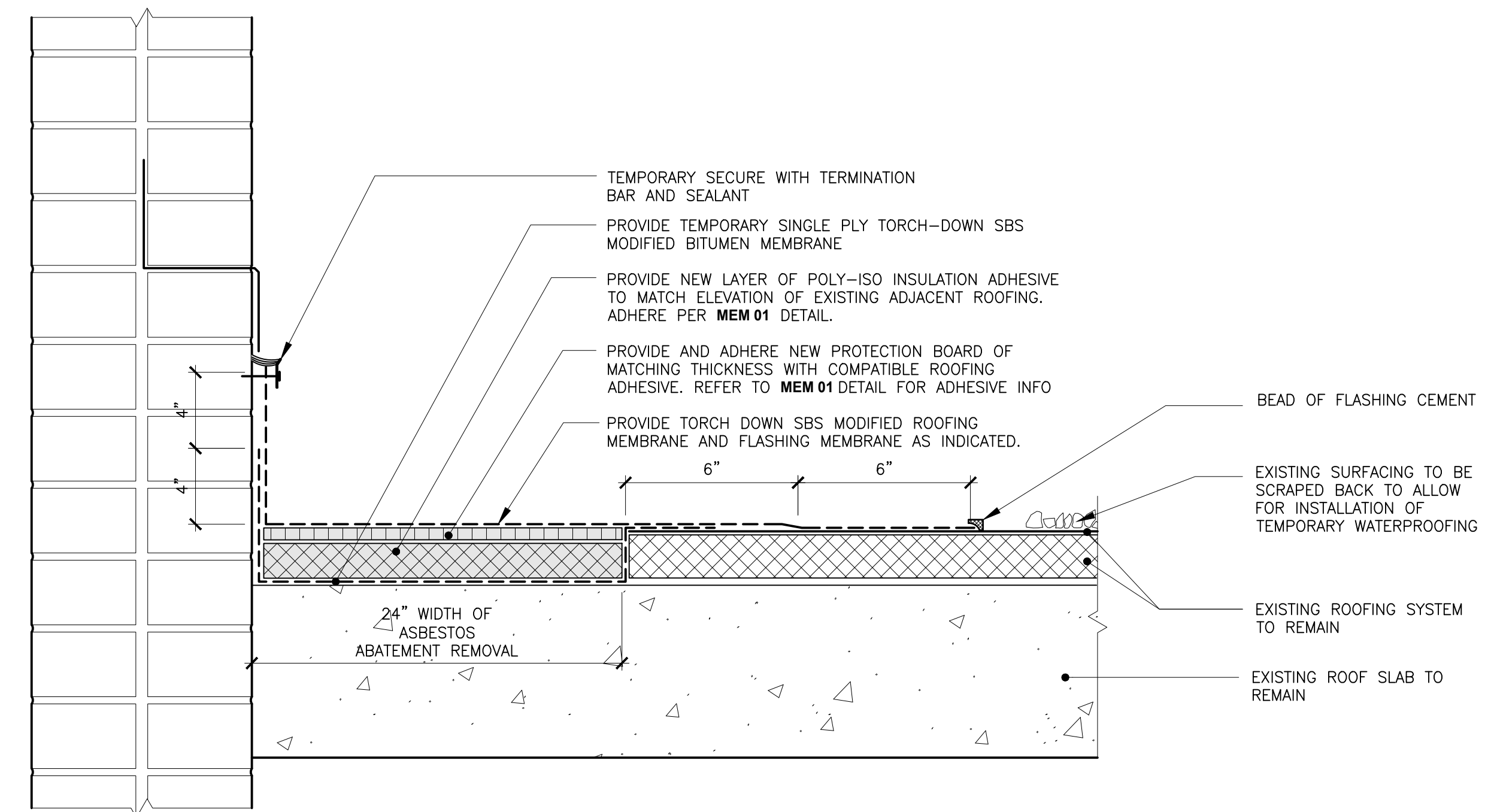
**NOTE:**

1. PROVIDE TEMPORARY WATERPROOFING UPON COMPLETION OF ACM REMOVAL TO PREVENT WATER INFILTRATION.
2. ALL COST RELATED TO TEMPORARY WATERPROOFING SHOULD BE INCLUDED AS A PART OF EACH ABATEMENT DETAIL UNIT COST.



028213 REMOVE EXISTING ASBESTOS-CONTAINING EXPANSION JOINT AND SEALANT

EXISTING MASONRY WALL TO REMAIN



**WEP 01**

**TEMPORARY WATERPROOFING (UOM: SF)**

NTS

DOB Employee Stamps and Signatures

**ACM 23**

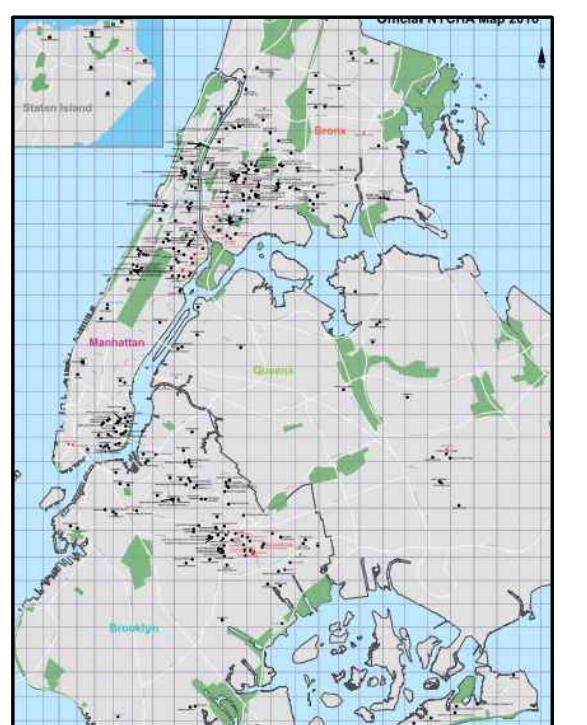
**ACM REMOVAL OF COPING STONE, FLASHING AND ONE TOP COURSE OF BRICKWORK AT PARAPET WALL (UOM: LF)**

NTS

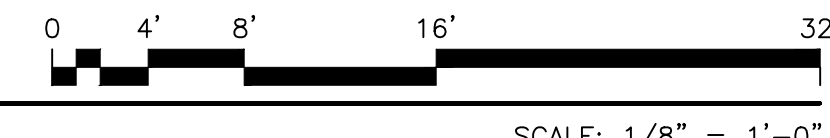
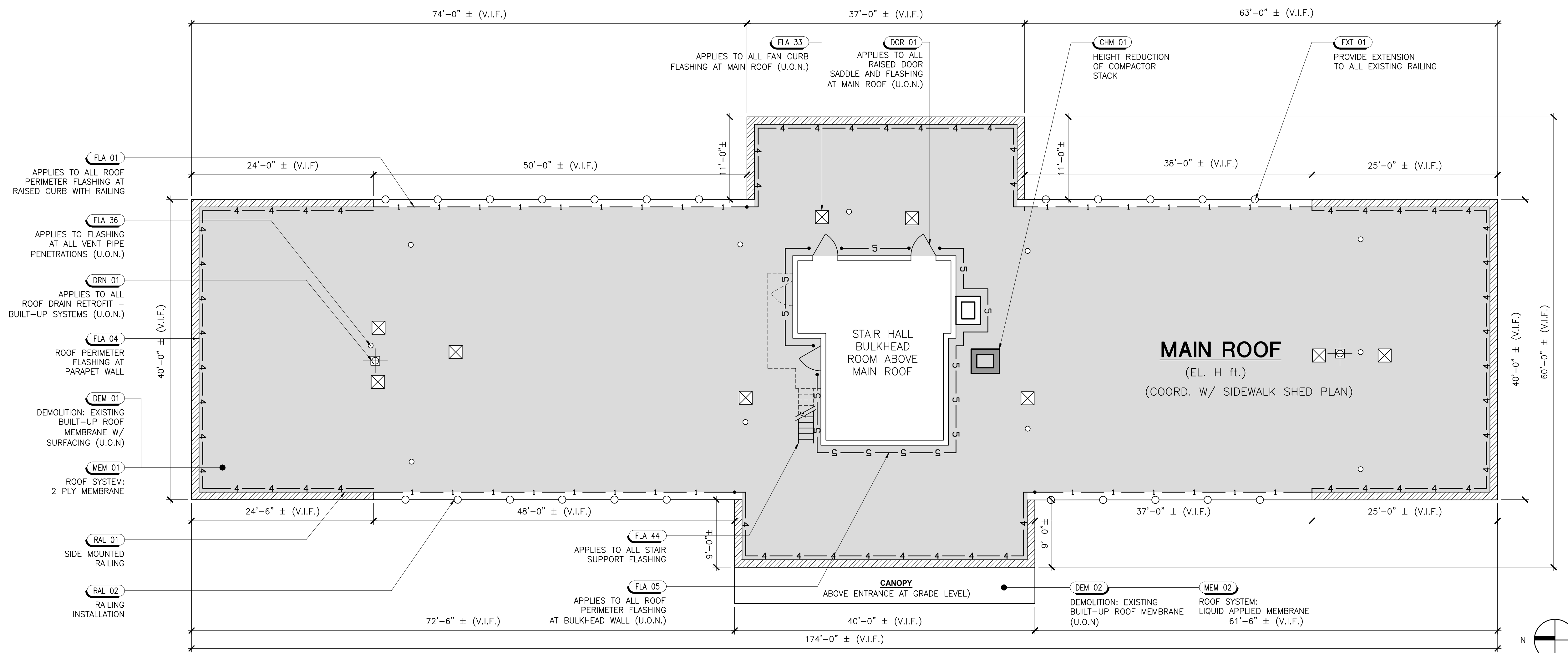
**ACM 22**

**ACM REMOVAL OF EXPANSION JOINT BETWEEN INCINERATOR STACK AND BULKHEAD WALL (UOM: LF)**

NTS



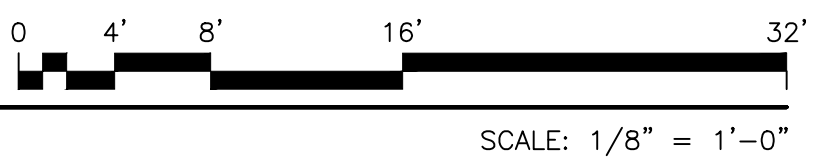
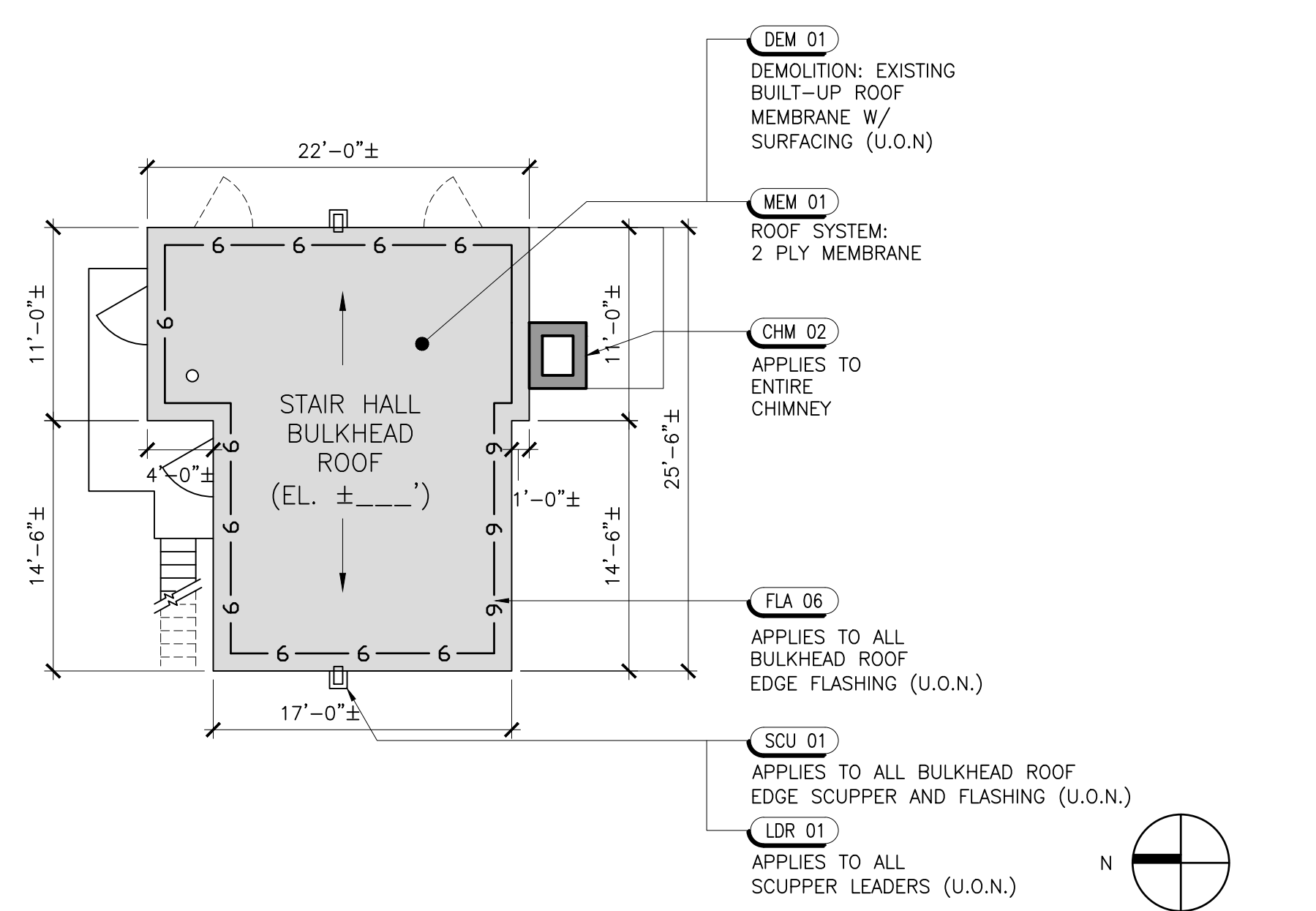
Key/ Location plan



**ROOF PLAN**  
 BUILDING

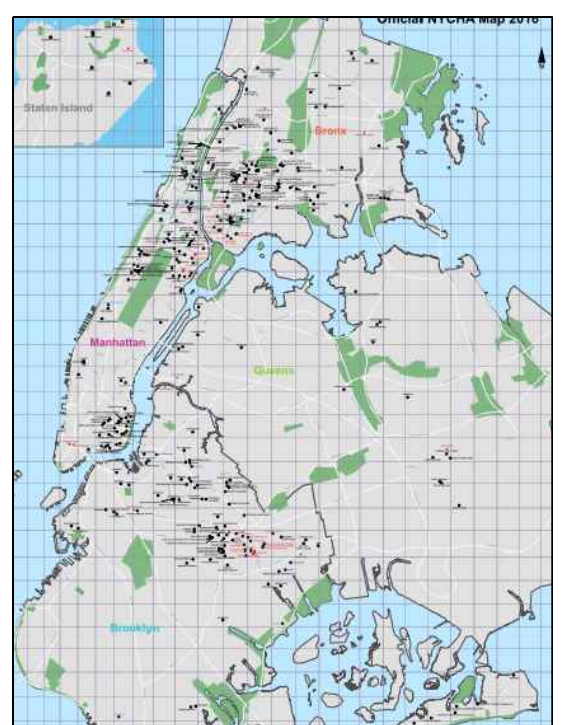
- NOTE:**
- COORDINATE ALL REMOVAL WORK WITH ASBESTOS ABATEMENT SCOPE OF WORK. SEE DRAWING H001 FOR ASBESTOS ABATEMENT SCHEDULE.
  - ALL VENT PIPE AND VENTILATOR LOCATIONS TO BE FIELD VERIFIED.
  - DIMENSIONS MARKED WITH "±" ARE FOR CONTRACTOR'S CONVENIENCE ONLY, AND SHALL BE VERIFIED.
  - CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND DRAIN LOCATIONS IN THE FIELD PRIOR TO PREPARATION OF TAPERED INSULATION LAYOUT.
  - PROTECT EXISTING CONDUITS AND PROVIDE TEMPORARY SUPPORT DURING REMOVAL OF EXISTING AND INSTALLATION OF NEW ROOFING SYSTEMS.
  - CONTRACTOR NEEDS TO GET APPROVAL FROM MANAGEMENT FOR REMOVAL OF THE ABANDONED ITEMS SUCH AS VENTS/CURBS/SUPPORTS ETC.
  - NOTIFY NYCHA IN ADVANCE AND COORDINATE TEMPORARY REMOVAL AND RESETTING OF EXISTING TELECOMMUNICATION EQUIPMENT AFFECTED BY ROOF REPLACEMENT WORK.

- LEGEND:**
- INDICATES EXISTING INDICATES VENT PIPE
  - ⊕ INDICATES EXISTING ROOF DRAIN
  - ⊗ ⊗ INDICATES EXISTING VENTILATION FAN CURB (SIZE VARIES)
  - INDICATES EXISTING CHIMNEY
  - ⊞ INDICATES NEW SCUPPER
  - INDICATES DIRECTION OF PROPOSED NEW ROOF SLOPE AT BULKHEAD
  - ▨ INDICATES EXISTING BRICK MASONRY PARAPET
  - 1 — INDICATES DETAIL FLA 01
  - 4 — 4 — INDICATES DETAIL FLA 04
  - 5 — 5 — INDICATES DETAIL FLA 05
  - 6 — 6 — INDICATES DETAIL FLA 06
  - — INDICATES EXISTING RAILING HEIGHT TO BE EXTENDED



**BULKHEAD ROOF PLAN**  
 BUILDING

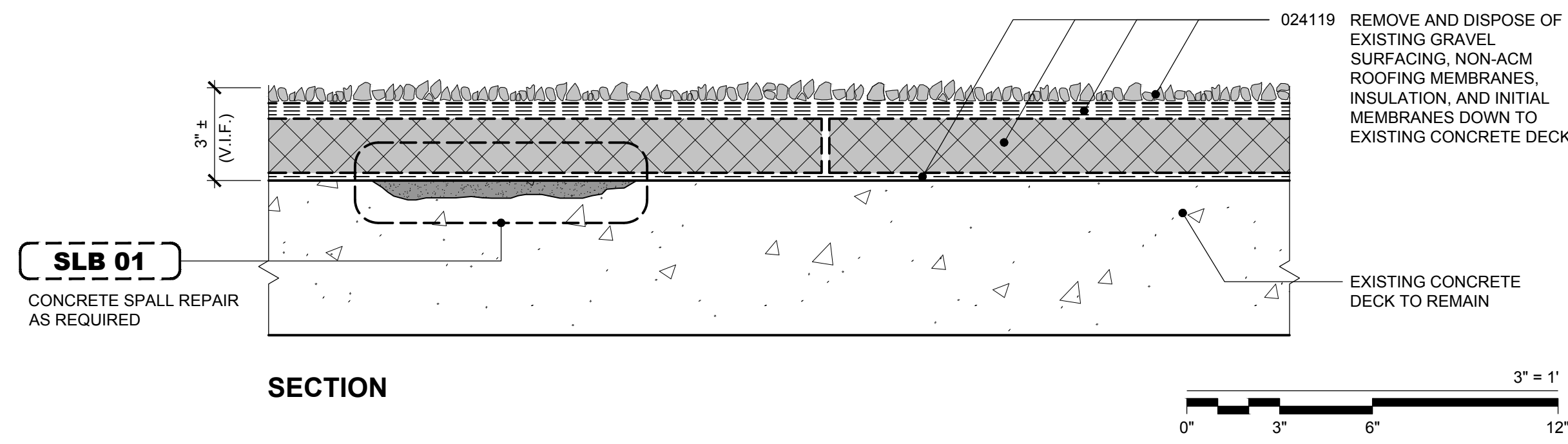
DOB Employee Stamps and Signatures



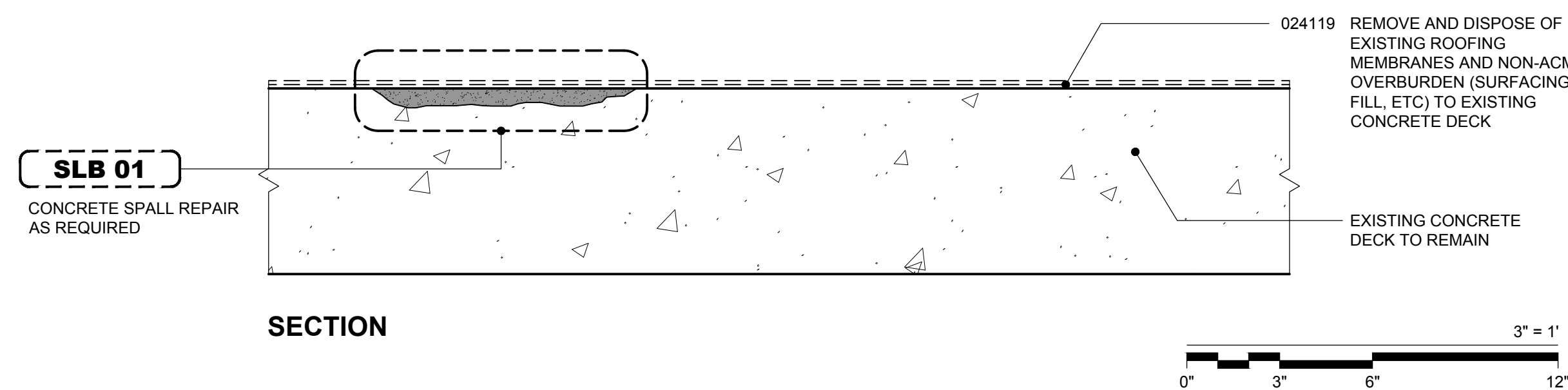
Key/ Location plan

**DEMOLITION NOTES (APPLIES TO DEM 01 THRU DEM 05):**

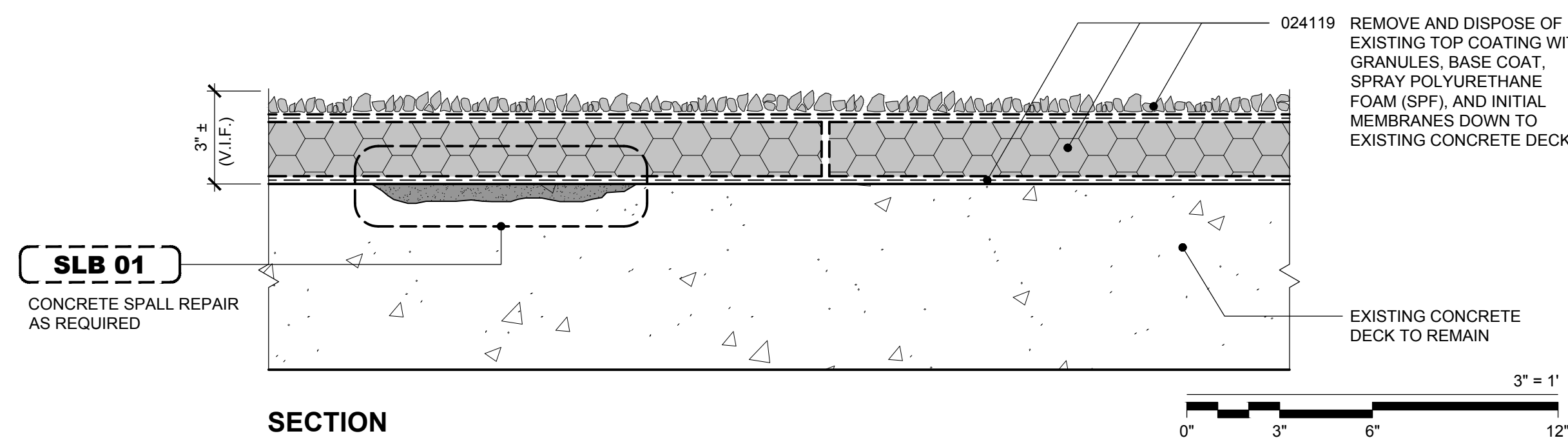
1. CONTRACTOR SHALL REMOVE & DISPOSE OF ALL EXISTING MEMBRANES, FLASHING & RELATED MATERIALS DOWN TO EXISTING CONCRETE SUBSTRATE
2. CONTRACTOR SHALL REMOVE EXISTING BASE AND PENETRATION FLASHING TO HEIGHT OF NEW FLASHING SHOWN IN RESTORATION ASSEMBLY DETAILS.
3. COORDINATE WITH ALL TRADES TO ENSURE ROOF SYSTEM REMAINS WATER TIGHT THROUGHOUT CONSTRUCTION.
4. EXISTING DRAIN AND PIPES TO BE MADE WATERTIGHT IN THEIR EXISTING CONFIGURATION AFTER ROOFING DEMOLITION. SEE ROOF PLAN FOR LOCATIONS AND MODIFICATION REQUIREMENTS FOR FINAL ROOF INSTALLATION.
5. THE CONTRACTOR MUST PROVIDE TEMPORARY ROOFING PROTECTION FROM WATER INFILTRATION AT THE EXPOSED ROOF AND BRICK.
6. TEMPORARY ROOFING NEEDS TO BE PROVIDED IMMEDIATELY AFTER ASBESTOS ABATEMENT OF WATERPROOFING AND FLASHING AT ROOF PERIMETER AND BULKHEAD WALLS AS WELL AS ABATEMENT OF ROOFING AND FLASHING AT ROOF PENETRATIONS.



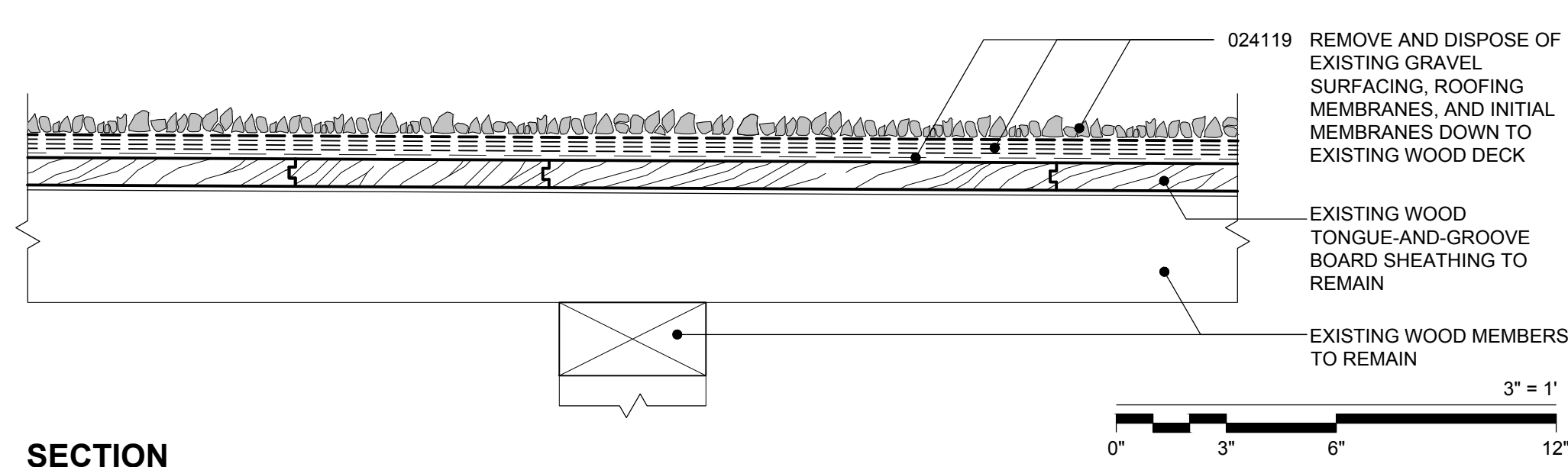
**DEM 01 DEMOLITION: EXISTING BUILT-UP ROOF MEMBRANE WITH INSULATION (SF)**



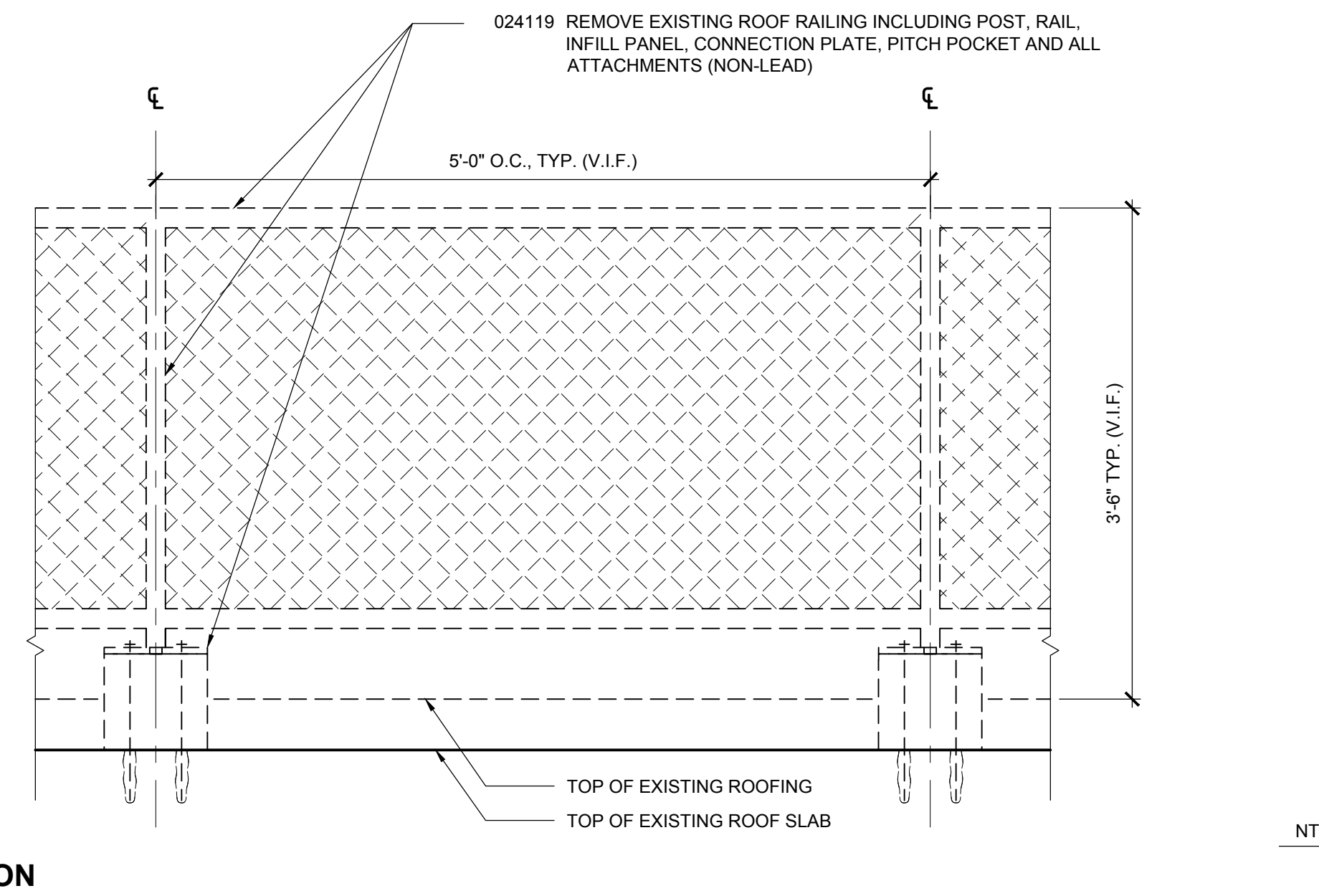
**DEM 02 DEMOLITION: EXISTING BUILT-UP ROOF MEMBRANE WITHOUT INSULATION (SF)**



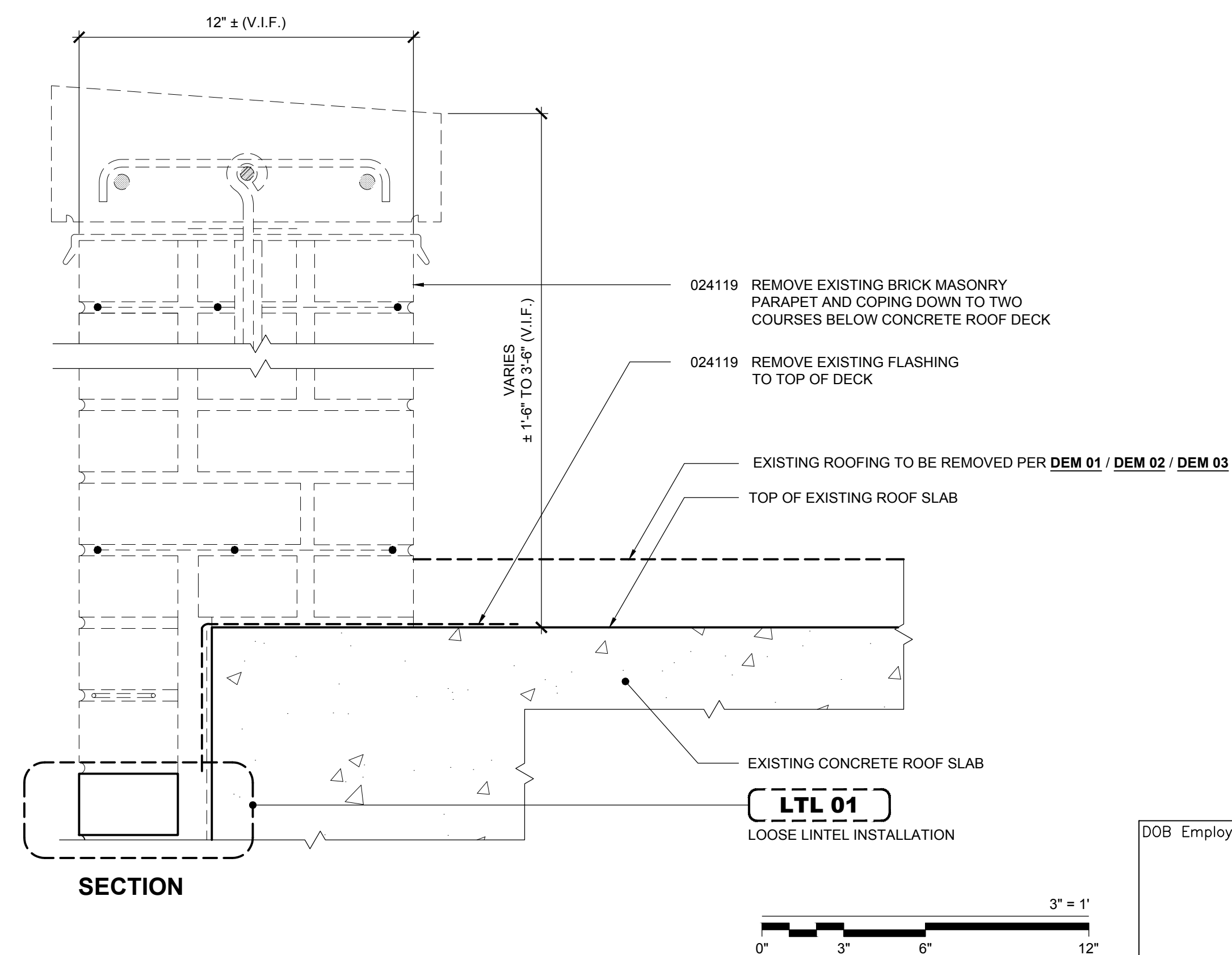
**DEM 03 DEMOLITION: EXISTING SPF ROOFING SYSTEM (SF)**



**DEM 04 DEMOLITION: EXISTING BUILT-UP ROOF MEMBRANE SYSTEM AT WOOD DECK (SF)**

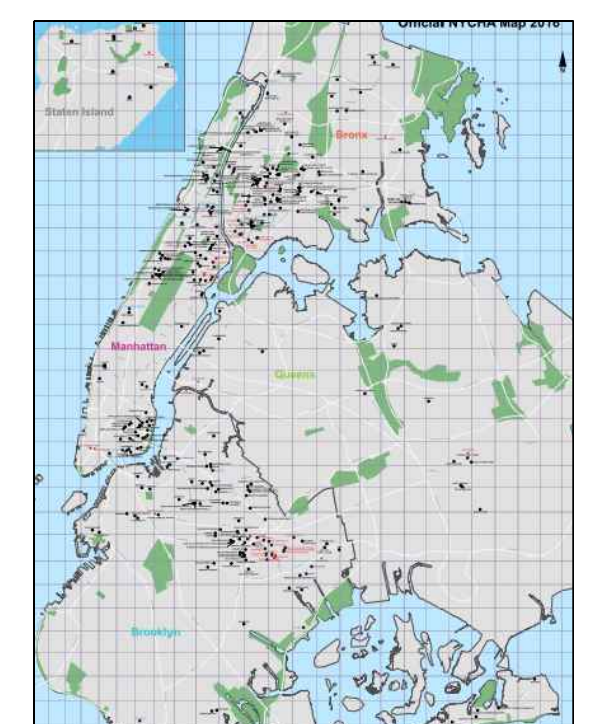


**DEM 05 DEMOLITION: EXISTING ROOF RAILINGS, POSTS & ATTACHMENTS (LF)**



**DEM 06 DEMOLITION: EXIST. PARAPET WALL-3 WYTHE AS NON-ACM(SF)**

DOB Employee Stamps and Signatures



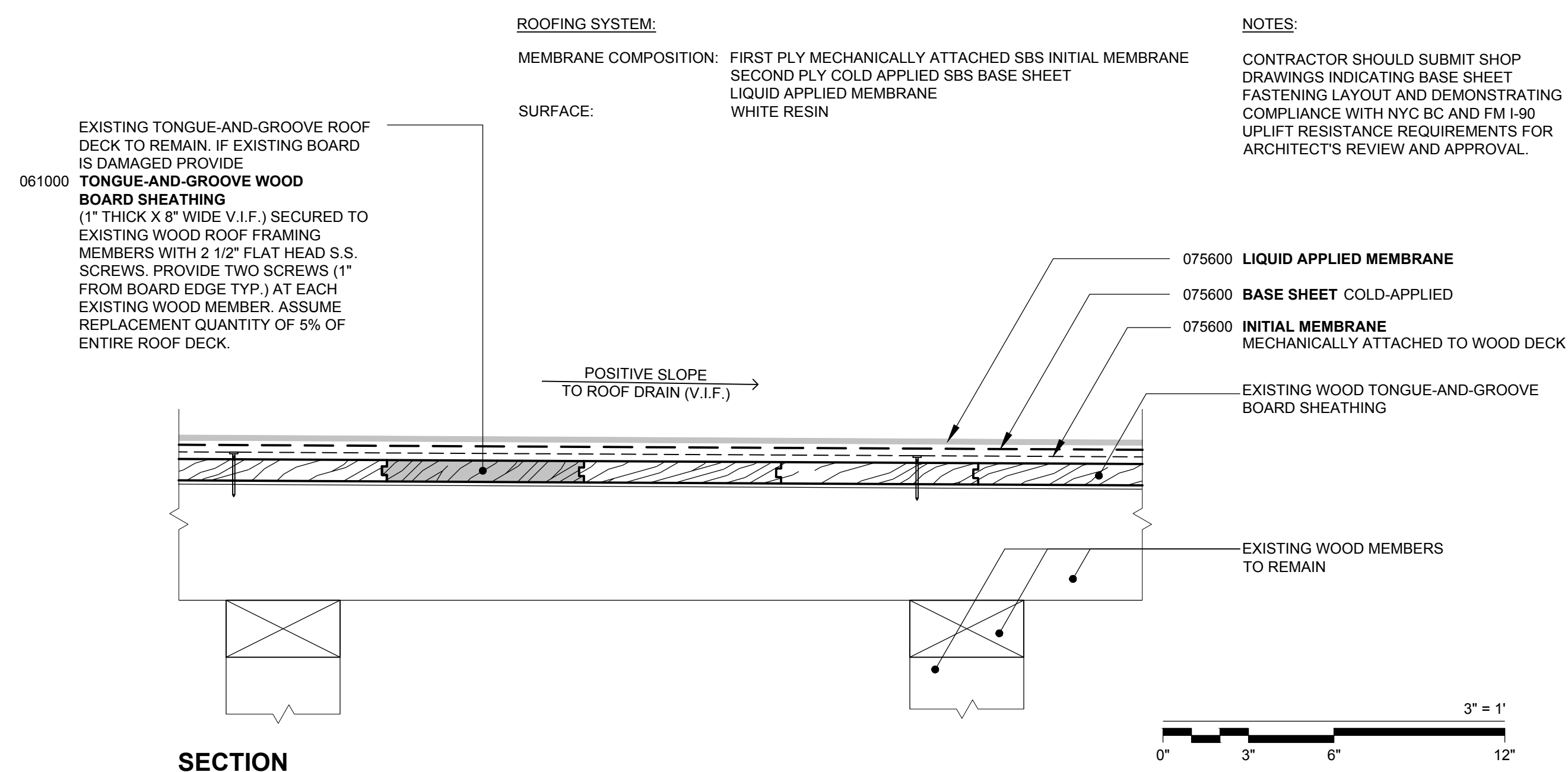
Key/ Location plan

Contract Title:  
**ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT**

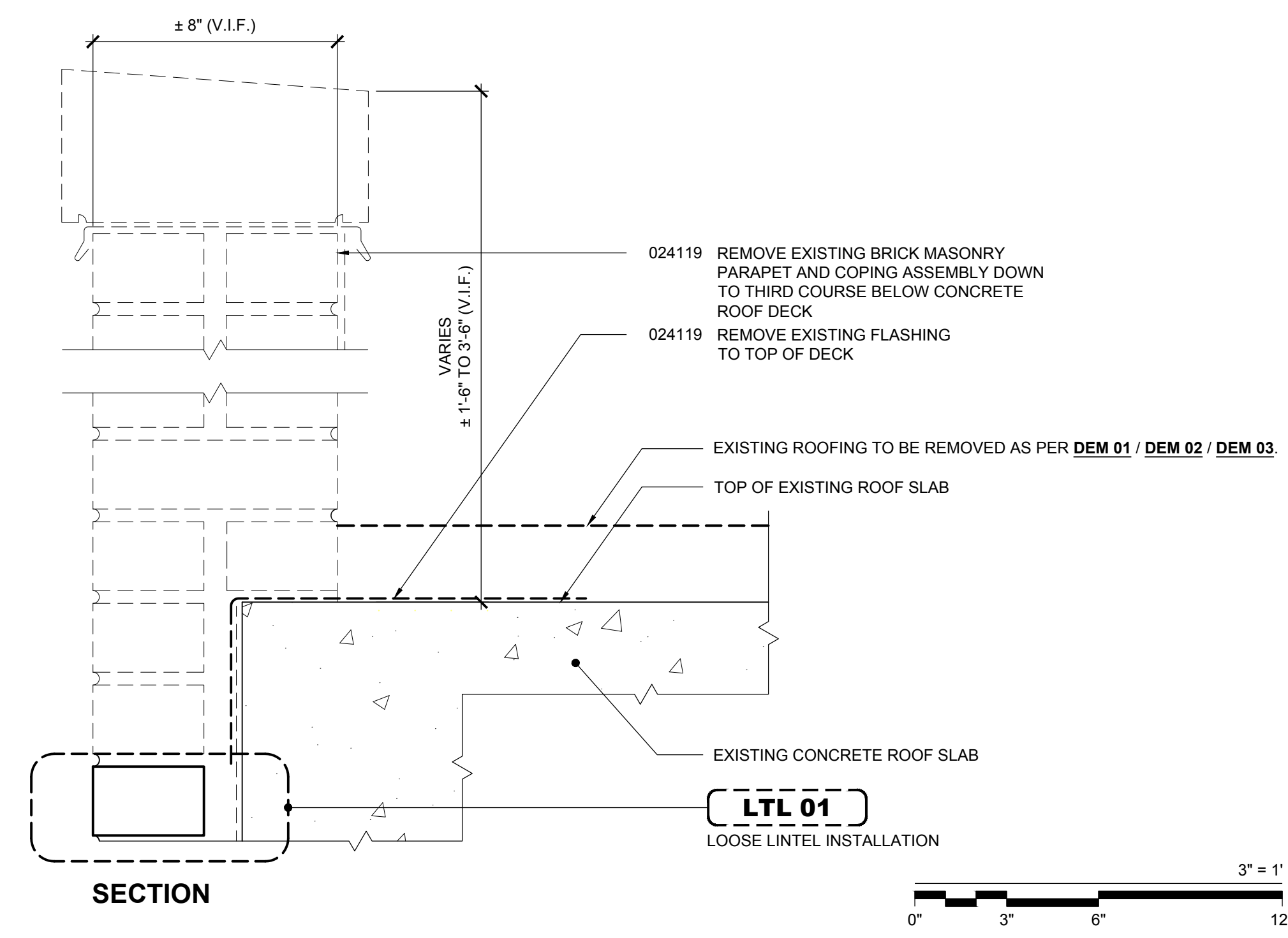
Contract No.:  
**RF 1805337**

Drawing Title: Restoration Details:  
 MEM 01, MEM 02, MEM 03,  
 SLB 01, DEM 07

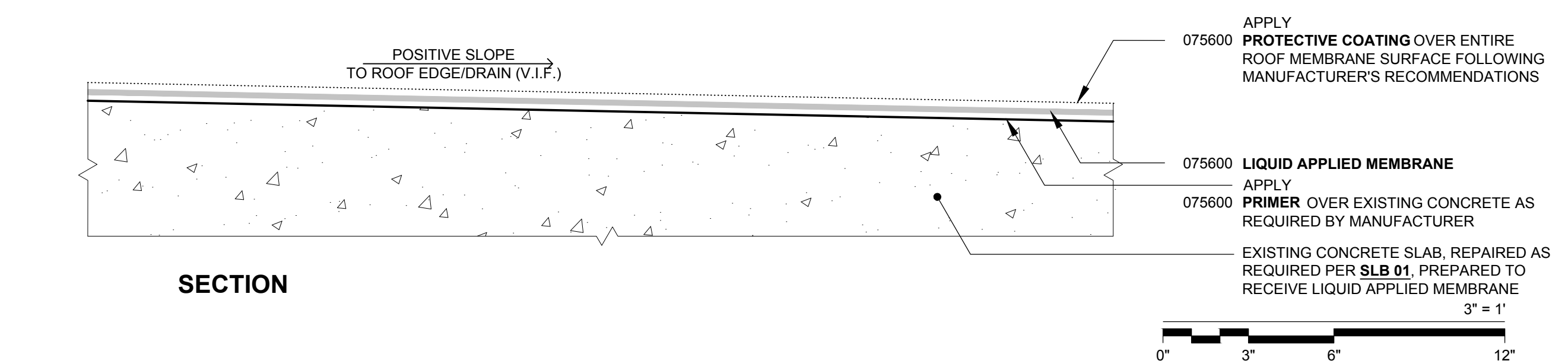
Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>A502.00</b>
	Sheet 17 of 64



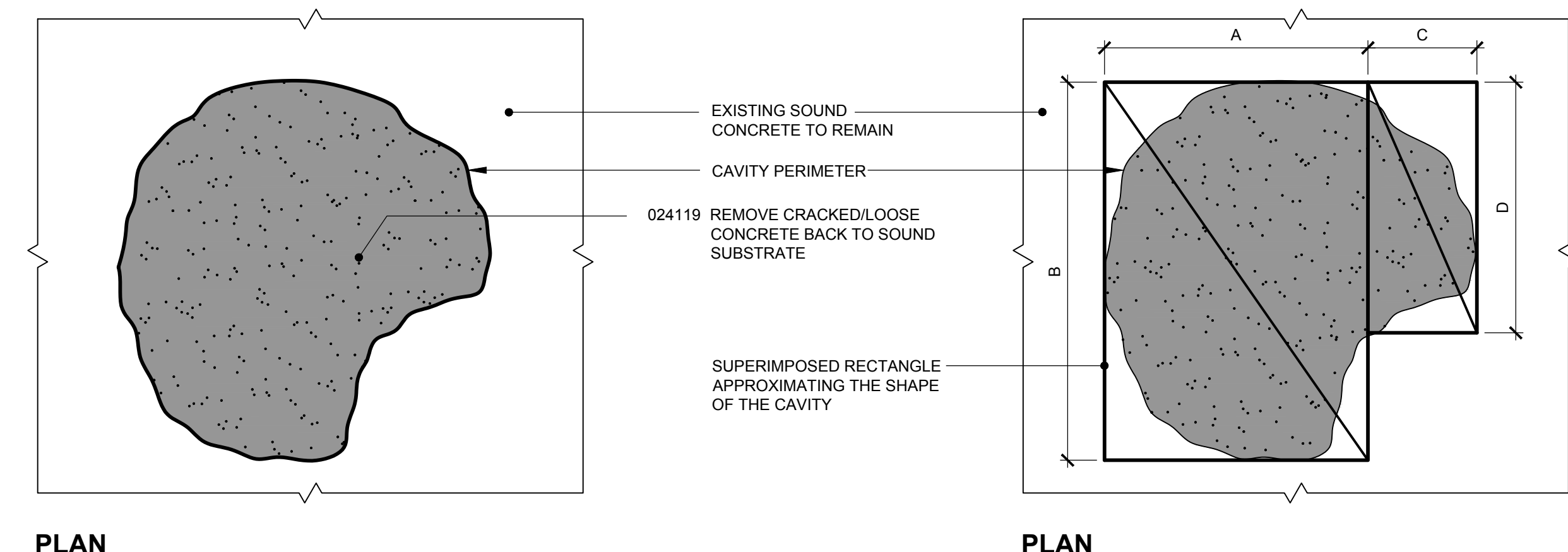
**MEM 03 LIQUID APPLIED MEMBRANE AT WOOD DECK (SF)**



**DEM 07 DEMOLITION: EXISTING PARAPET WALL - 2 WYTHE AS NON-ACM (SF)**

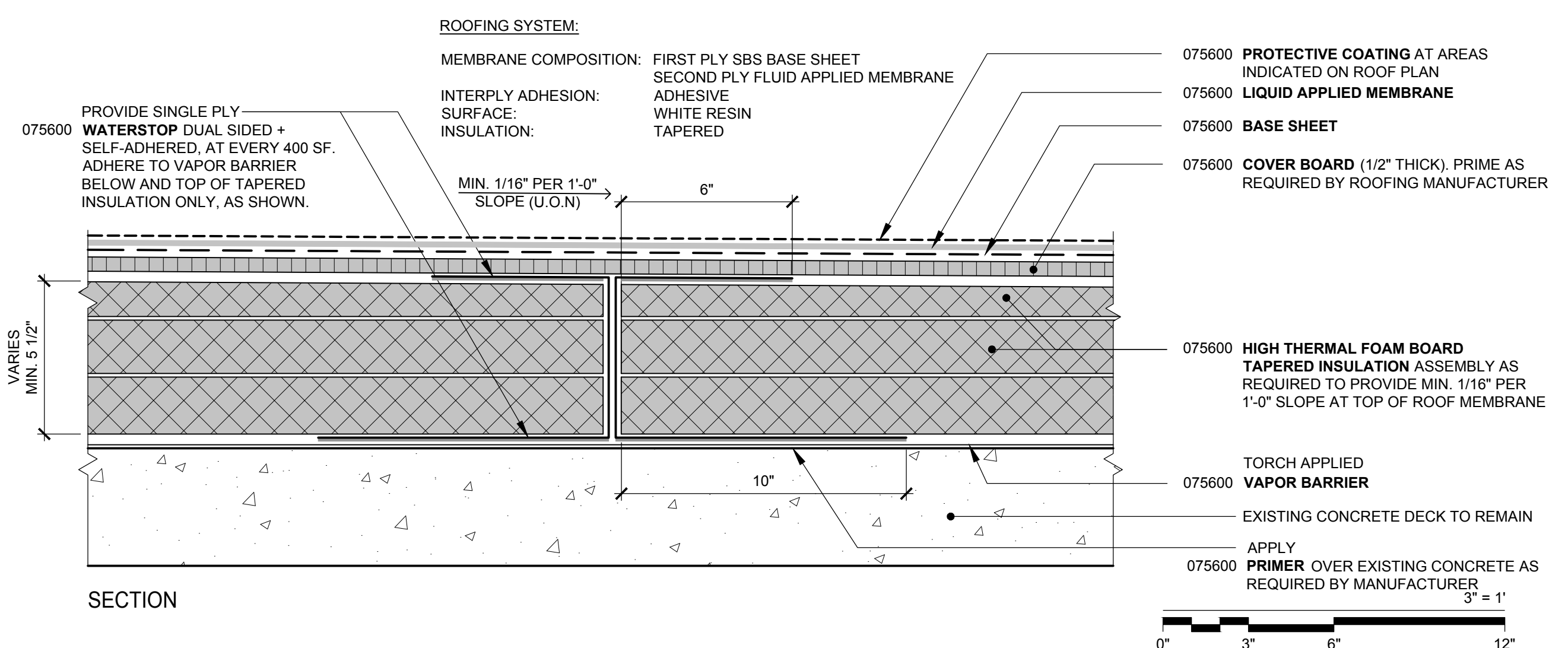


**MEM 02 LIQUID APPLIED MEMBRANE (SF)**

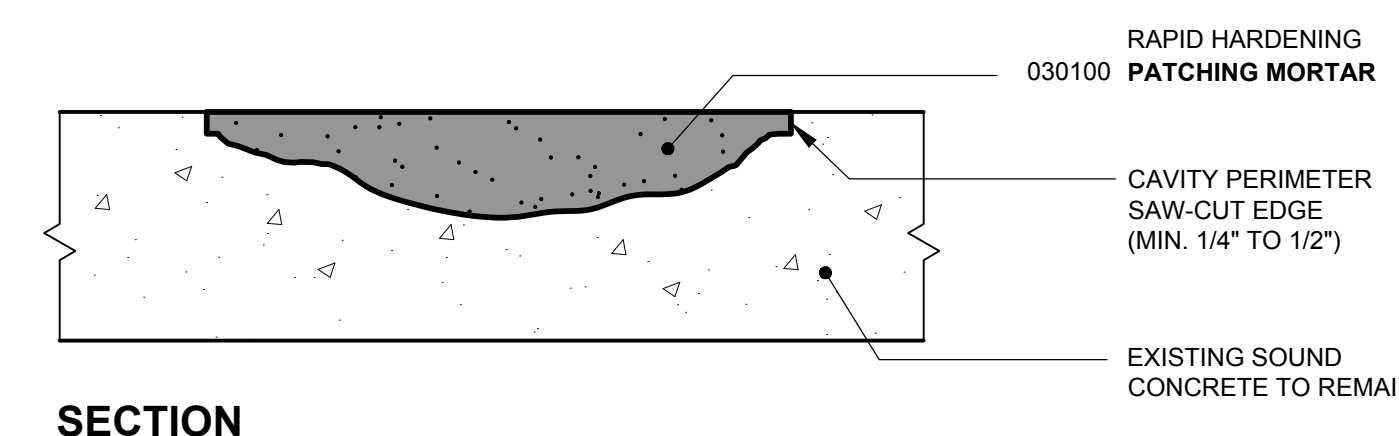


PLAN

PLAN



**MEM 01 LIQUID APPLIED MEMBRANE SYSTEM (SF)**



SECTION

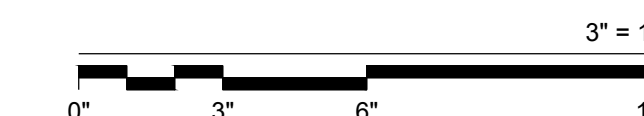
**REPAIR OF DETERIORATED CONCRETE**

- AFTER REMOVING ROOFING SYSTEM, VISUALLY SURVEY CONCRETE IN THE PRESENCE OF A NYCHA REPRESENTATIVE OR EOR.
- SOUND SURFACES WITH 3LB. DEAD BLOW HAMMER TO IDENTIFY EXTENT OF DETERIORATED/DELAMINATED CONCRETE TO BE REMOVED.
- MARK AREA OF DETERIORATED/DELAMINATED CONCRETE.
- CREATE A CAVITY BY REMOVING ALL LOOSE MATERIAL. (TAKE PHOTO & DOCUMENT LOCATION OF DETERIORATED AREAS BEFORE REPAIRING).
- DETERMINE QUANTITY OF CONCRETE REPAIR IN ACCORDANCE WITH QUANTIFICATION PROCEDURE DIAGRAM.
- PREPARE CAVITY SURFACE AND APPLY RAPID HARDENING PATCHING MORTAR AS RECOMMENDED BY MANUFACTURER'S INSTRUCTIONS.

THE QUANTITY OF CONCRETE REPAIR IN SQUARE FEET IS EQUAL TO:  
 (A X B) + (C X D)

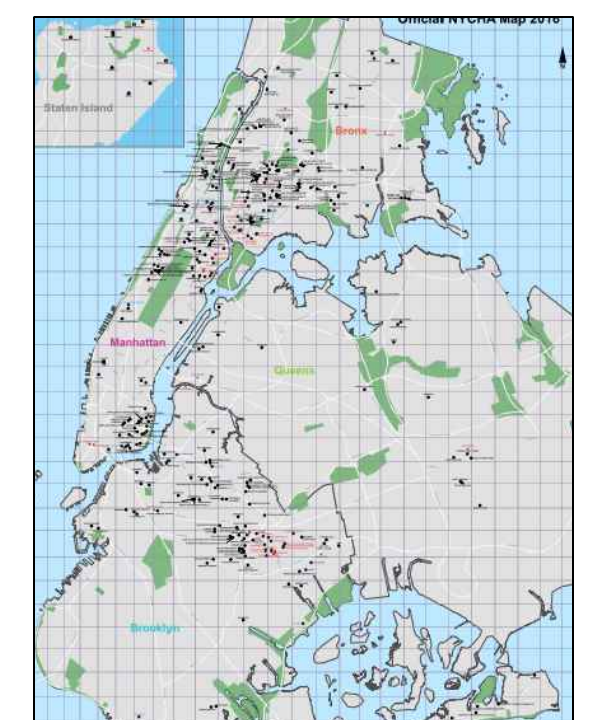
**QUANTIFICATION PROCEDURE**

- AT EACH CAVITY LOCATION, THE QUANTITY OF CONCRETE REPAIR EQUALS THE SUM OF THE AREAS OF THE SUPERIMPOSED RECTANGLES THAT APPROXIMATE THE SHAPE OF THE CAVITY.
- THE UNIT OF MEASURE FOR THE QUANTIFICATION OF CONCRETE REPAIR IS THE SQUARE FEET (SQ FT).

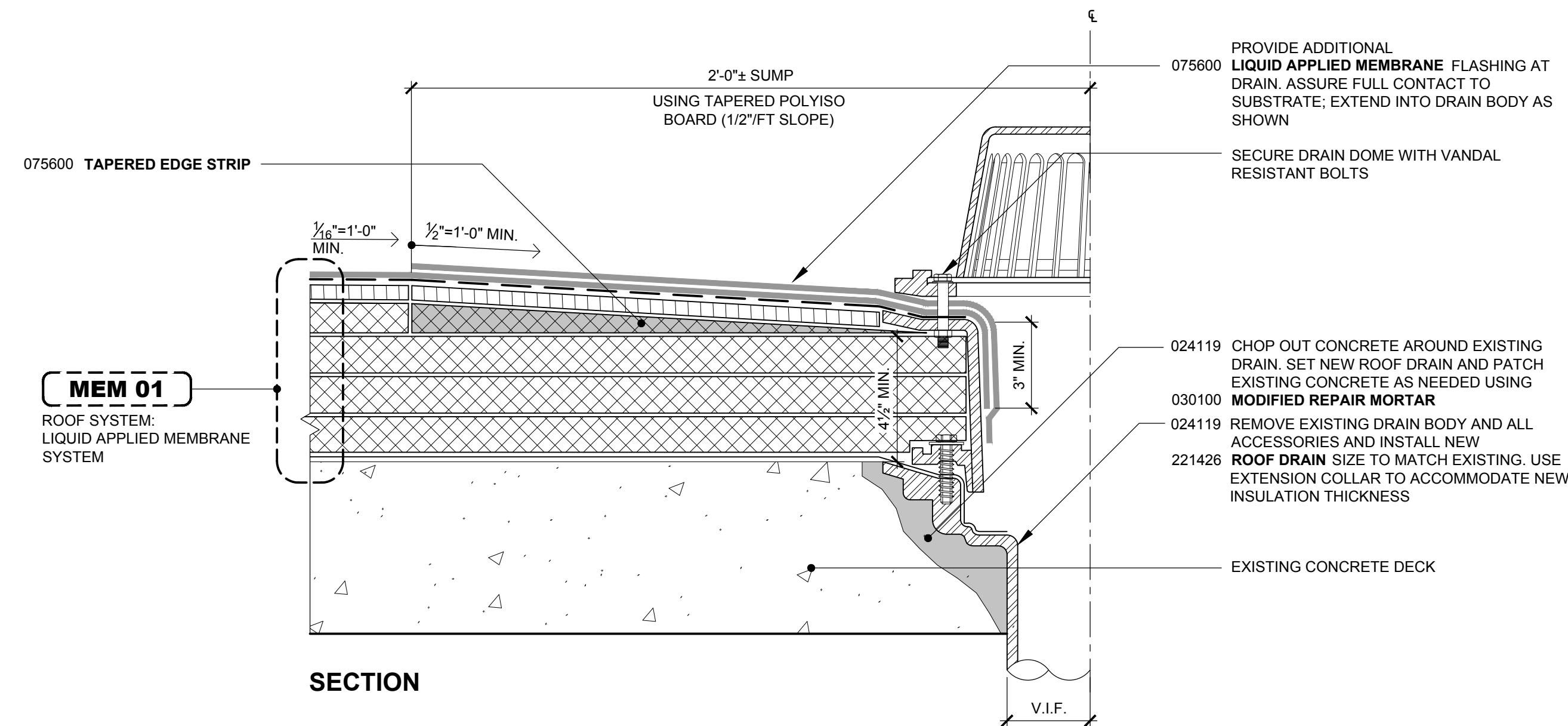


**SLB 01 "FLASH PATCH" CONCRETE DECK (SF)**

DOB Employee Stamps and Signatures



Key/ Location plan



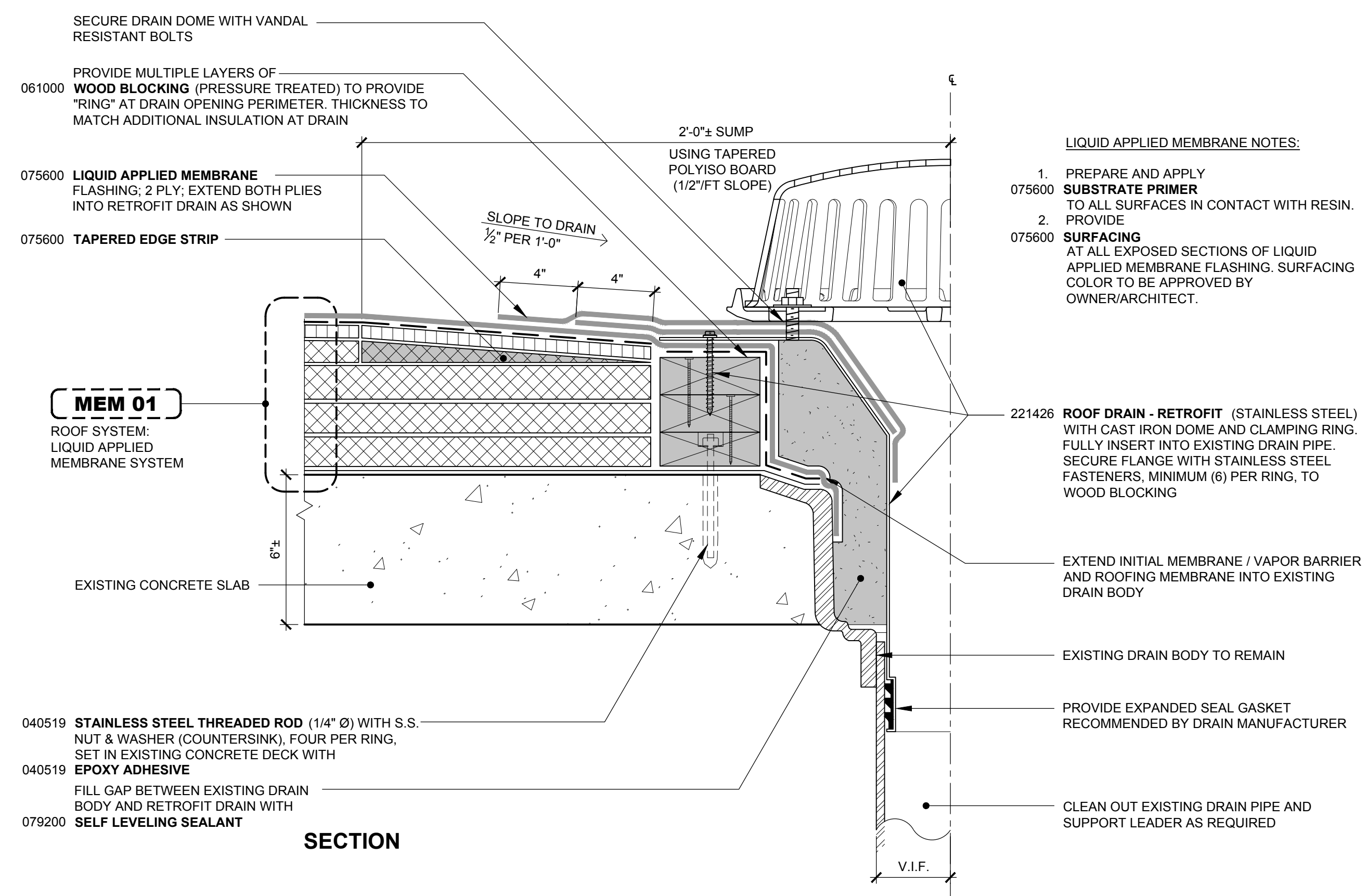
**TYPICAL DRAIN NOTES:**

- POWER FLUSH CLEAN EACH ROOF DRAIN AFTER ROOFING WORK IS COMPLETED.
- DEMONSTRATE TO OWNER THAT EACH DRAIN IS FULLY FUNCTIONAL AFTER COMPLETION OF ALL WORK.
- REFER TO SPECIFICATION SECTION 221426 FOR DRAIN TESTING INFO.

**LIQUID APPLIED MEMBRANE NOTES:**

1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
2. PROVIDE **075600 SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

**DRN 02 ROOF DRAIN REPLACEMENT AT MAIN/BULKHEAD ROOF (EA)**



**FLA 06**

PERIMETER FLASHING AT FLAT CONCRETE EDGE

WOOD BLOCKING

ROOF METAL EDGE FLASHING

**FLA 07**

PERIMETER FLASHING AT SUNK SLAB

221426 SCUPPER DRAIN GRATE WITH MEMBRANE CLAMP

ADDITIONAL **075600 LIQUID APPLIED MEMBRANE** FLASHING AT SCUPPER; 2 PLY; EXTEND BOTH PLIES INTO EXISTING DRAIN BODY

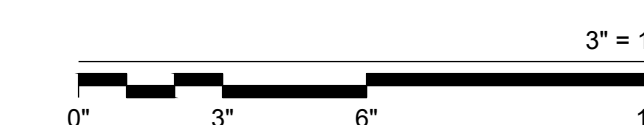
**075600 TAPERED EDGE STRIP**

**MEM 01**

ROOF SYSTEM: LIQUID APPLIED MEMBRANE SYSTEM

EXISTING CONCRETE SLAB

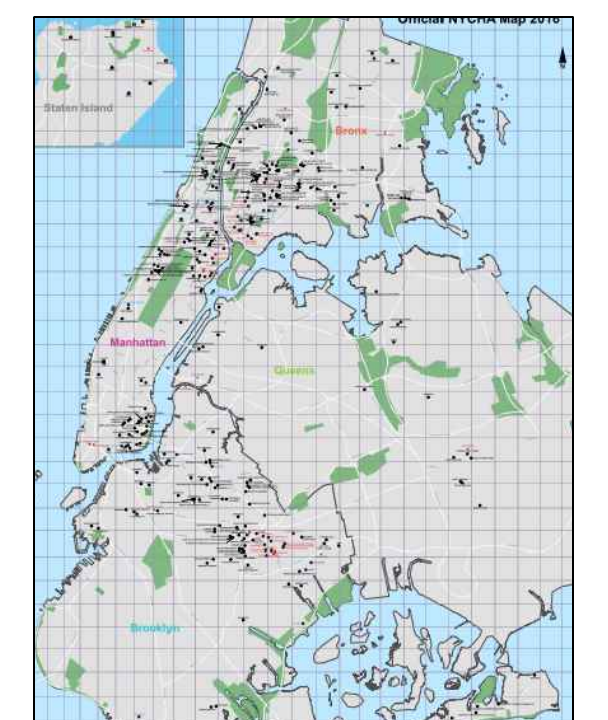
SECTION



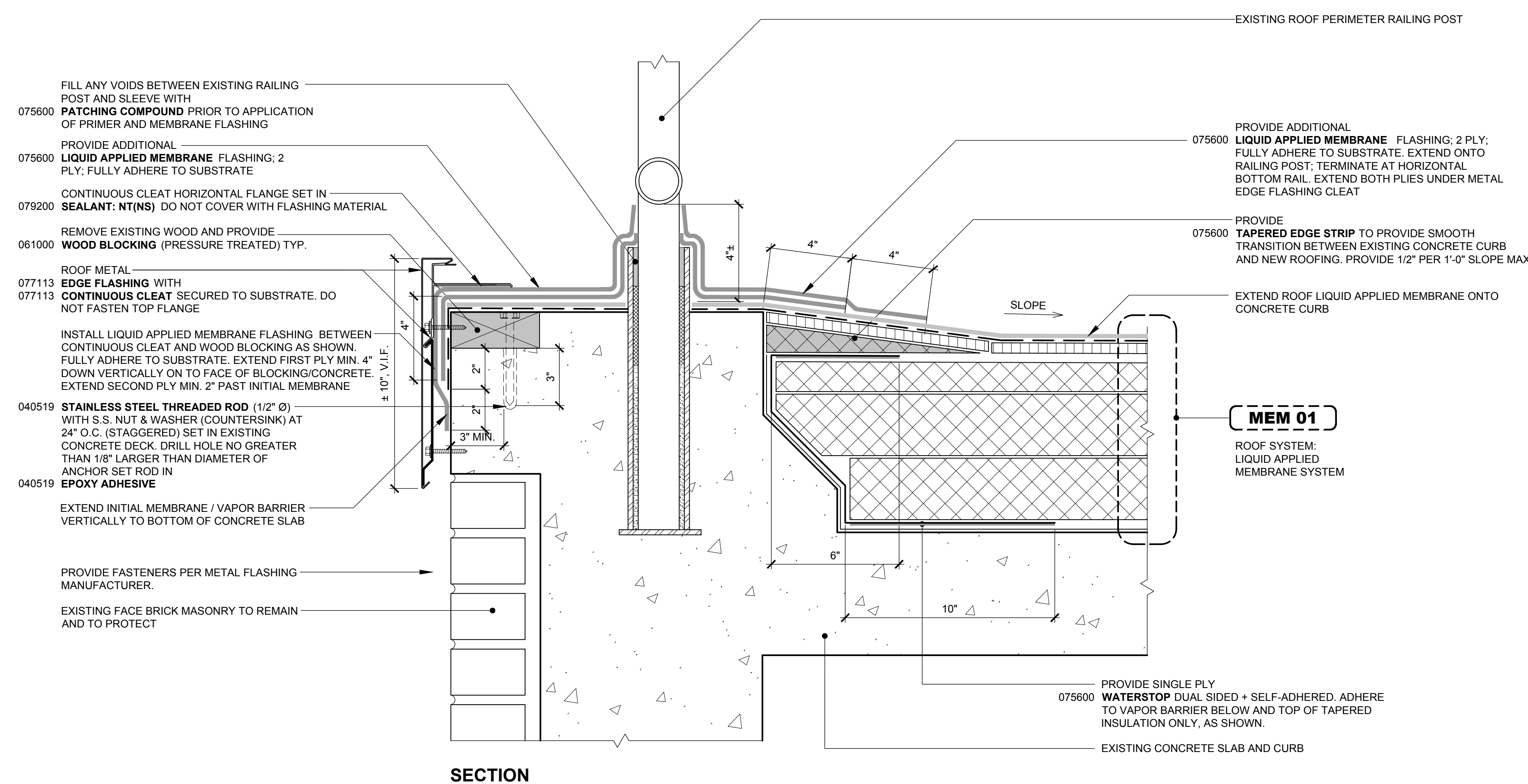
DOB Employee Stamps and Signatures

**DRN 01 ROOF DRAIN RETROFIT: LIQUID APPLIED MEMBRANE SYSTEM (EA)**

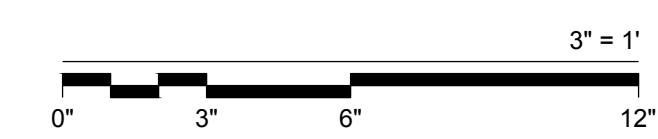
**DRN 03 ROOF DRAIN SCUPPER REPLACEMENT (EA)**



Key/ Location plan



- LIQUID APPLIED MEMBRANE NOTES:**
1. PREPARE AND APPLY **SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
  2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
  3. PROVIDE **SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

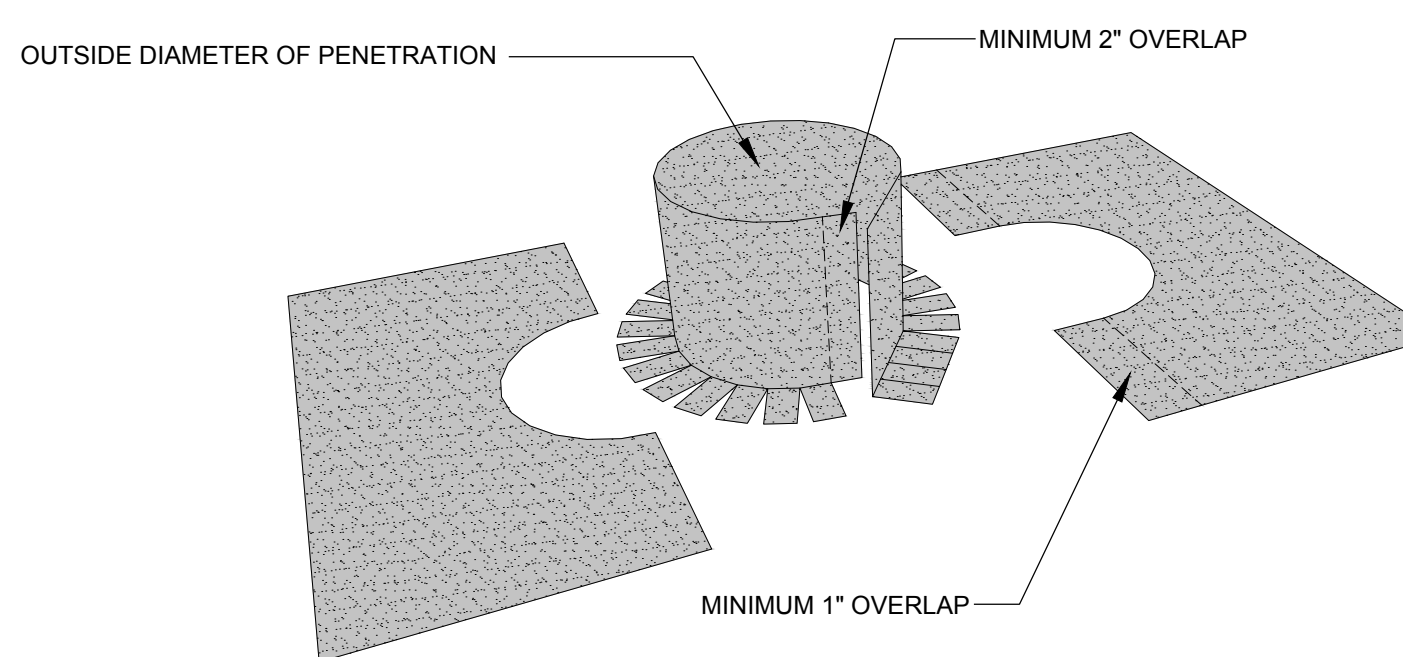


DOB Employee Stamps and Signatures

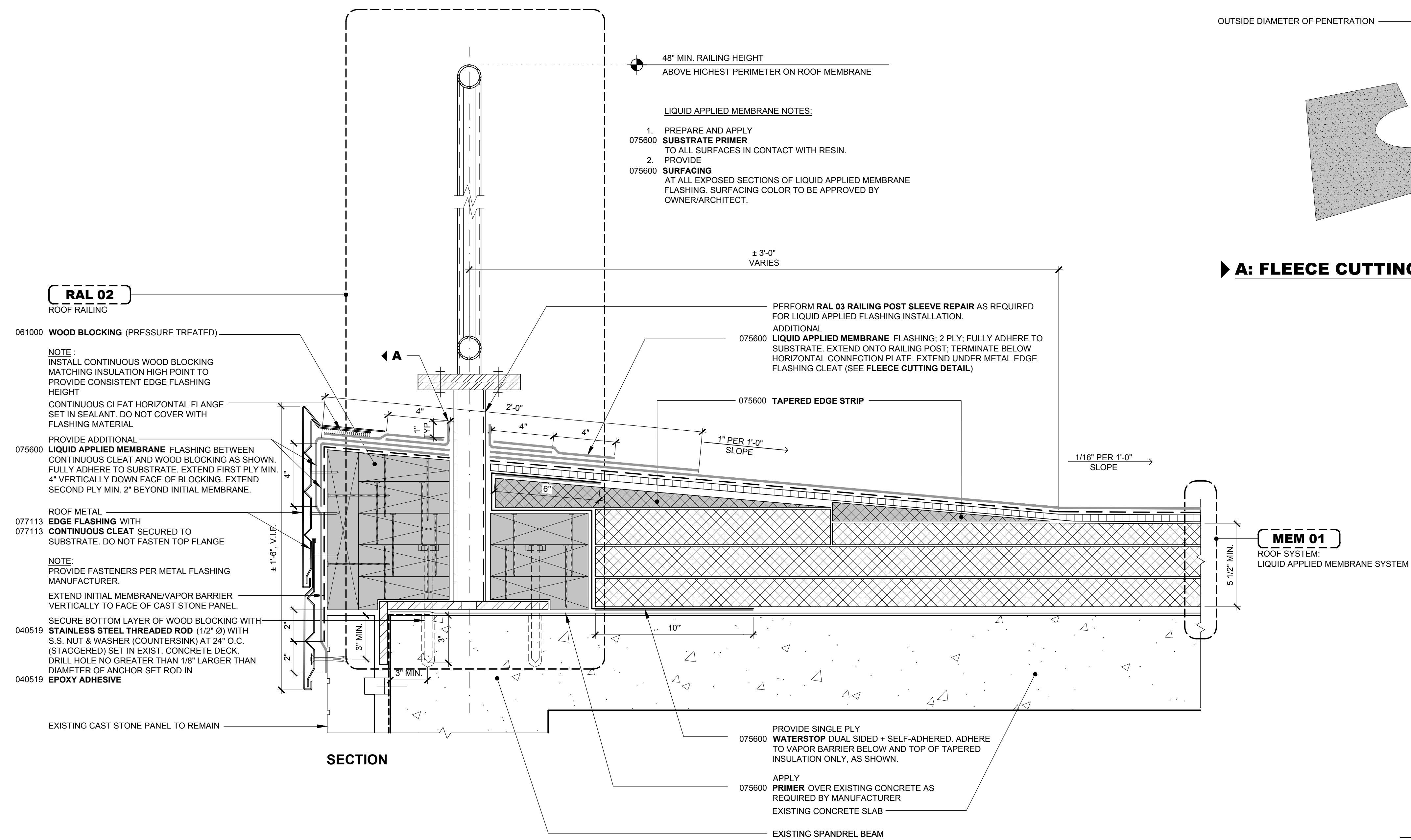
**FLA 01 ROOF PERIMETER FLASHING - RAISED CURB WITH RAILING (LF)**



Key/ Location plan



**A: FLEECE CUTTING DETAIL** NTS



**RAL 02**  
 ROOF RAILING

061000 WOOD BLOCKING (PRESSURE TREATED)

NOTE:  
 INSTALL CONTINUOUS WOOD BLOCKING MATCHING INSULATION HIGH POINT TO PROVIDE CONSISTENT EDGE FLASHING HEIGHT  
 CONTINUOUS CLEAT HORIZONTAL FLANGE SET IN SEALANT. DO NOT COVER WITH FLASHING MATERIAL  
 PROVIDE ADDITIONAL

075600 LIQUID APPLIED MEMBRANE FLASHING BETWEEN CONTINUOUS CLEAT AND WOOD BLOCKING AS SHOWN. FULLY ADHERE TO SUBSTRATE. EXTEND FIRST PLY MIN. 4\"/>

ROOF METAL  
 077113 EDGE FLASHING WITH CONTINUOUS CLEAT SECURED TO SUBSTRATE. DO NOT FASTEN TOP FLANGE

NOTE:  
 PROVIDE FASTENERS PER METAL FLASHING MANUFACTURER.  
 EXTEND INITIAL MEMBRANE/VAPOR BARRIER VERTICALLY TO FACE OF CAST STONE PANEL.

040519 STAINLESS STEEL THREADED ROD (1/2\"/>

040519 EPOXY ADHESIVE

EXISTING CAST STONE PANEL TO REMAIN

SECTION

48\"/>

LIQUID APPLIED MEMBRANE NOTES:

1. PREPARE AND APPLY SUBSTRATE PRIMER TO ALL SURFACES IN CONTACT WITH RESIN.
2. PROVIDE SURFACING AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

± 3'-0\"/>

PERFORM RAL 03 RAILING POST SLEEVE REPAIR AS REQUIRED FOR LIQUID APPLIED FLASHING INSTALLATION.  
 ADDITIONAL LIQUID APPLIED MEMBRANE FLASHING: 2 PLY; FULLY ADHERE TO SUBSTRATE. EXTEND ONTO RAILING POST. TERMINATE BELOW HORIZONTAL CONNECTION PLATE. EXTEND UNDER METAL EDGE FLASHING CLEAT (SEE FLEECE CUTTING DETAIL)

075600 TAPERED EDGE STRIP

1\"/>

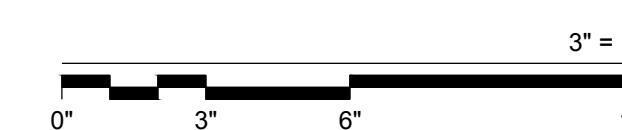
1/16\"/>

**MEM 01**  
 ROOF SYSTEM:  
 LIQUID APPLIED MEMBRANE SYSTEM

075600 PROVIDE SINGLE PLY WATERSTOP DUAL SIDED + SELF-ADHERED. ADHERE TO VAPOR BARRIER BELOW AND TOP OF TAPERED INSULATION ONLY, AS SHOWN.

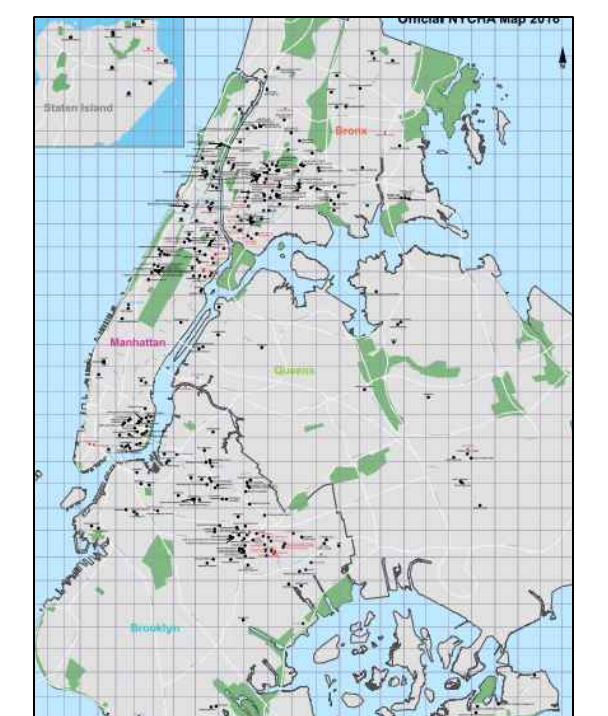
075600 APPLY PRIMER OVER EXISTING CONCRETE AS REQUIRED BY MANUFACTURER EXISTING CONCRETE SLAB

EXISTING SPANDREL BEAM



DOB Employee Stamps and Signatures

**FLA 02 PERIMETER FLASHING AT ROOF EDGE - RAISED PERIMETER (LF)**



Key/ Location plan

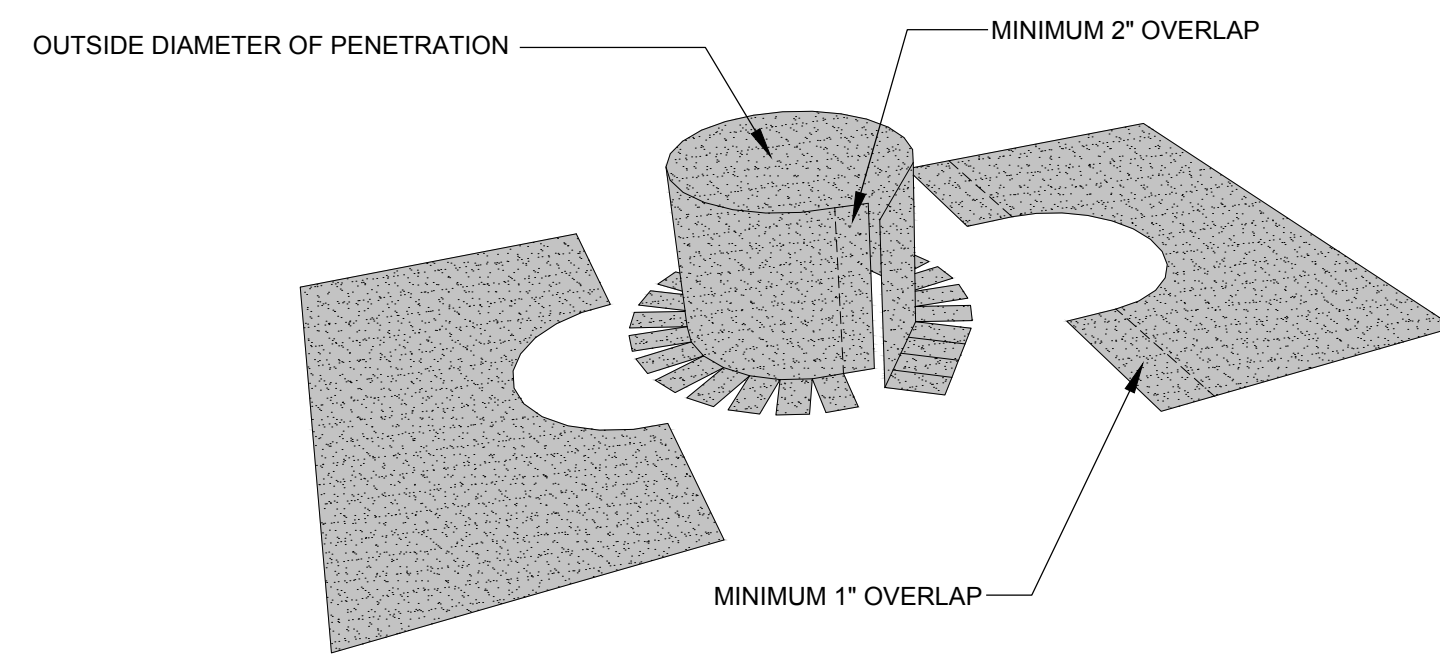
**Contract Title:**  
**ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

Drawing Title: Restoration Details:  
 FLA 03, FLA 04

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>A506.00</b>
	Sheet 21 of 64

DOB BSCAN STICKER



**A: FLEECE CUTTING DETAIL** NTS

**LIQUID APPLIED MEMBRANE NOTES:**

1. PREPARE AND APPLY **SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
3. PROVIDE **SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

EXISTING STEEL RAILING TO REMAIN. MECHANICALLY REMOVE RUST FROM ALL EXPOSED STEEL SURFACES  
 099713 **STEEL COATING: 3ER** TO BE APPLIED TO PREPARED SURFACES

NOTE:  
 DO NOT PAINT PIPE TO RECEIVE WATERPROOFING FLASHING. PRIME WITH MANUFACTURER'S APPROVED PRIMER

061000 **WOOD BLOCKING** (PRESSURE TREATED)

NOTE:  
 INSTALL CONTINUOUS WOOD BLOCKING MATCHING INSULATION HIGH POINT TO PROVIDE CONSISTENT EDGE FLASHING HEIGHT

CONTINUOUS CLEAT HORIZONTAL FLANGE SET IN SEALANT. DO NOT COVER WITH FLASHING MATERIAL

INSTALL LIQUID APPLIED MEMBRANE FLASHING BETWEEN CONTINUOUS CLEAT AND WOOD BLOCKING AS SHOWN. FULLY ADHERE TO SUBSTRATE. EXTEND FIRST PLY MIN. 4" VERTICALLY ONTO BLOCKING. EXTEND SECOND PLY MIN. 2" PAST INITIAL MEMBRANE.

ROOF METAL  
 077113 **EDGE FLASHING WITH CONTINUOUS CLEAT** SECURED TO SUBSTRATE. DO NOT FASTEN TOP FLANGE

PROVIDE FASTENERS PER METAL FLASHING MANUFACTURER.

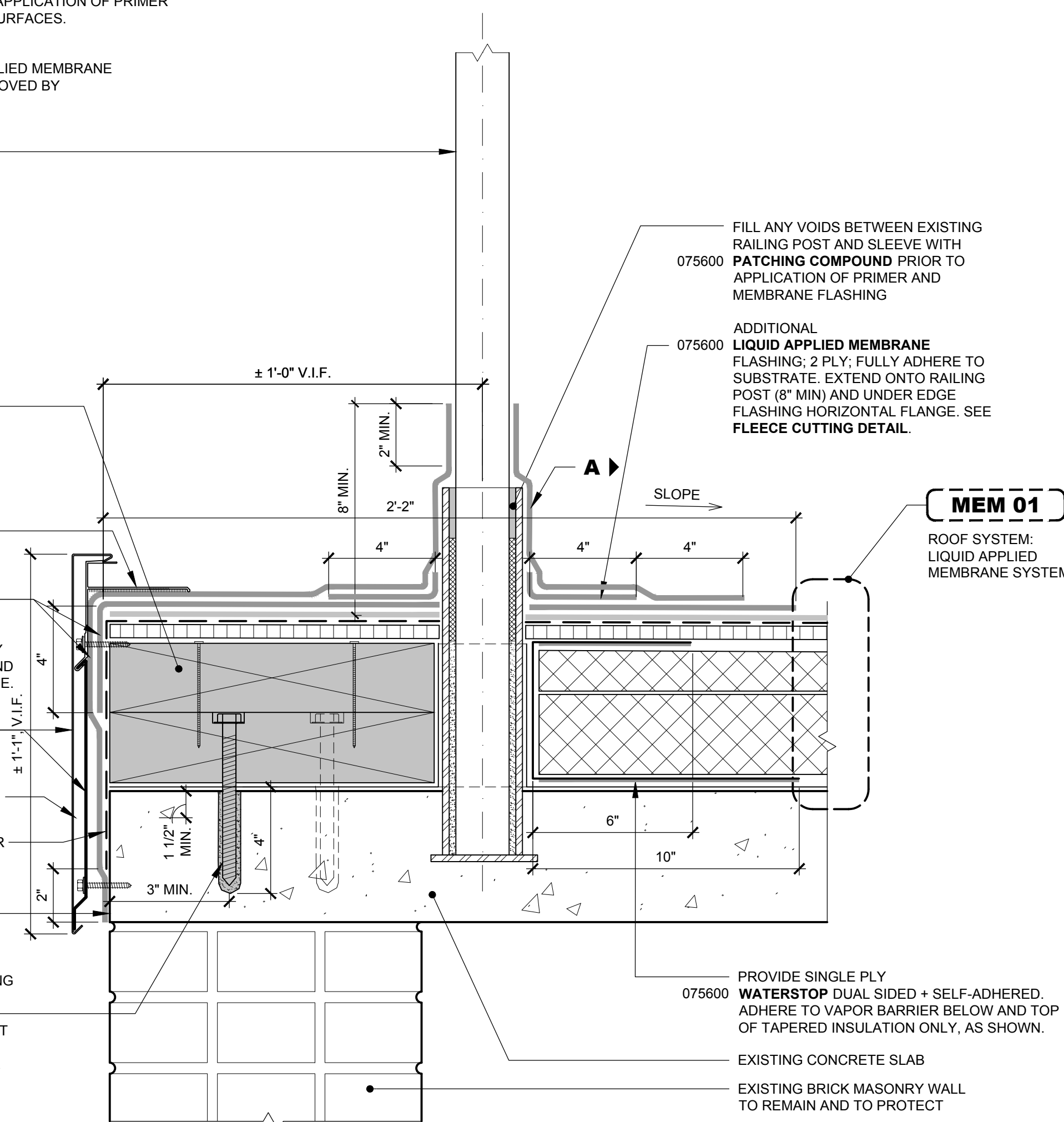
EXTEND INITIAL MEMBRANE/VAPOR BARRIER TO MIN. 2" ABOVE BOTTOM EDGE OF CONCRETE SLAB

075600 **PRIMER** OVER EXISTING CONCRETE AS REQUIRED BY MANUFACTURER

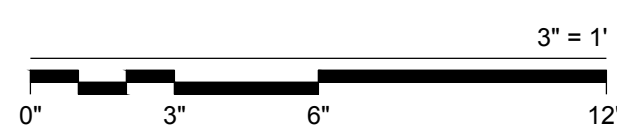
SECURE BOTTOM LAYER OF WOOD BLOCKING WITH

040519 **STAINLESS STEEL THREADED ROD** (1/2" Ø) WITH S.S. NUT & WASHER (COUNTERSINK) AT 24" O.C. (STAGGERED) SET IN EXISTING CONCRETE DECK. DRILL HOLE NO GREATER THAN 1/8" LARGER THAN DIAMETER OF ANCHOR SET ROD IN

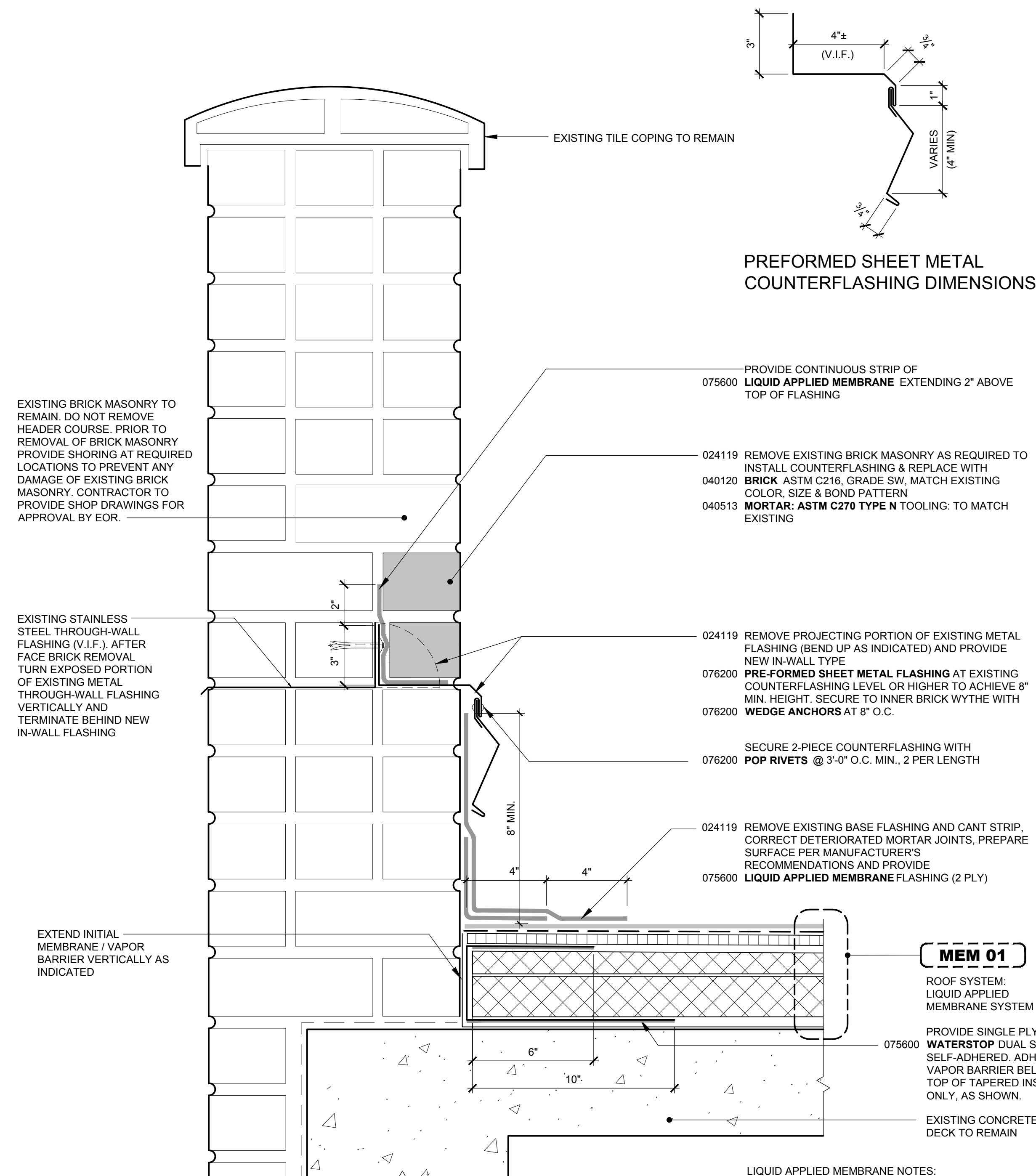
040519 **EPOXY ADHESIVE**



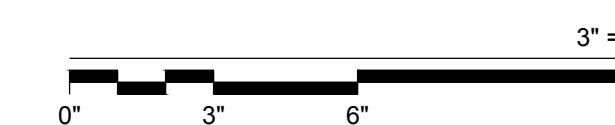
**SECTION**



**FLA 03 PERIMETER FLASHING AT FLAT CONCRETE EDGE WITH RAILING (LF)**



**SECTION**



**FLA 04 PERIMETER FLASHING AT HIGH PARAPET (LF)**

**LIQUID APPLIED MEMBRANE NOTES:**

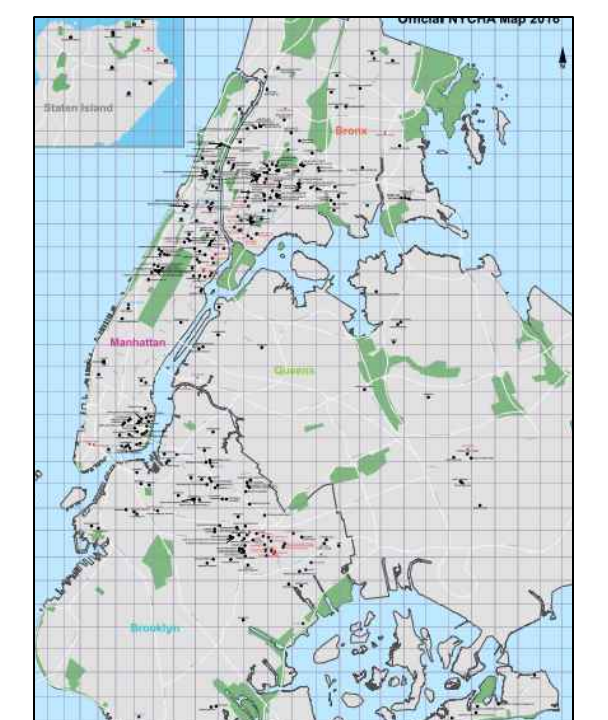
1. PREPARE AND APPLY **SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
3. PROVIDE **SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

DOB Employee Stamps and Signatures

Seal / Signature:	Issue Date: 12.04.2018
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	Drawing No.: <b>A506.00</b>
	Sheet 21 of 64

DOB BSCAN STICKER

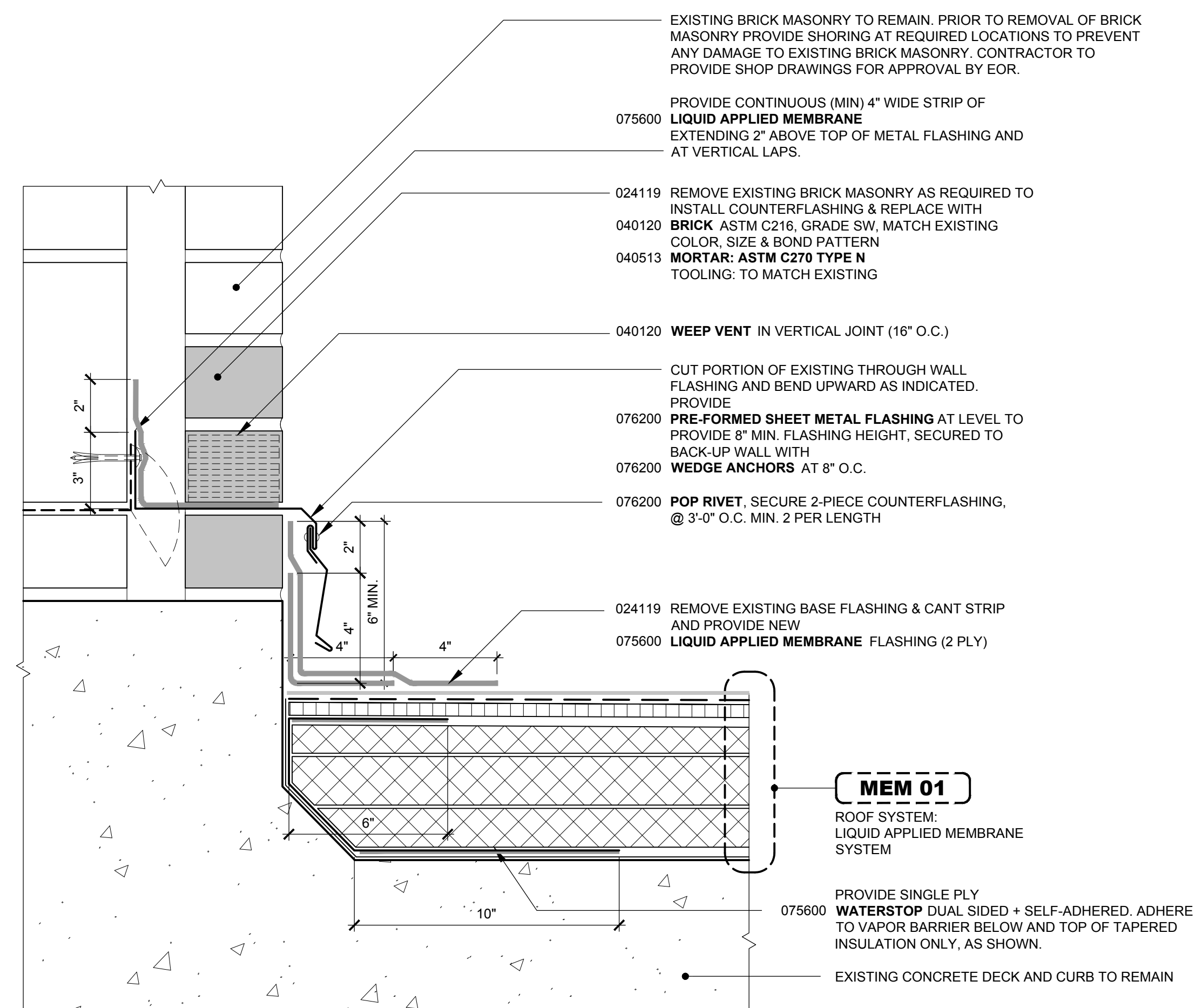




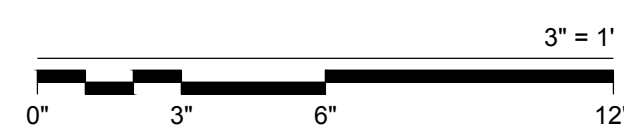
Key/ Location plan

**LIQUID APPLIED MEMBRANE NOTES:**

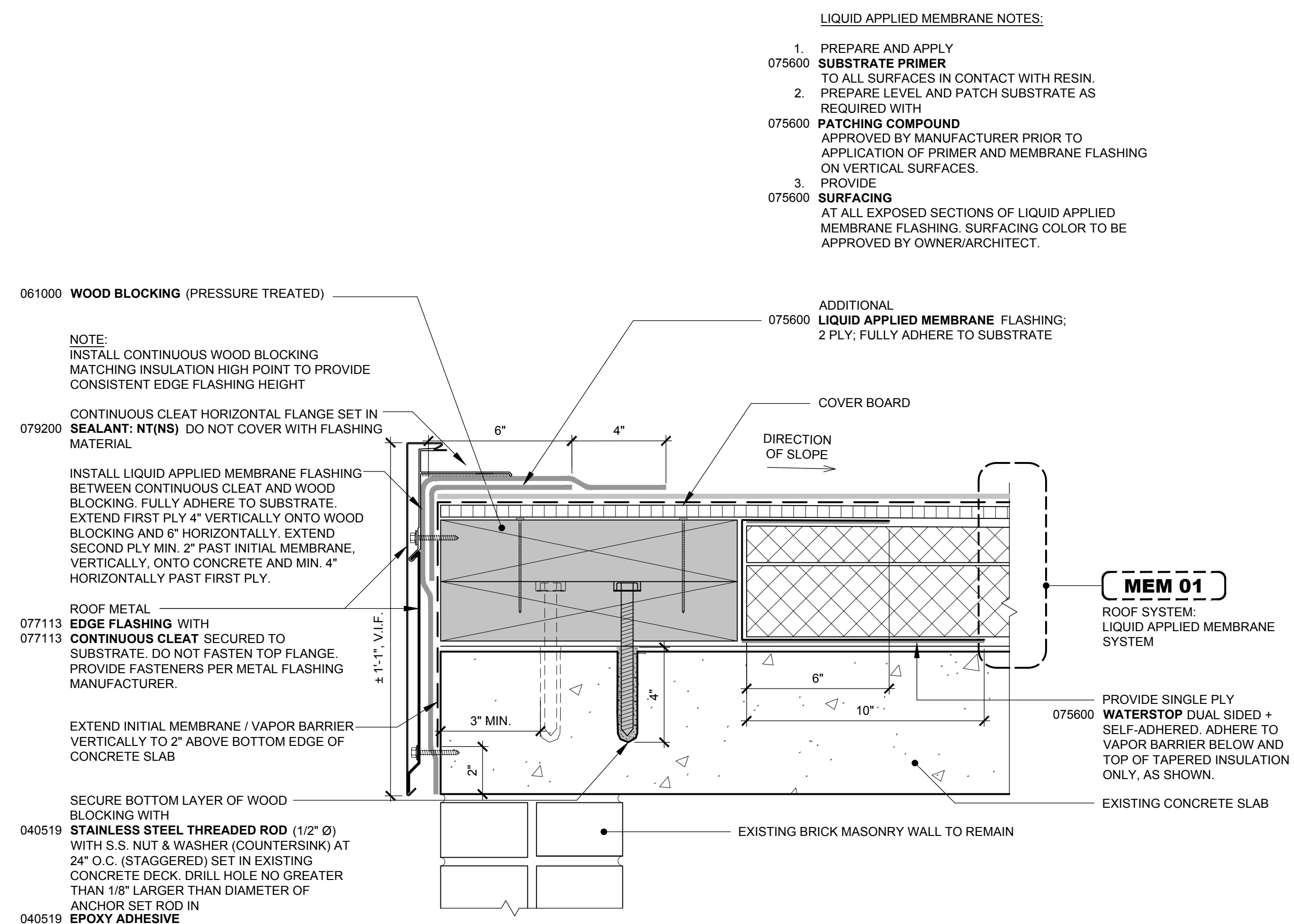
1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **075600 PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
3. PROVIDE **075600 SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.



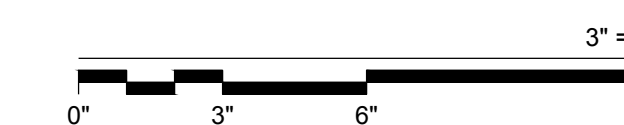
SECTION



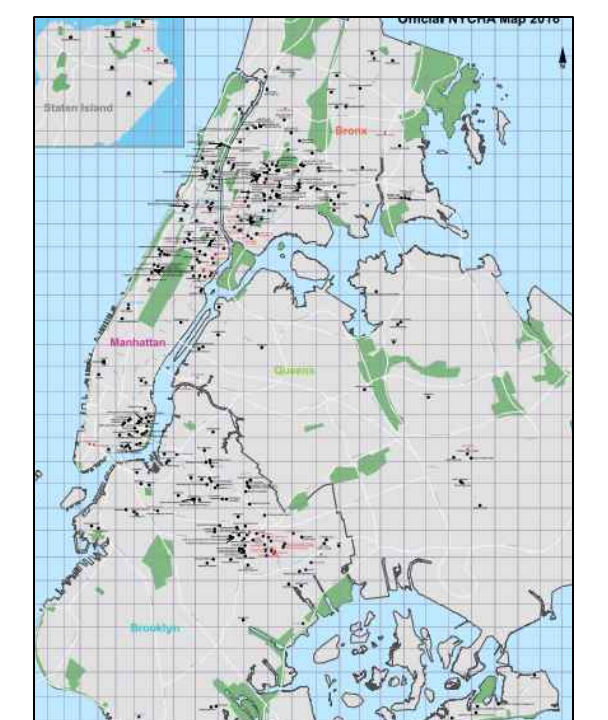
**FLA 05 PERIMETER FLASHING AT BULKHEAD / BUILDING WALL (LF)**



SECTION

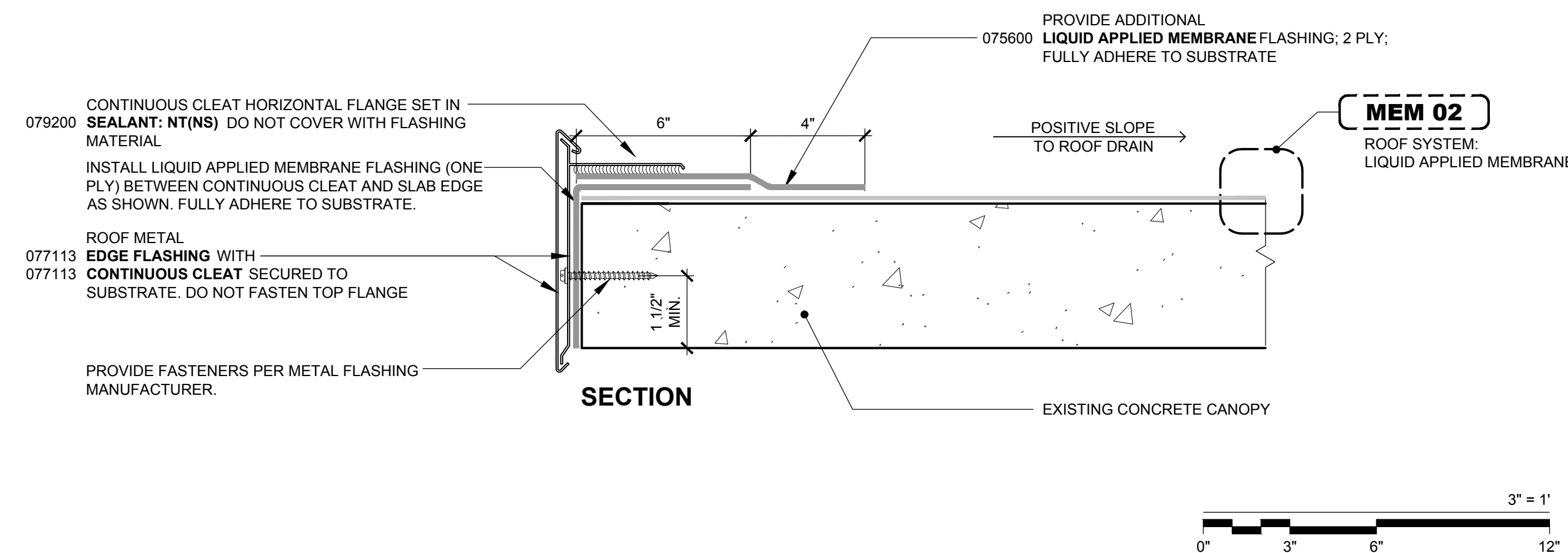


**FLA 06 PERIMETER FLASHING AT FLAT CONCRETE EDGE (LF)**

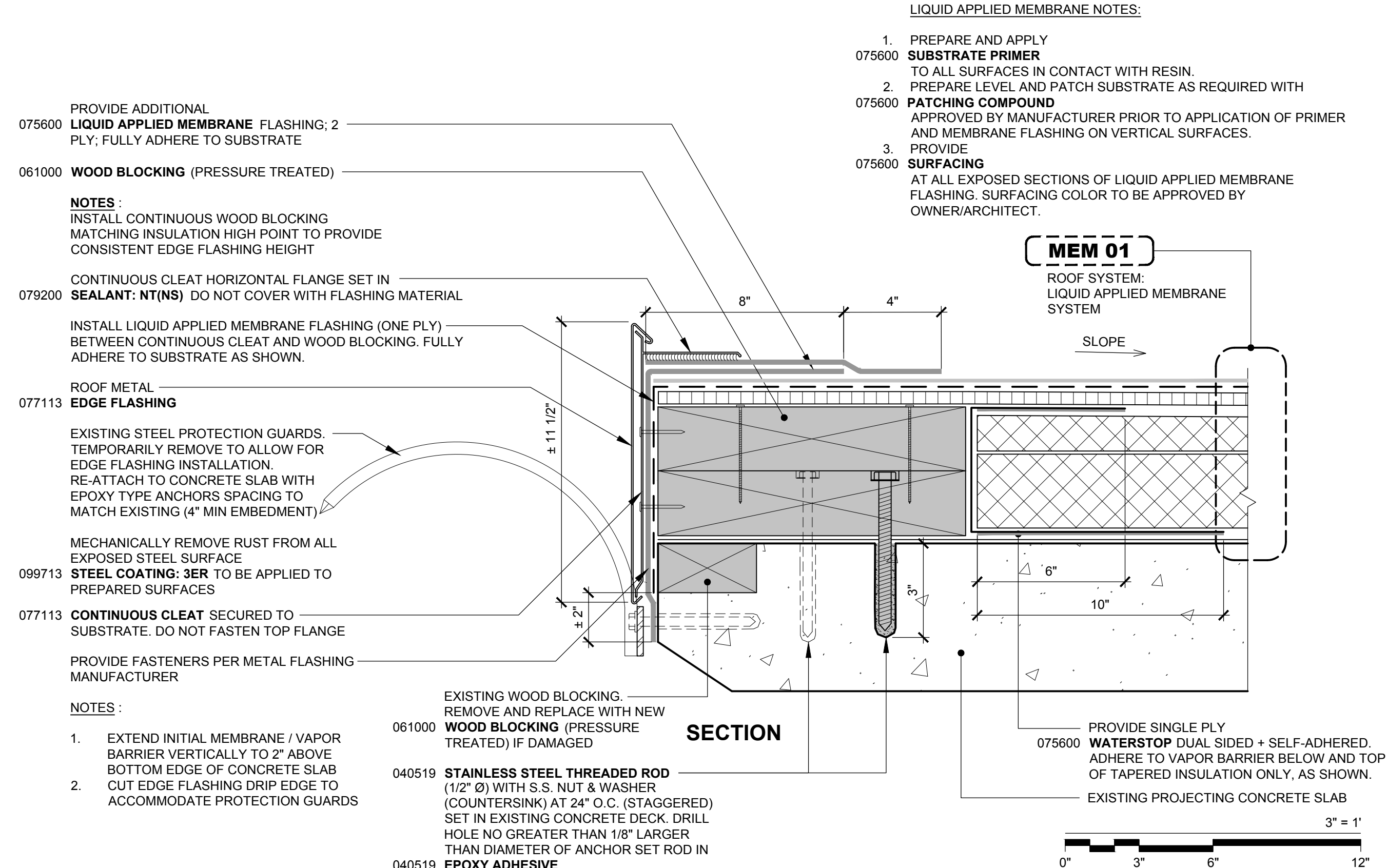


Key/ Location plan

- LIQUID APPLIED MEMBRANE NOTES:**
1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
  2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **075600 PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
  3. PROVIDE **075600 SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

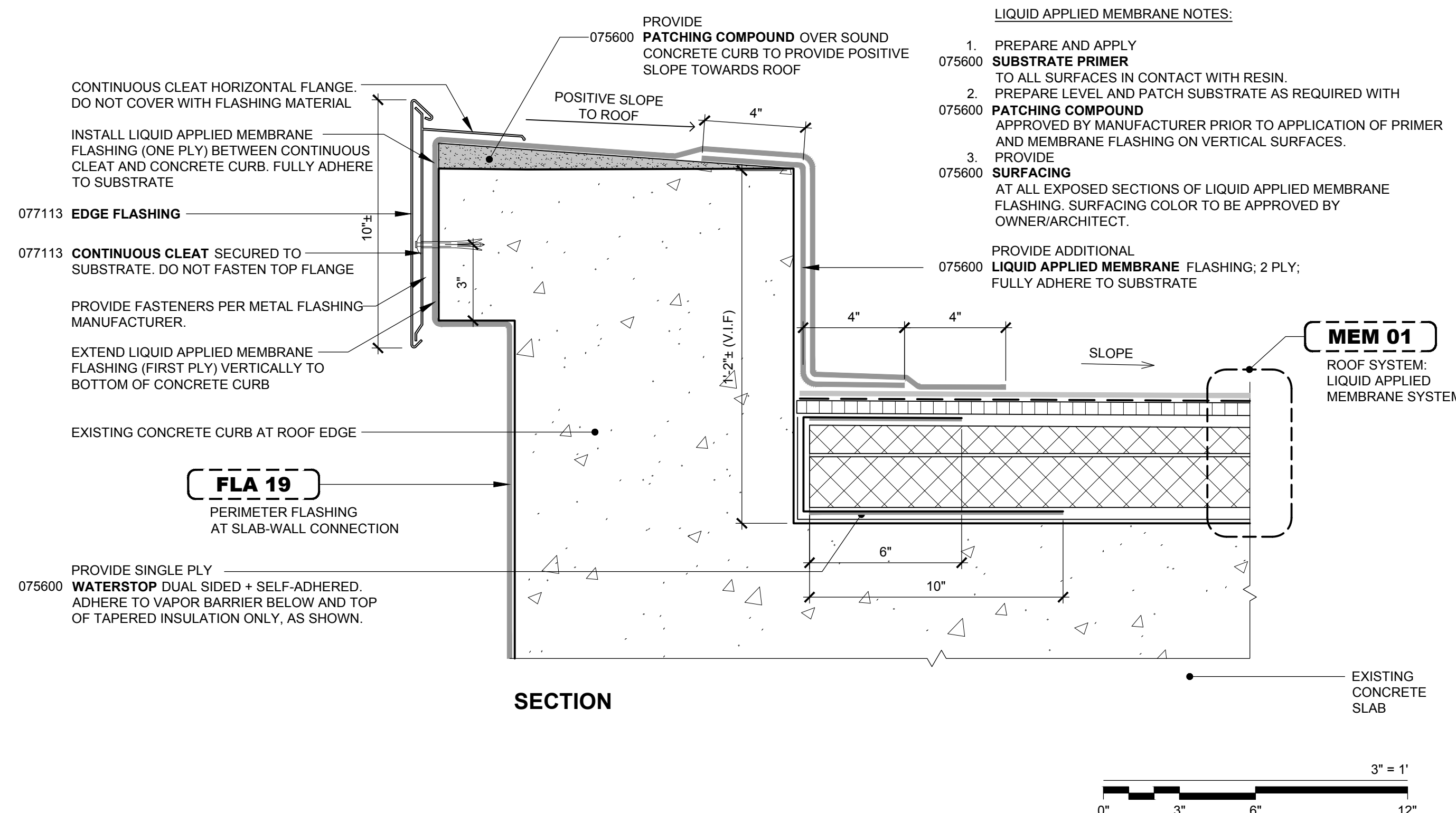


**FLA 09** **EDGE FLASHING AT CNOPY AT FLAT CONCRETE EDGE (LF)**



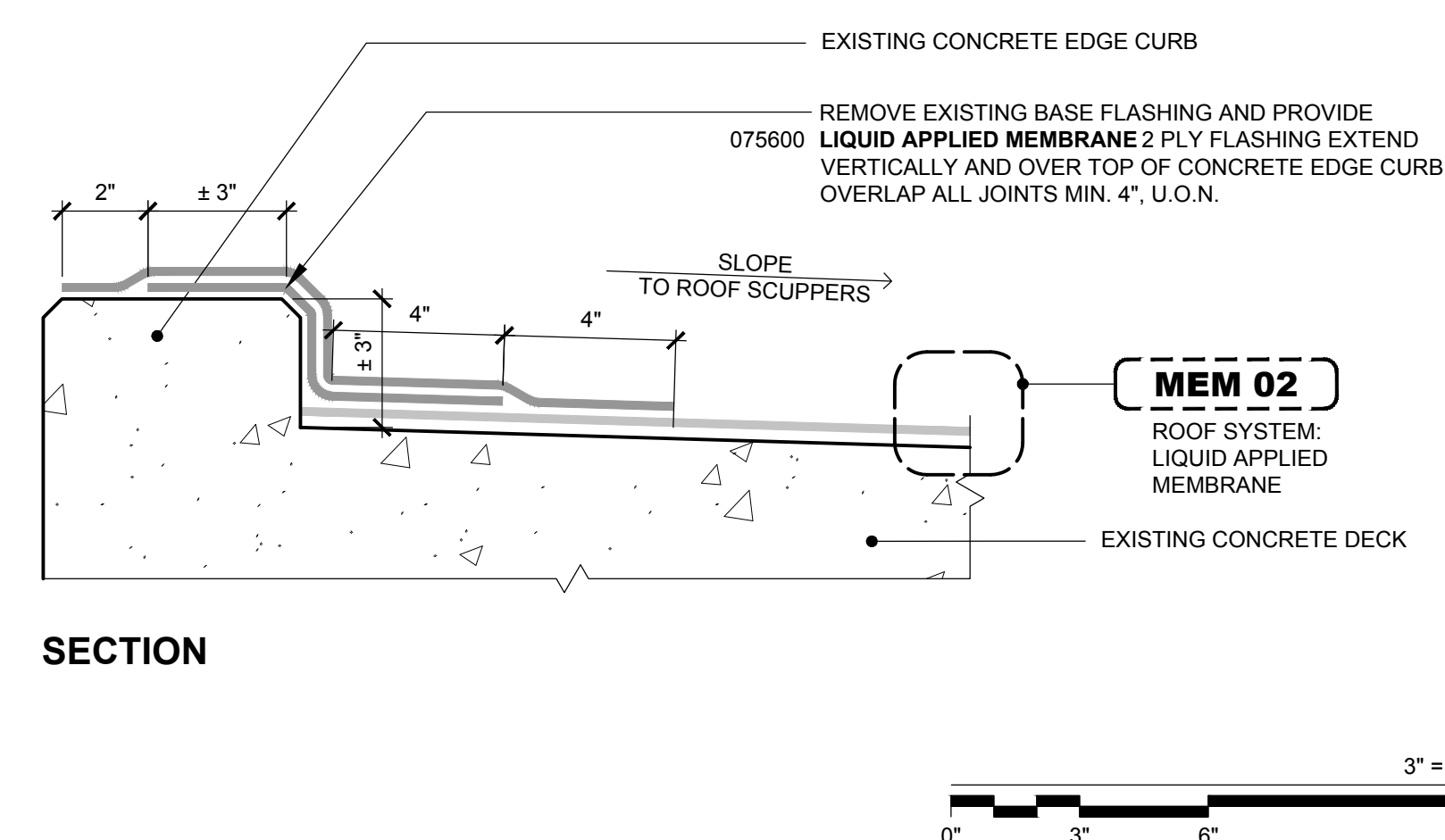
**FLA 10** **EDGE FLASHING AT PROJECTING SLAB (LF)**

- LIQUID APPLIED MEMBRANE NOTES:**
1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
  2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **075600 PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
  3. PROVIDE **075600 SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.



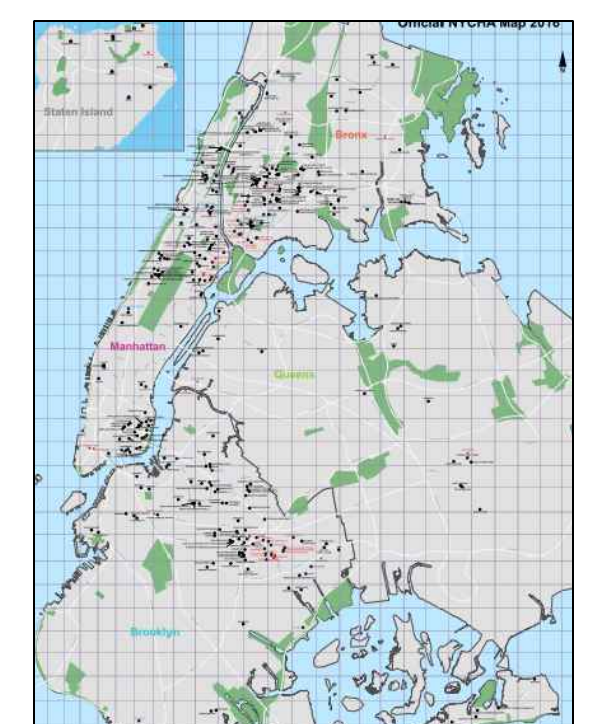
**FLA 07** **PERIMETER FLASHING - SUNK SLAB (LF)**

- LIQUID APPLIED MEMBRANE NOTES:**
1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
  2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **075600 PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
  3. PROVIDE **075600 SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

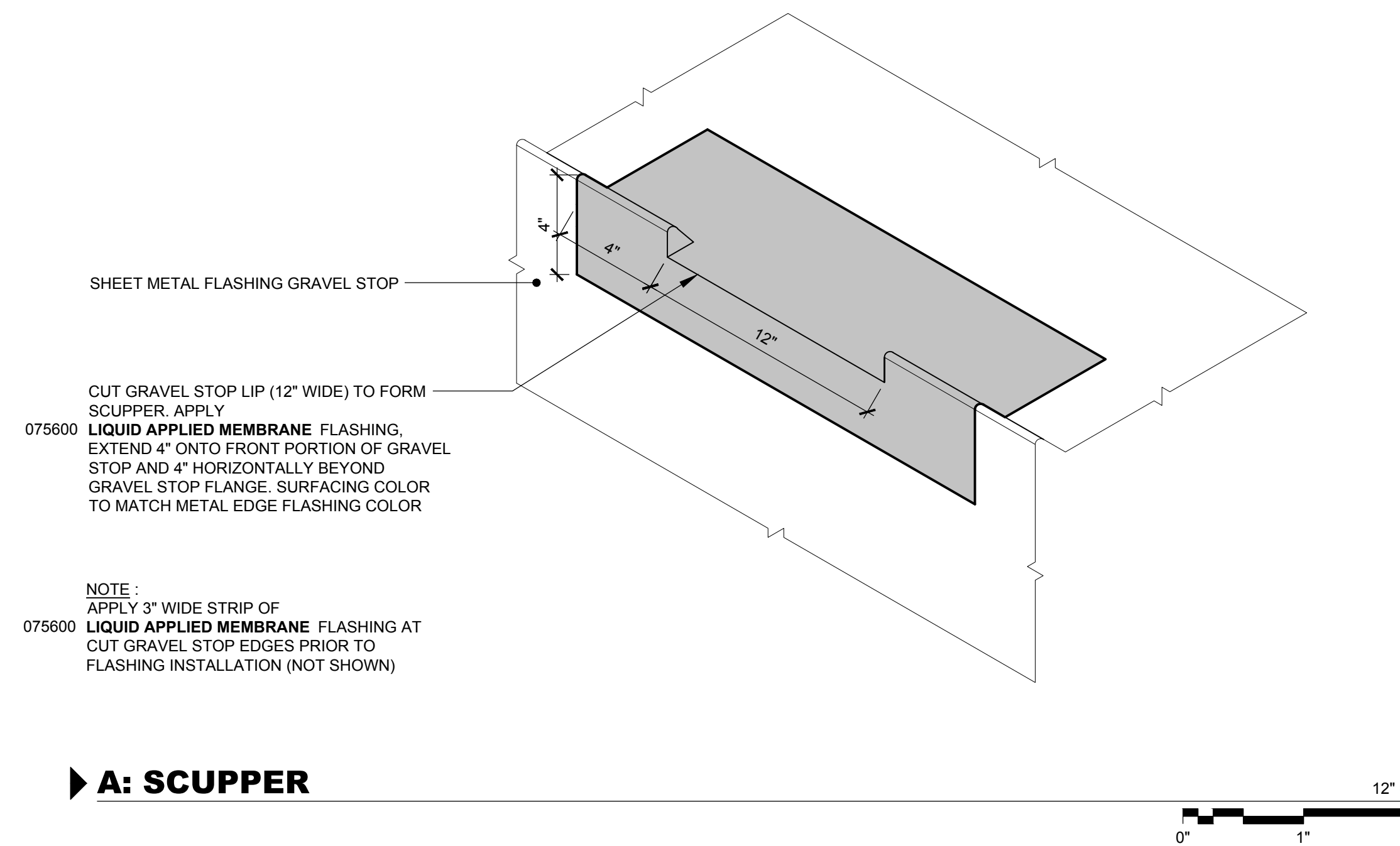


**FLA 08** **EDGE FLASHING AT CANOPY AT RAISED CONCRETE EDGE (LF)**

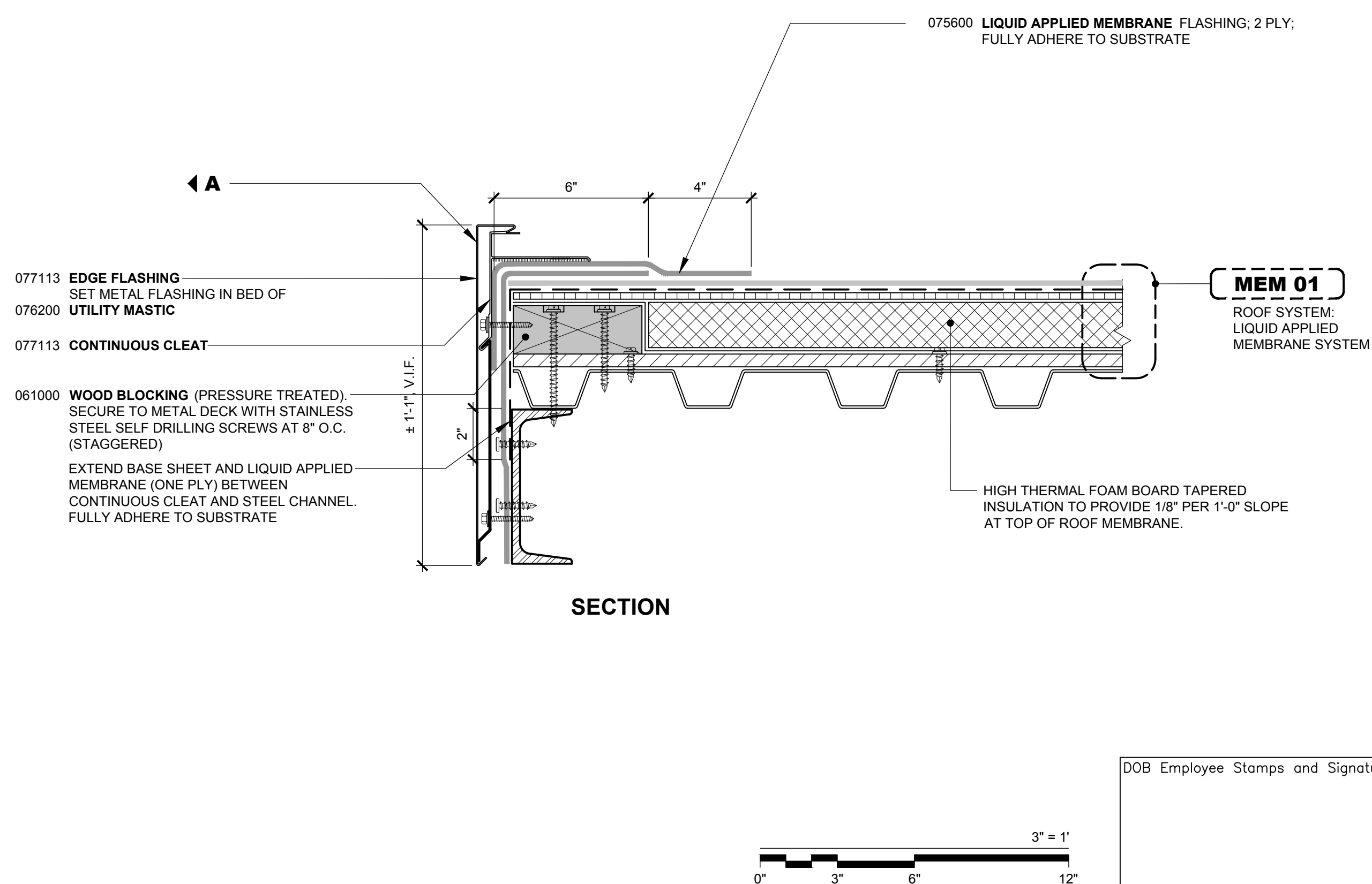
DOB Employee Stamps and Signatures



Key/ Location plan

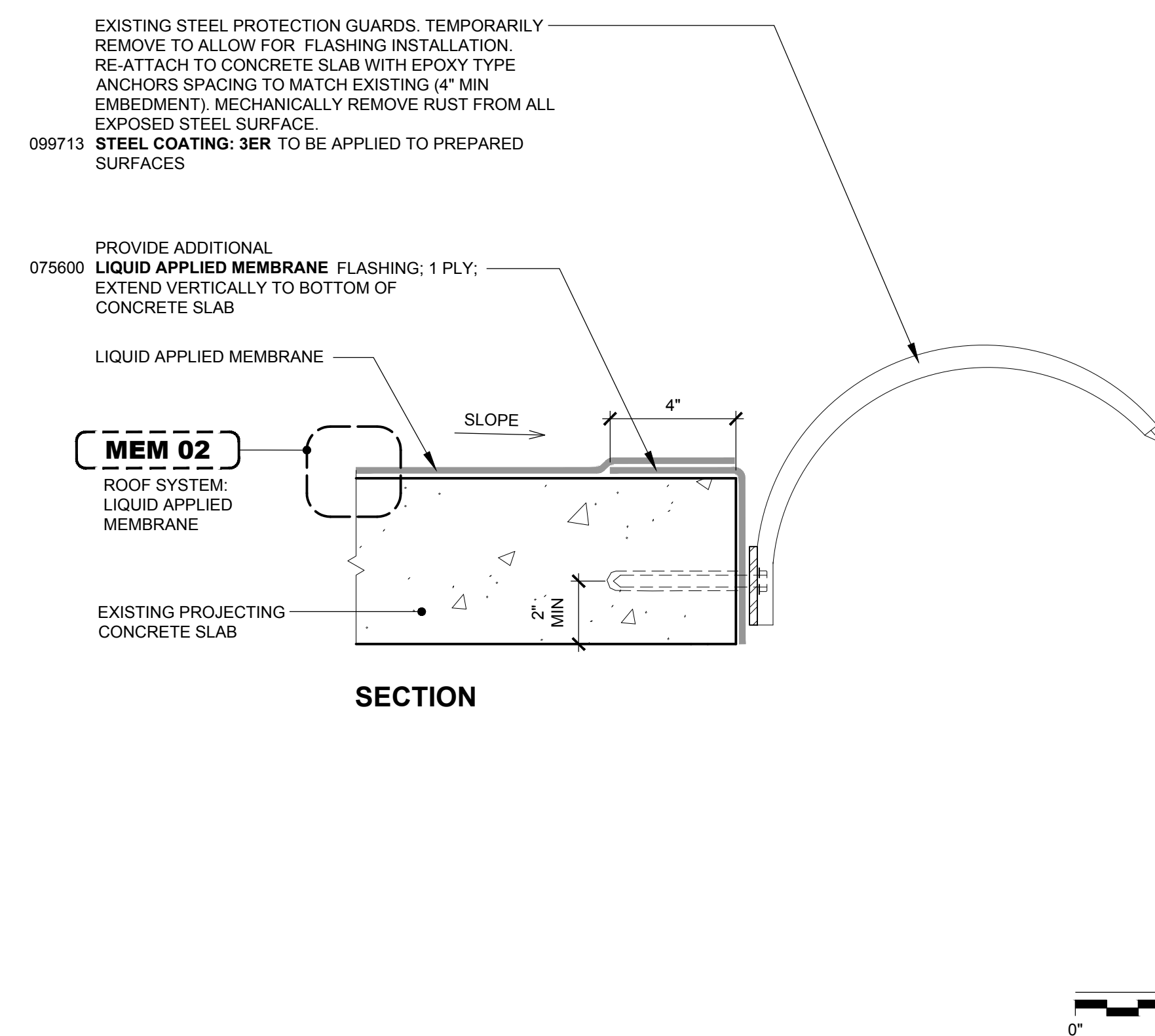


- LIQUID APPLIED MEMBRANE NOTES:**
1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
  2. PROVIDE **075600 SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

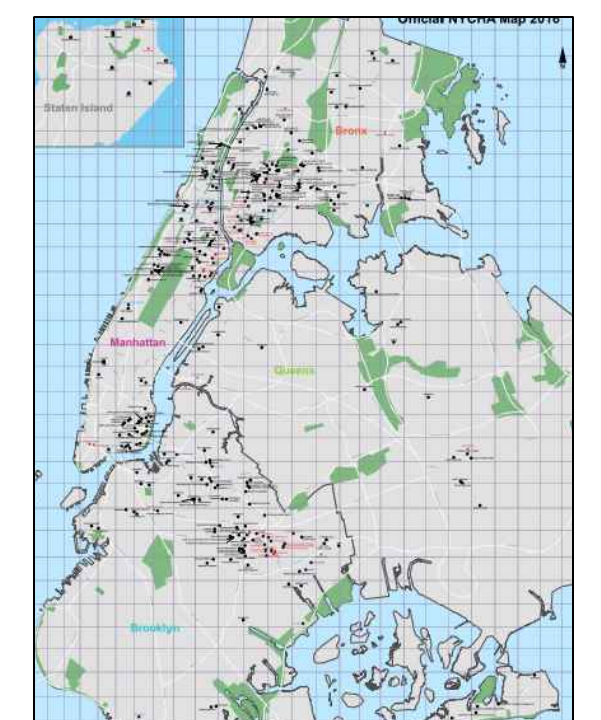


**FLA 12 EDGE FLASHING - AT CANOPY (METAL DECK SUBSTRATE)(LF)**

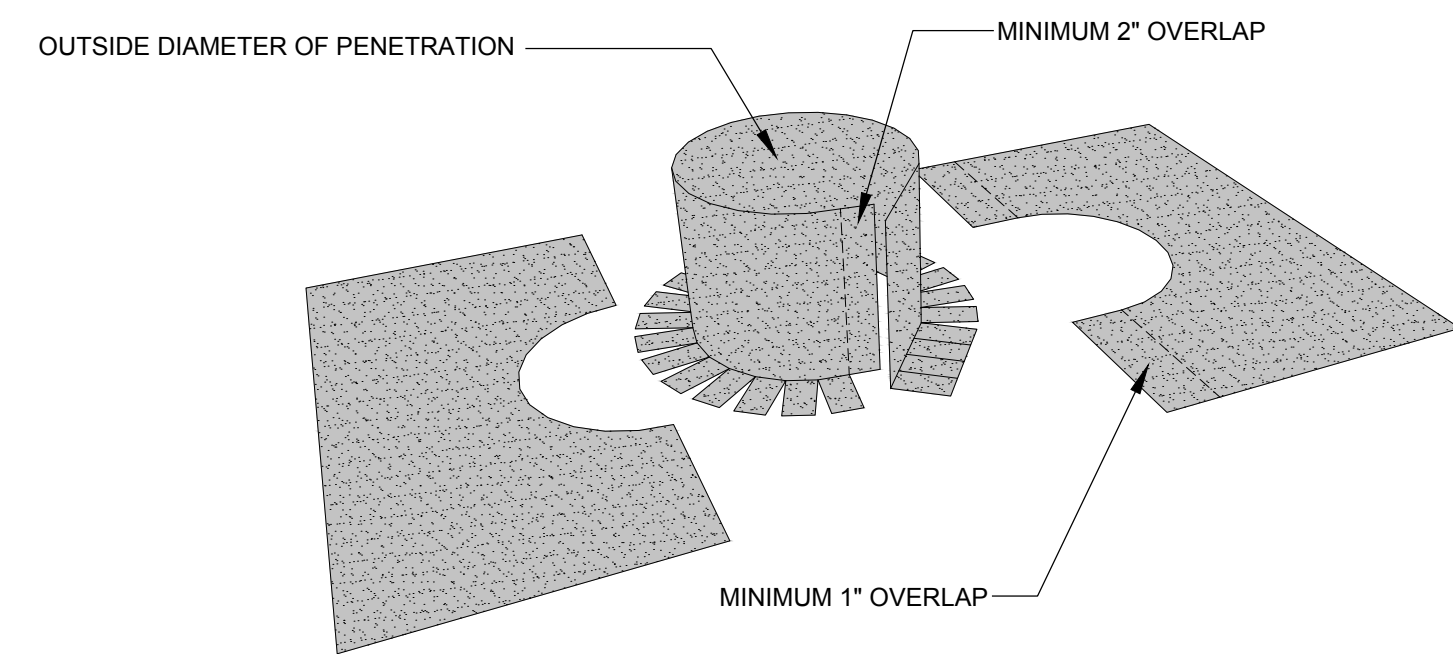
- LIQUID APPLIED MEMBRANE NOTES:**
1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
  2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **075600 PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
  3. PROVIDE **075600 SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.



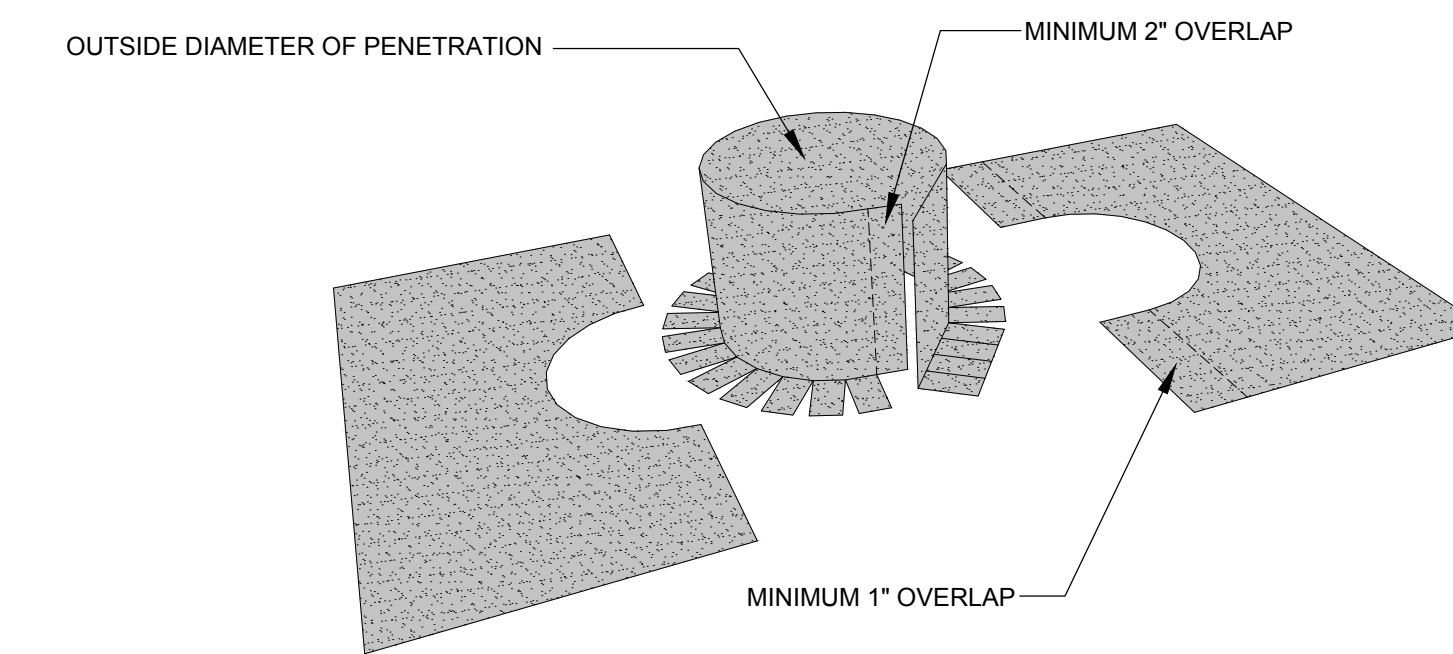
**FLA 11 EDGE FLASHING - PROJECTING SLAB, LIQUID (LF)**



Key/ Location plan



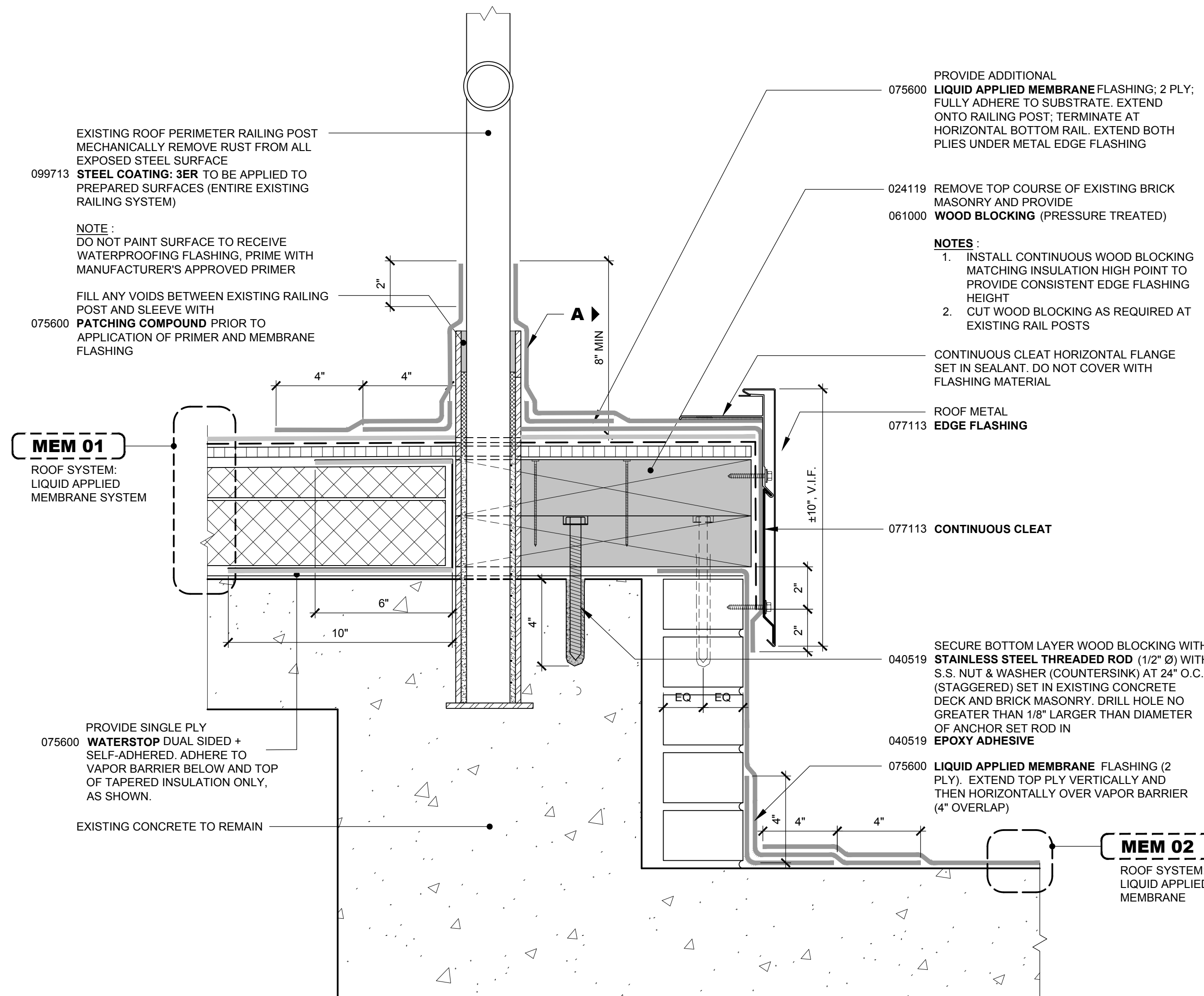
**A: FLEECE CUTTING DETAIL** NTS



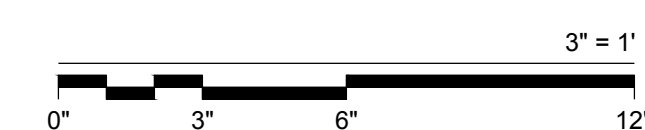
**A: FLEECE CUTTING DETAIL** NTS

LIQUID APPLIED MEMBRANE NOTES:

1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **075600 PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
3. PROVIDE **075600 SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

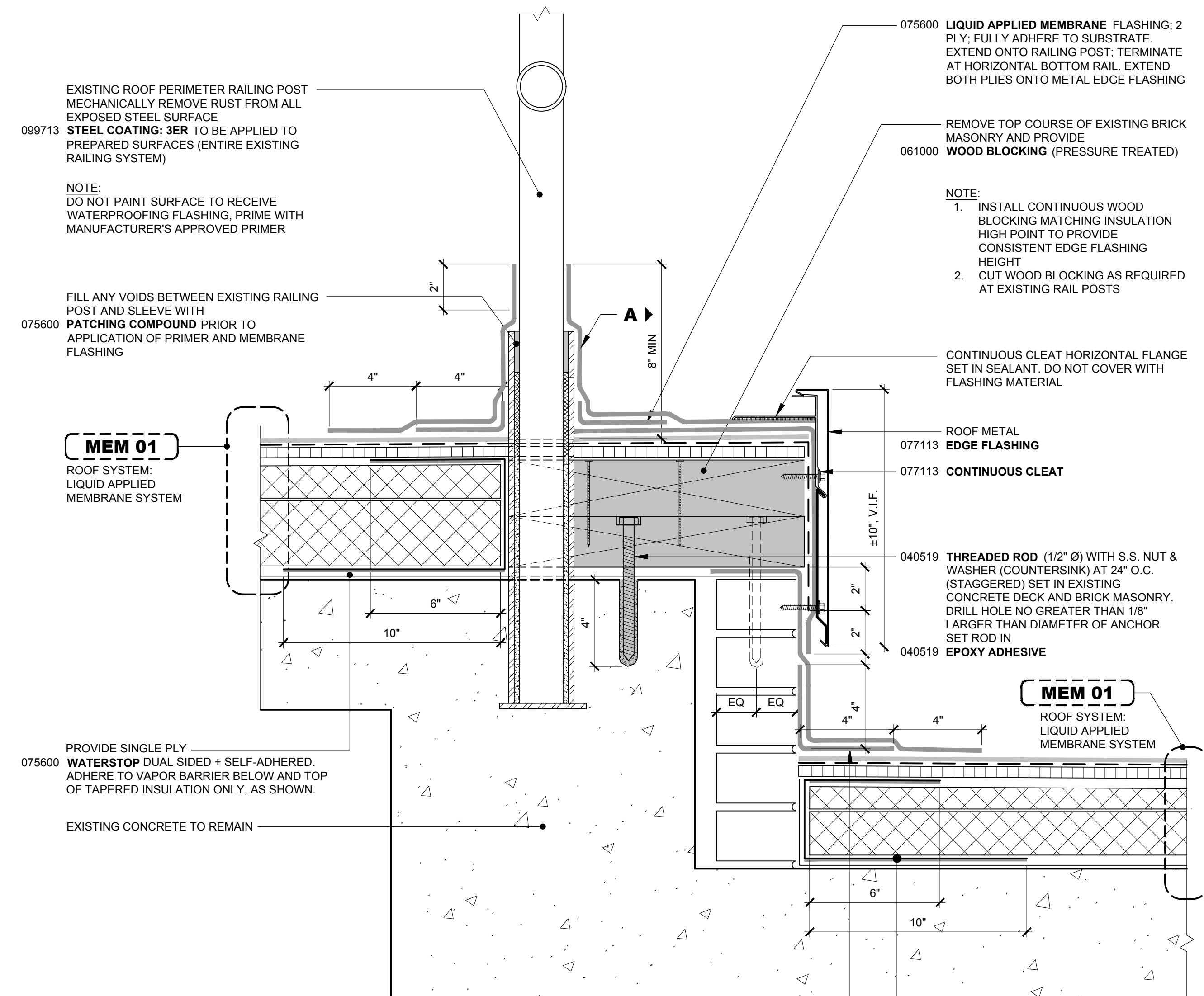


SECTION

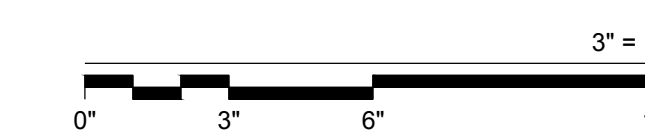


LIQUID APPLIED MEMBRANE NOTES:

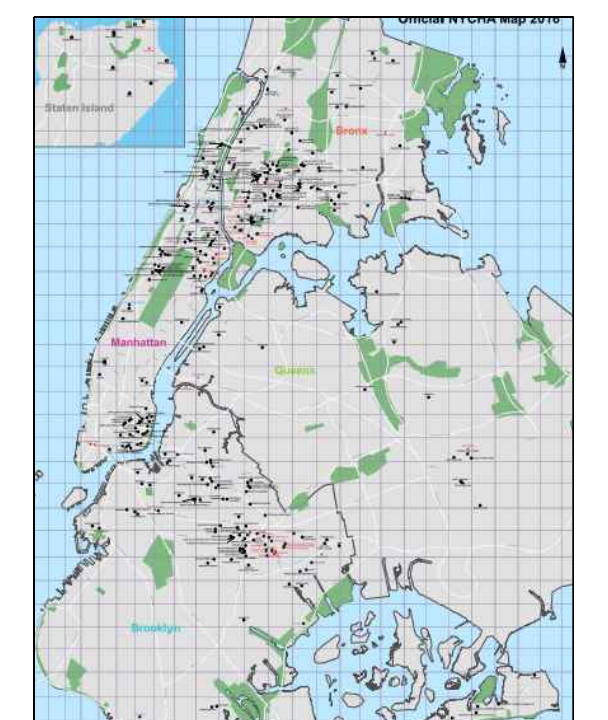
1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **075600 PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
3. PROVIDE **075600 SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.



SECTION



DOB Employee Stamps and Signatures

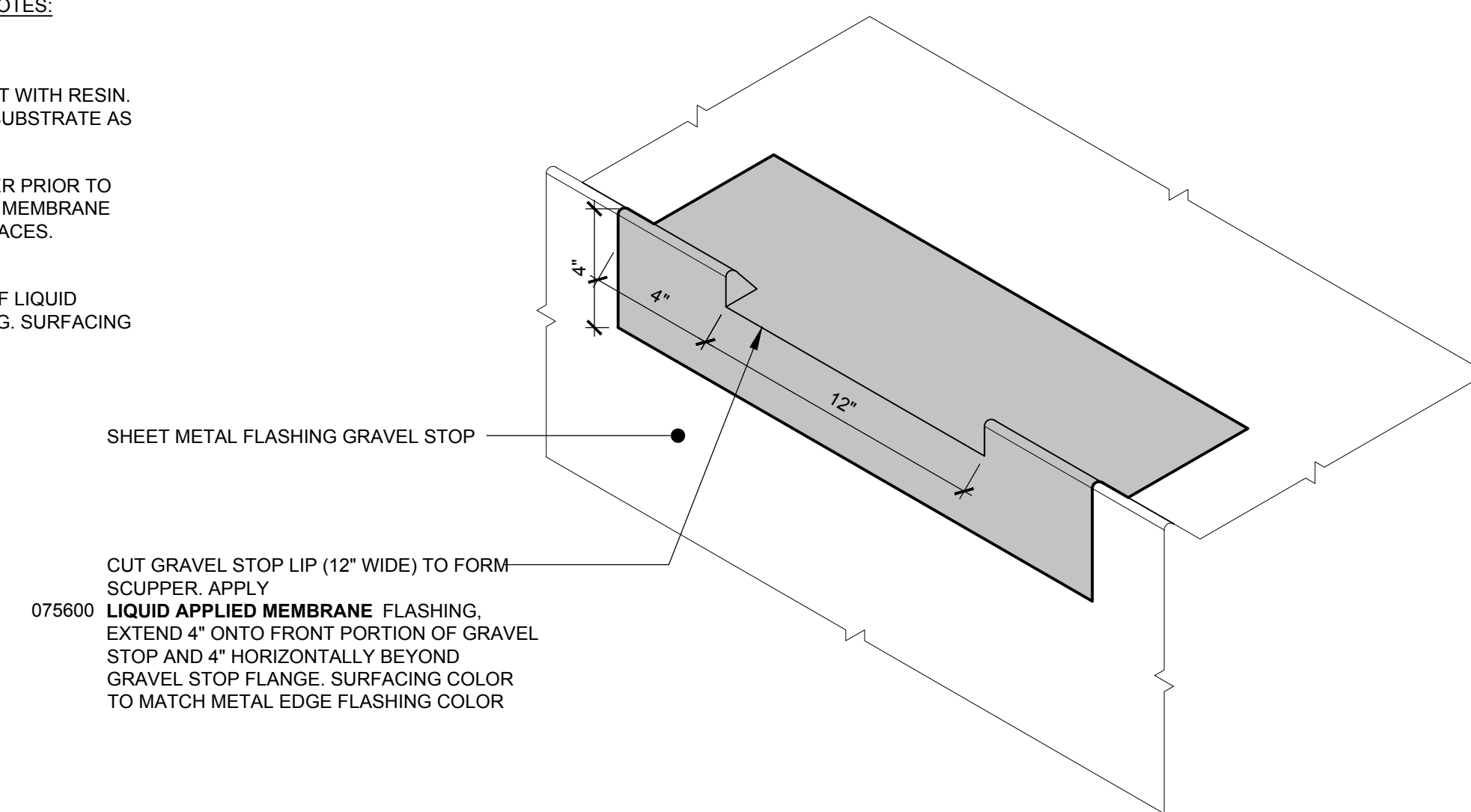


Key/ Location plan

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	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.:
	<b>A511.00</b>
	Sheet 26 of 64

**LIQUID APPLIED MEMBRANE NOTES:**

1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **075600 PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
3. PROVIDE **075600 SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

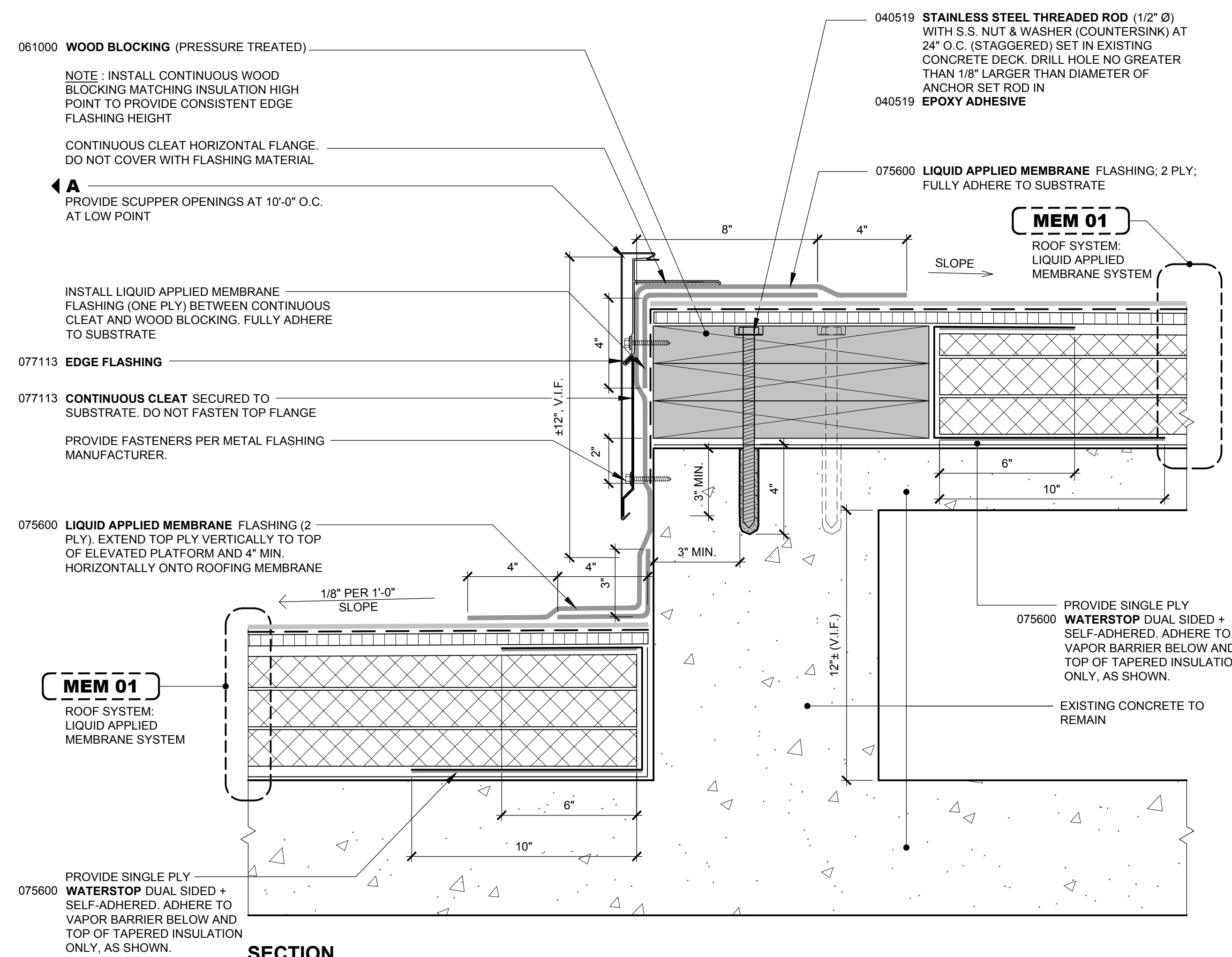
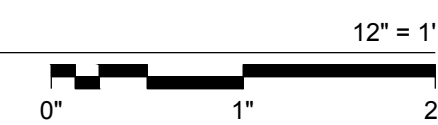


SHEET METAL FLASHING GRAVEL STOP

CUT GRAVEL STOP LIP (12" WIDE) TO FORM SCUPPER, APPLY **075600 LIQUID APPLIED MEMBRANE FLASHING**, EXTEND 4" ONTO FRONT PORTION OF GRAVEL STOP AND 4" HORIZONTALLY BEYOND GRAVEL STOP FLANGE. SURFACING COLOR TO MATCH METAL EDGE FLASHING COLOR

NOTE: APPLY 3" WIDE STRIP OF **075600 LIQUID APPLIED MEMBRANE FLASHING** AT CUT GRAVEL STOP EDGES PRIOR TO FLASHING INSTALLATION (NOT SHOWN)

**A**  
**SCUPPER**



**061000 WOOD BLOCKING** (PRESSURE TREATED)  
 NOTE: INSTALL CONTINUOUS WOOD BLOCKING MATCHING INSULATION HIGH POINT TO PROVIDE CONSISTENT EDGE FLASHING HEIGHT

CONTINUOUS CLEAT HORIZONTAL FLANGE. DO NOT COVER WITH FLASHING MATERIAL

**A** PROVIDE SCUPPER OPENINGS AT 10'-0" O.C. AT LOW POINT

INSTALL LIQUID APPLIED MEMBRANE FLASHING (ONE PLY) BETWEEN CONTINUOUS CLEAT AND WOOD BLOCKING. FULLY ADHERE TO SUBSTRATE

**077113 EDGE FLASHING**

**077113 CONTINUOUS CLEAT** SECURED TO SUBSTRATE. DO NOT FASTEN TOP FLANGE. PROVIDE FASTENERS PER METAL FLASHING MANUFACTURER.

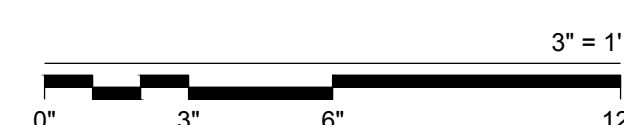
**075600 LIQUID APPLIED MEMBRANE FLASHING** (2 PLY). EXTEND TOP PLY VERTICALLY TO TOP OF ELEVATED PLATFORM AND 4" MIN. HORIZONTALLY ONTO ROOFING MEMBRANE

1/8" PER 1'-0" SLOPE

**MEM 01**  
 ROOF SYSTEM:  
 LIQUID APPLIED  
 MEMBRANE SYSTEM

PROVIDE SINGLE PLY **075600 WATERSTOP DUAL SIDED + SELF-ADHERED**. ADHERE TO VAPOR BARRIER BELOW AND TOP OF TAPERED INSULATION ONLY, AS SHOWN.

**SECTION**



**LIQUID APPLIED MEMBRANE NOTES:**

1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **075600 PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
3. PROVIDE **075600 SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

EXISTING STEEL RIAL POST TO REMAIN. MECHANICALLY REMOVE RUST FROM AL EXPOSED STEEL SURFACE

**099713 STEEL COATING: 3ER** TO BE APPLIED TO PREPARED SURFACES (ENTIRE EXISTING RAILING SYSTEM)

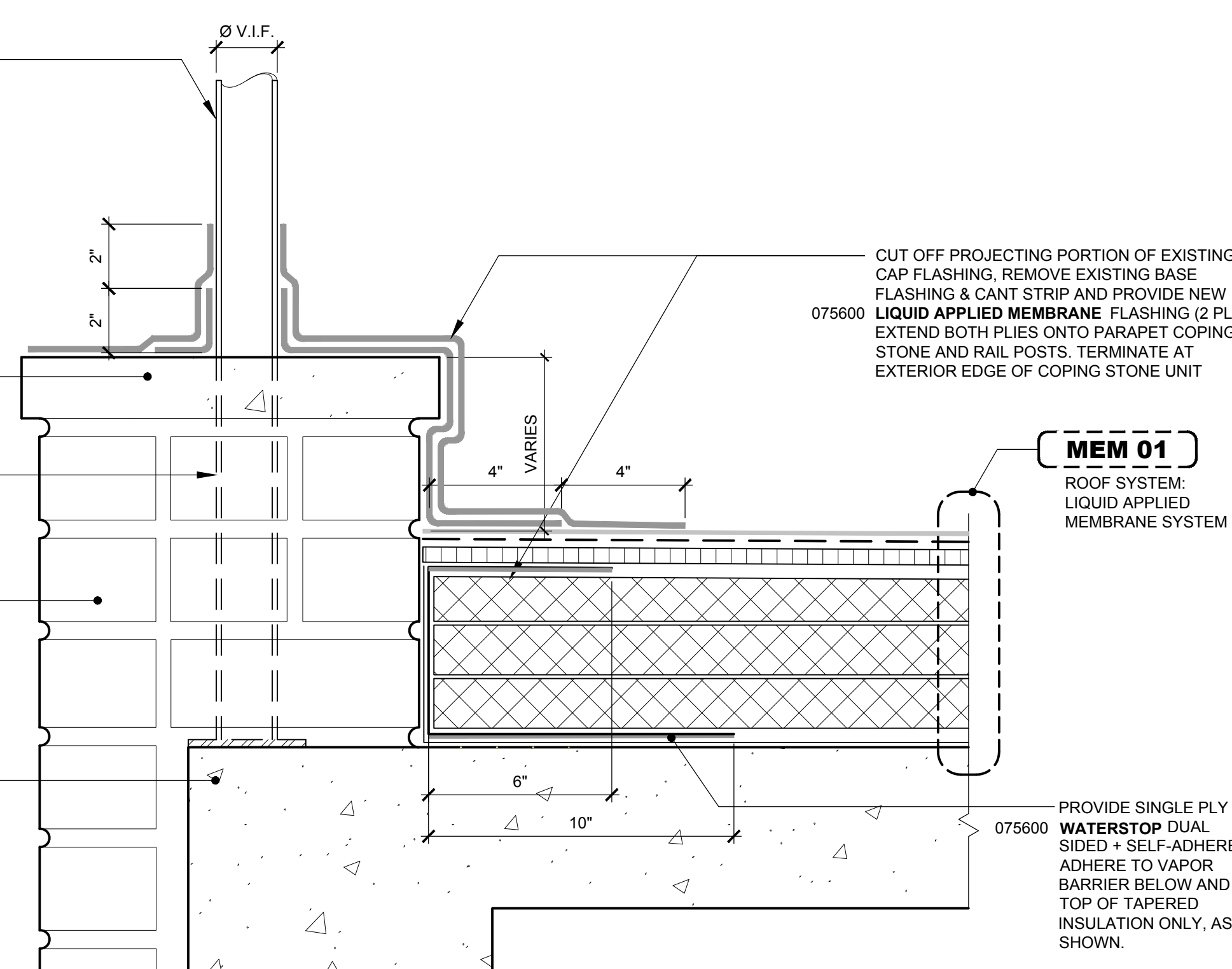
NOTE: DO NOT PAINT SURFACE TO RECEIVE WATERPROOFING FLASHING. PRIME WITH MANUFACTURER'S APPROVED PRIMER

EXISTING COPING STONE TO REMAIN

EXISTING METAL RAILING POST TO REMAIN

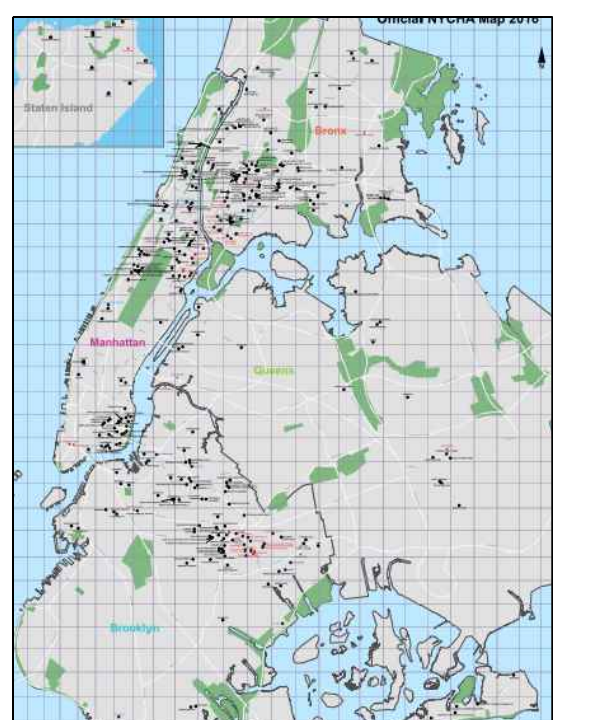
EXISTING BRICK MASONRY PARAPET TO REMAIN

EXISTING CONCRETE TO REMAIN



**SECTION**





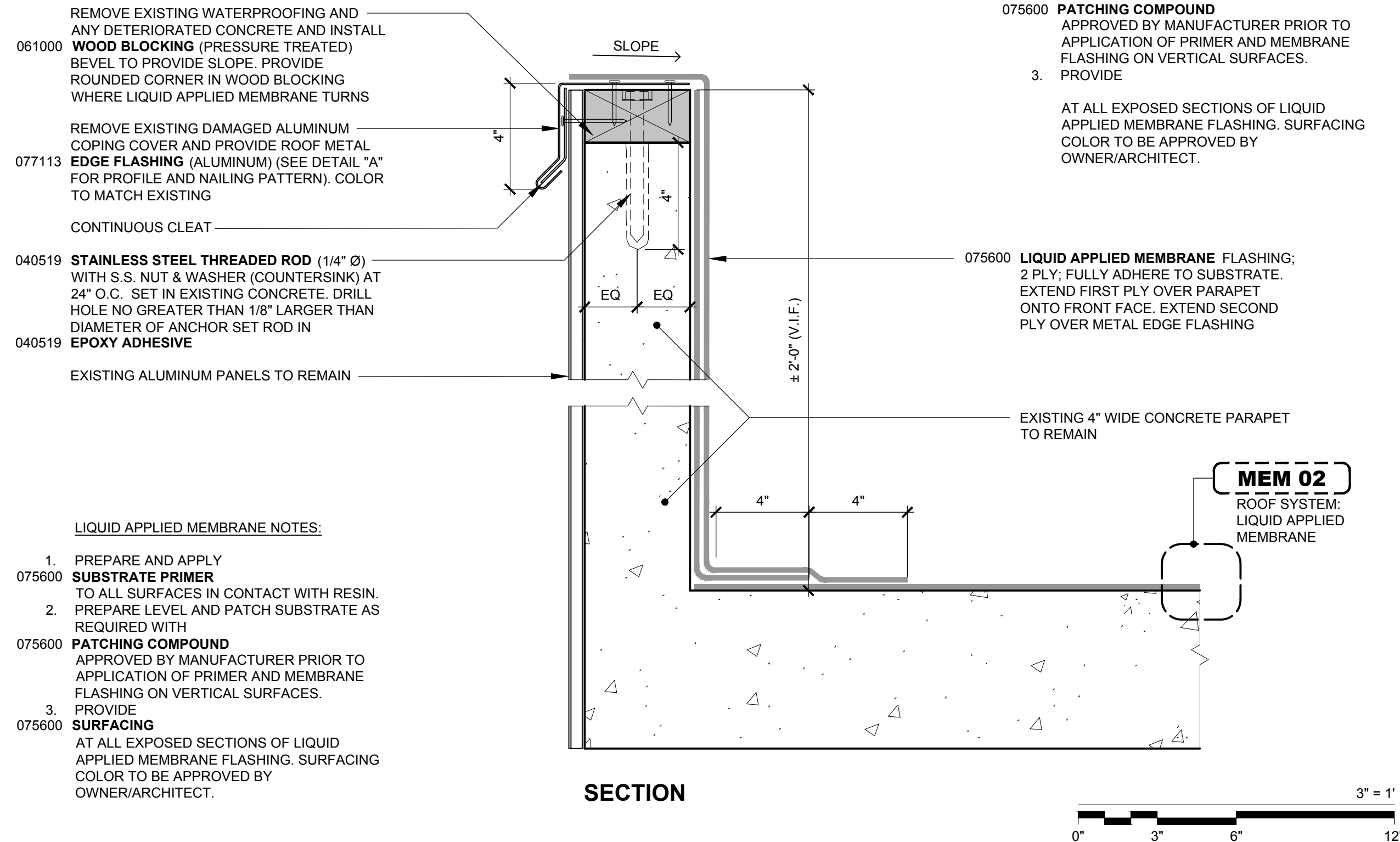
Key/ Location plan

Seal / Signature:	Issue Date: 12.04.2018
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	Checked By: NS / VS
	Drawing No.:
	<b>A512.00</b>
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**LIQUID APPLIED MEMBRANE NOTES:**

1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH
2. **075600 PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES. PROVIDE

AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

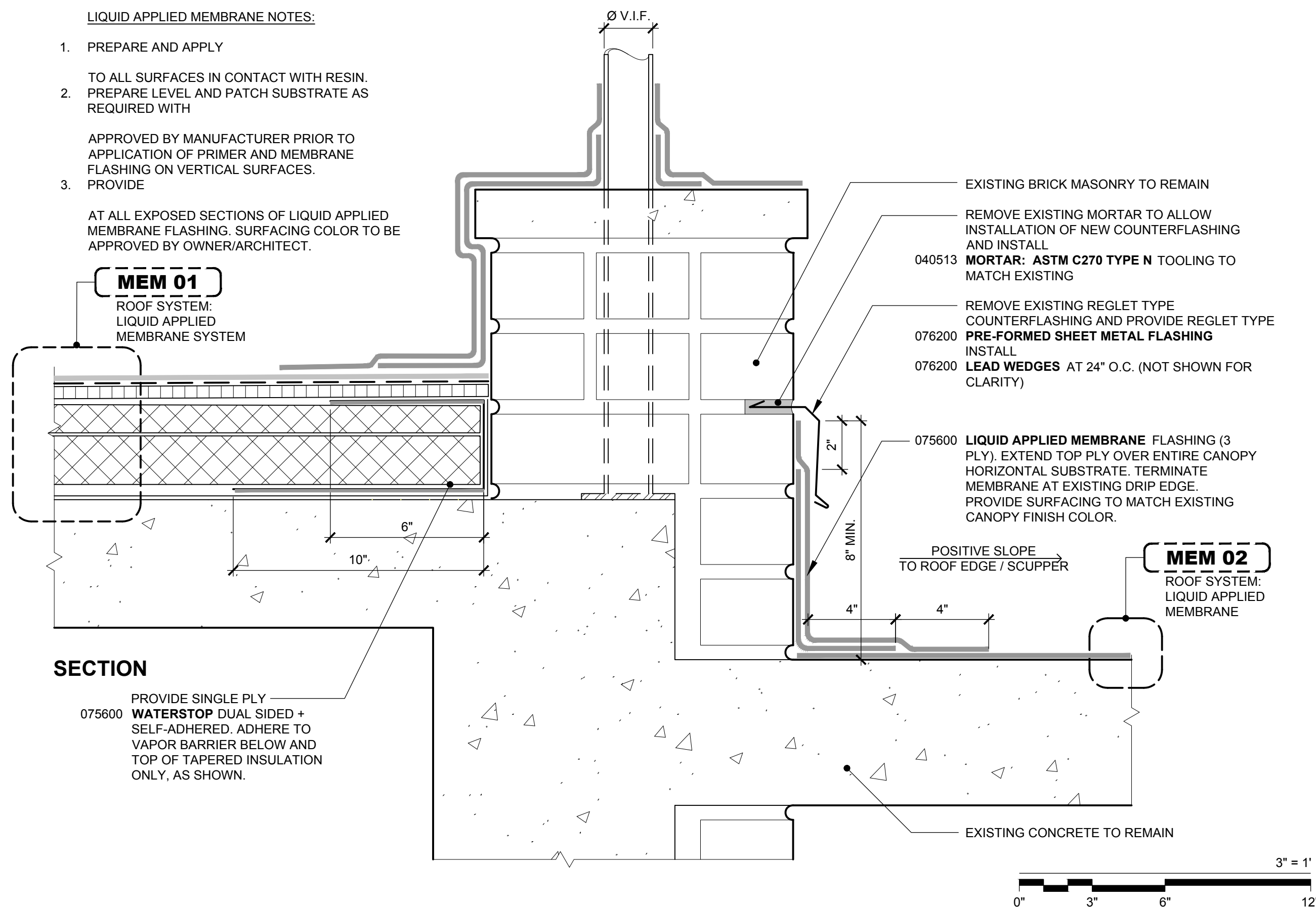


**FLA 18 PERIMETER FLASHING AT ENTRANCE CANOPY PARAPET (LF)**

**LIQUID APPLIED MEMBRANE NOTES:**

1. PREPARE AND APPLY
  2. TO ALL SURFACES IN CONTACT WITH RESIN. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH
  3. PROVIDE
- APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
- AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

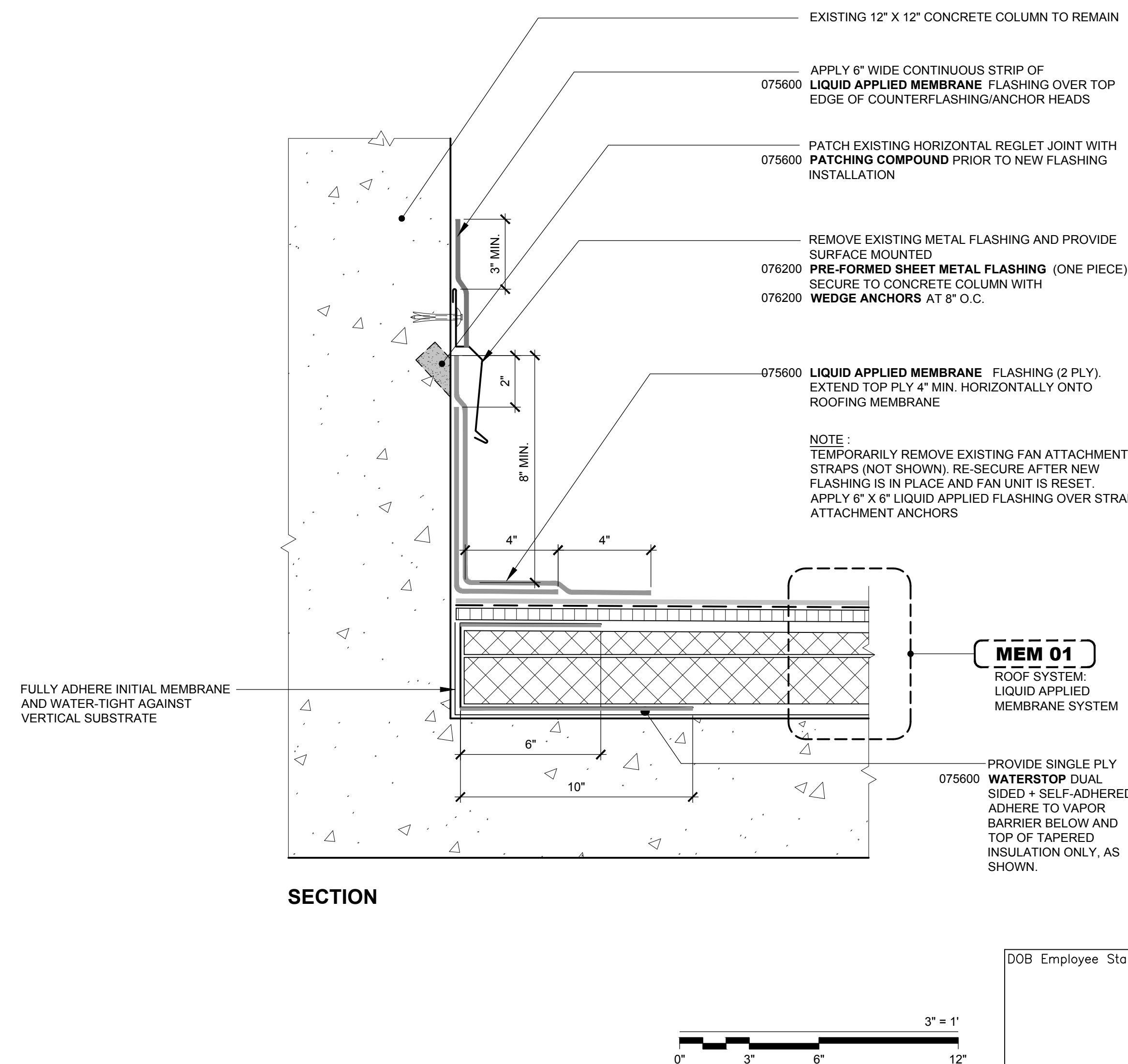
**MEM 01**  
 ROOF SYSTEM:  
 LIQUID APPLIED  
 MEMBRANE SYSTEM



**FLA 17 PERIMETER FLASHING AT CANOPY TO PARAPET CONNECTION (LF)**

**LIQUID APPLIED MEMBRANE NOTES:**

1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH
2. **075600 PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES. PROVIDE
3. **075600 SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.



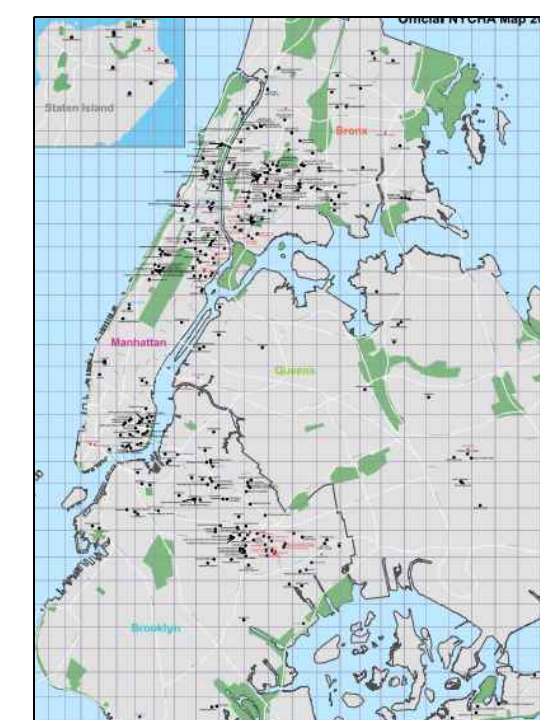
**FLA 19 PERIMETER FLASHING AT CONCRETE WALL/COLUMN (LF)**

Date: Revision:

Date: Submissions:

**NEW YORK CITY HOUSING AUTHORITY**  
**DESIGN DEPARTMENT**  
 90 Church Street 10th floor, New York, NY 10007  
 Tel 212 306-3000 Fax (call)

Development: VARIOUS  
 Bldg. Addresses:  
 Building No.: Oracle No:  
 Borough of: CITYWIDE



Key/ Location plan

Zoning Map: Zone:  
 Block No.: Lot No.:  
 Development No.: VARIOUS E.D.P No.:

Contract Title:  
**ROOF REPLACEMENT AND  
 ROOFTOP STRUCTURE RENOVATION  
 REQUIREMENT CONTRACT**

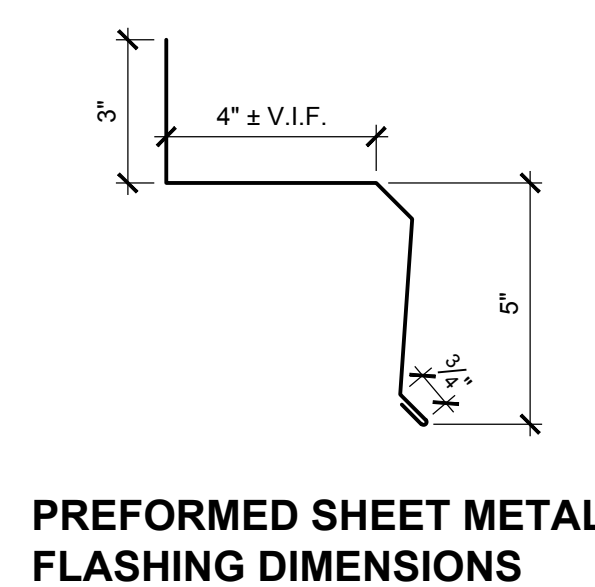
Contract No.:  
**RF 1805337**

Drawing Title: Restoration Details:  
 FLA 20

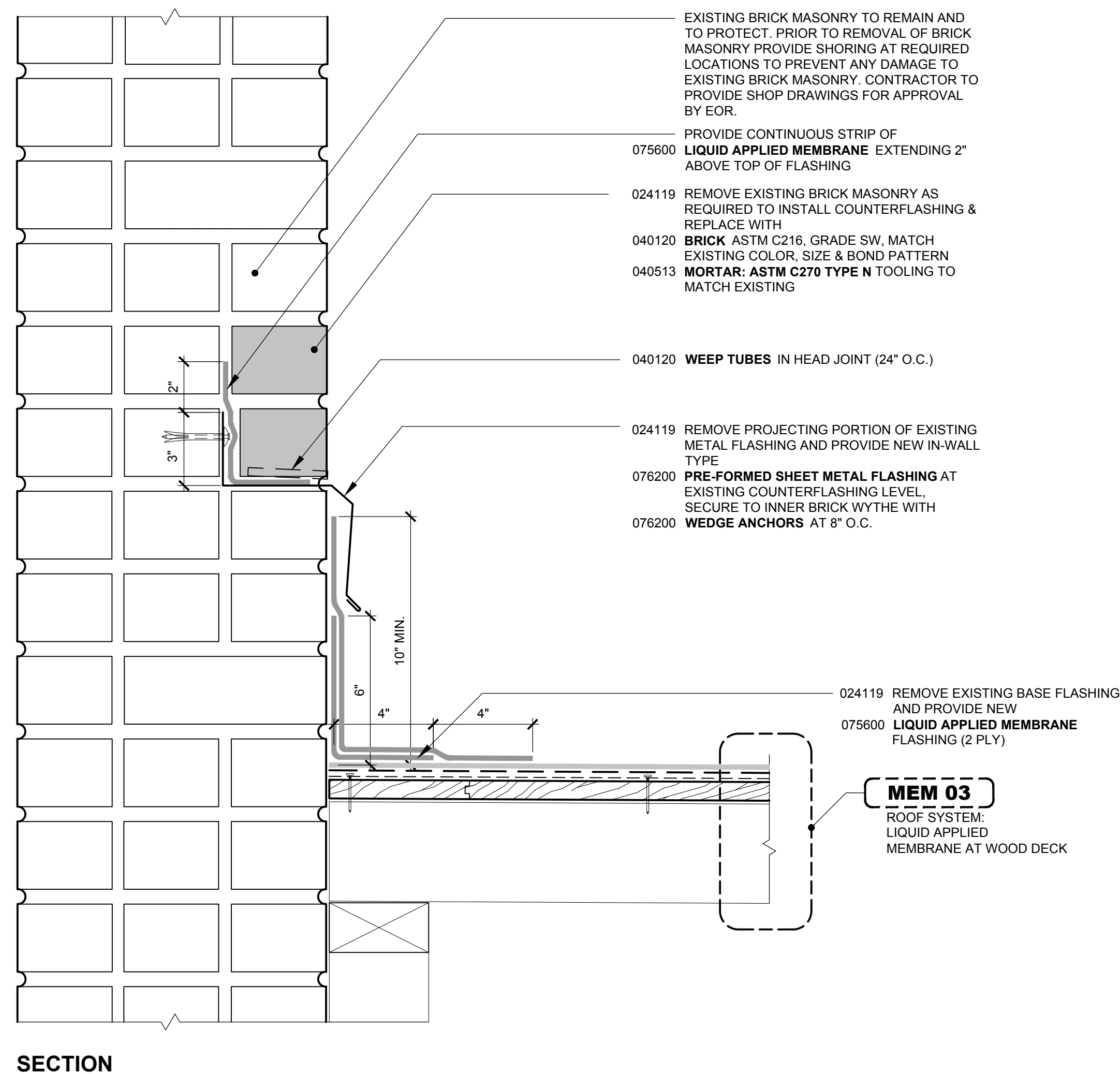
Seal / Signature:	Issue Date: 12.04.2018
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DOB BSCAN STICKER

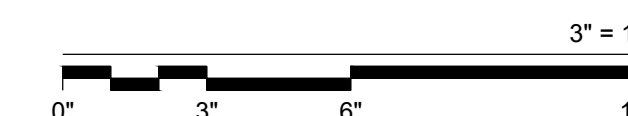
- LIQUID APPLIED MEMBRANE NOTES:
1. PREPARE AND APPLY  
 075600 **SUBSTRATE PRIMER**  
 TO ALL SURFACES IN CONTACT WITH RESIN.
  2. PREPARE LEVEL AND PATCH SUBSTRATE AS  
 REQUIRED WITH  
 075600 **PATCHING COMPOUND**  
 APPROVED BY MANUFACTURER PRIOR TO  
 APPLICATION OF PRIMER AND MEMBRANE FLASHING  
 ON VERTICAL SURFACES.
  3. PROVIDE  
 075600 **SURFACING**  
 AT ALL EXPOSED SECTIONS OF LIQUID APPLIED  
 MEMBRANE FLASHING. SURFACING COLOR TO BE  
 APPROVED BY OWNER/ARCHITECT.



**PREFORMED SHEET METAL  
 FLASHING DIMENSIONS**

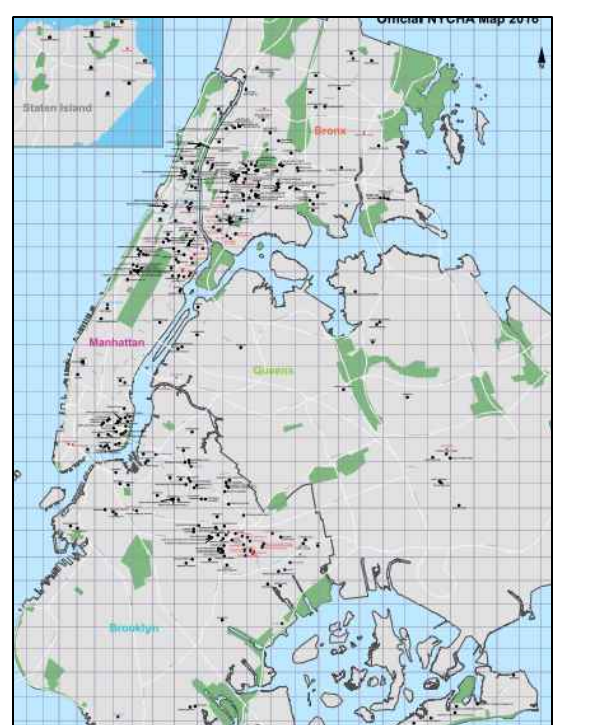


**SECTION**



DOB Employee Stamps and Signatures

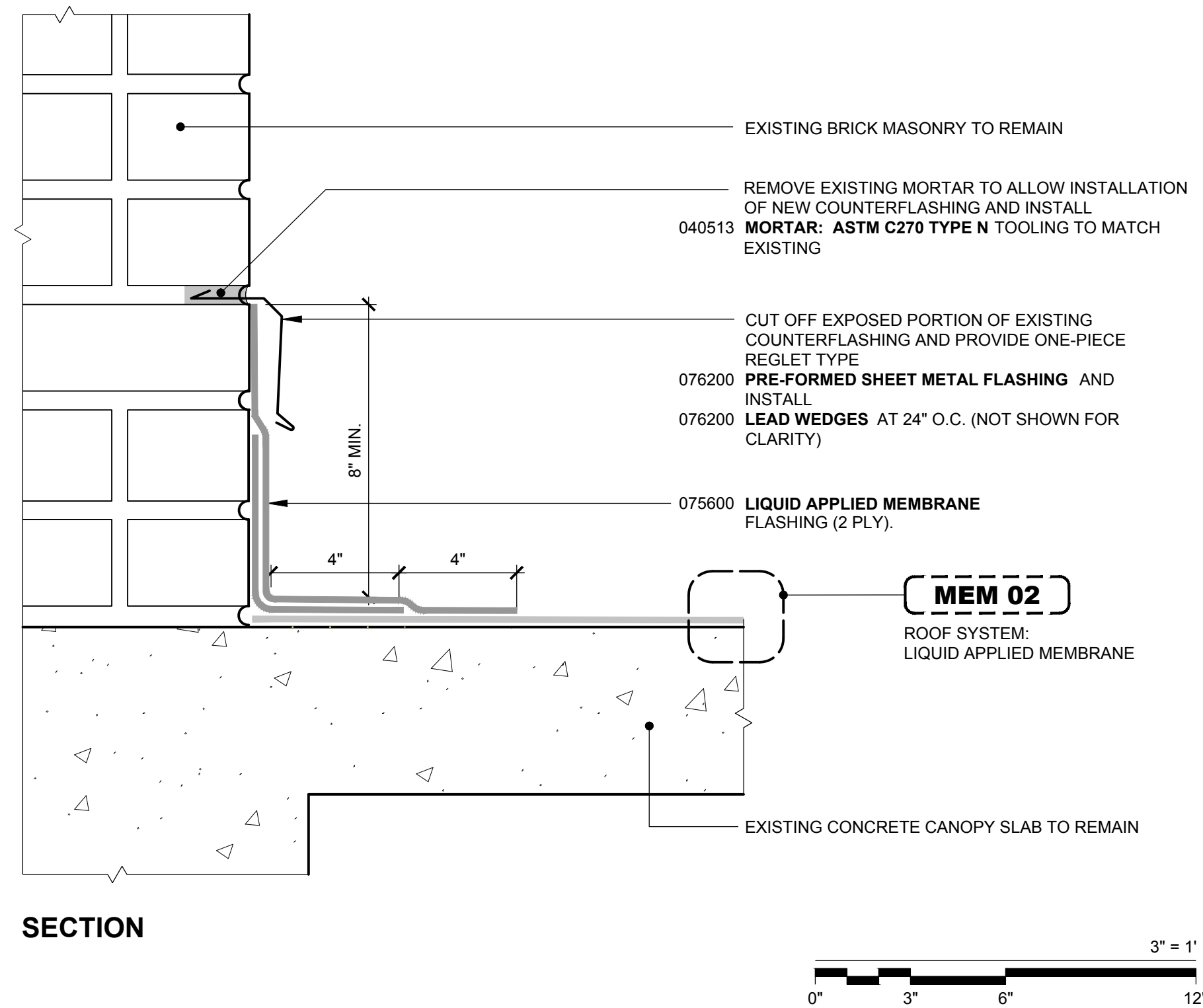
**FLA 20 PERIMETER FLASHING AT PARAPET WALL, WOOD DECK (LF)**



Key/ Location plan

**PREFORMED SHEET METAL FLASHING DIMENSIONS**

- LIQUID APPLIED MEMBRANE NOTES:
1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH
  2. **075600 PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
  3. PROVIDE **075600 SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

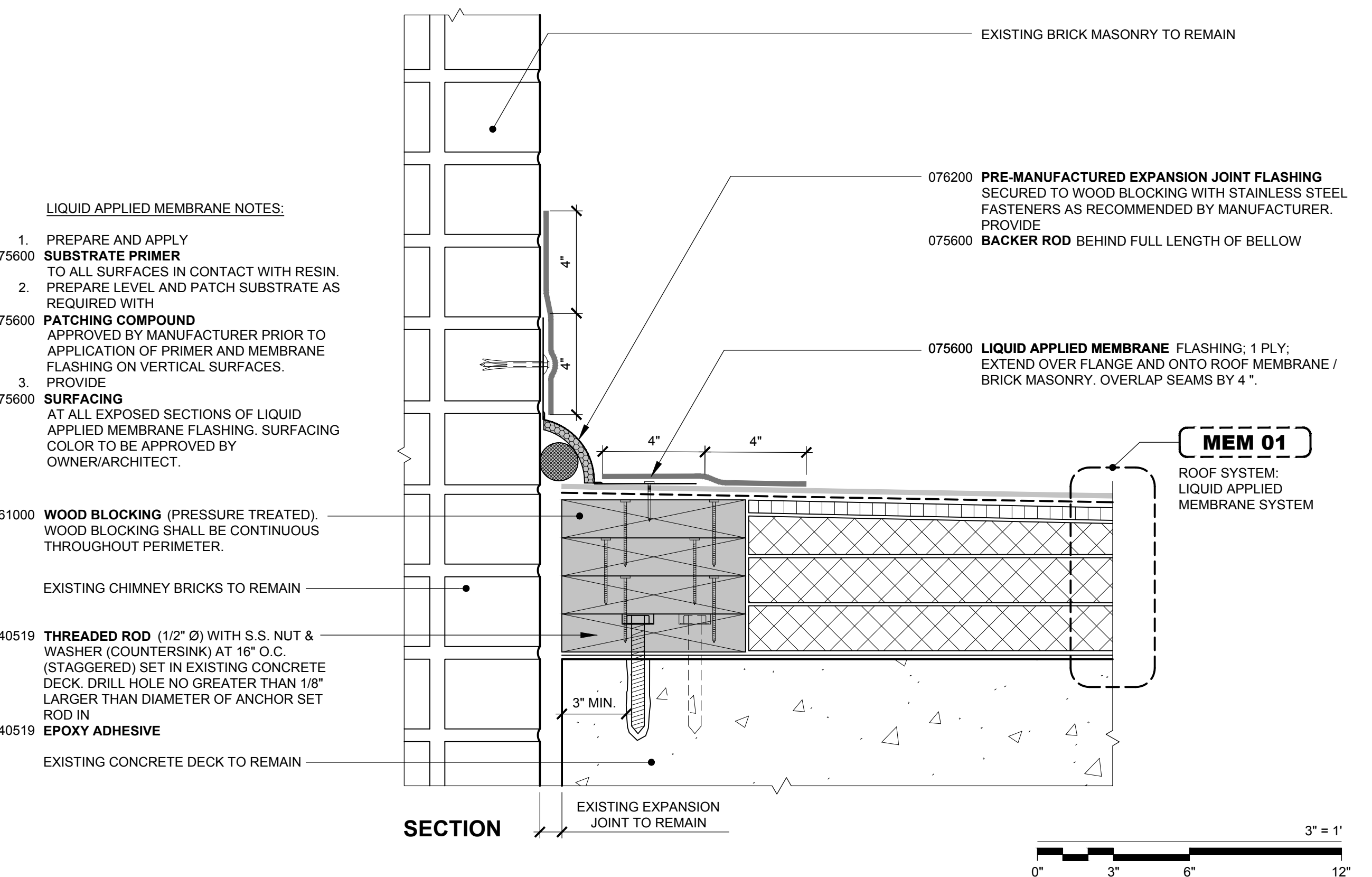
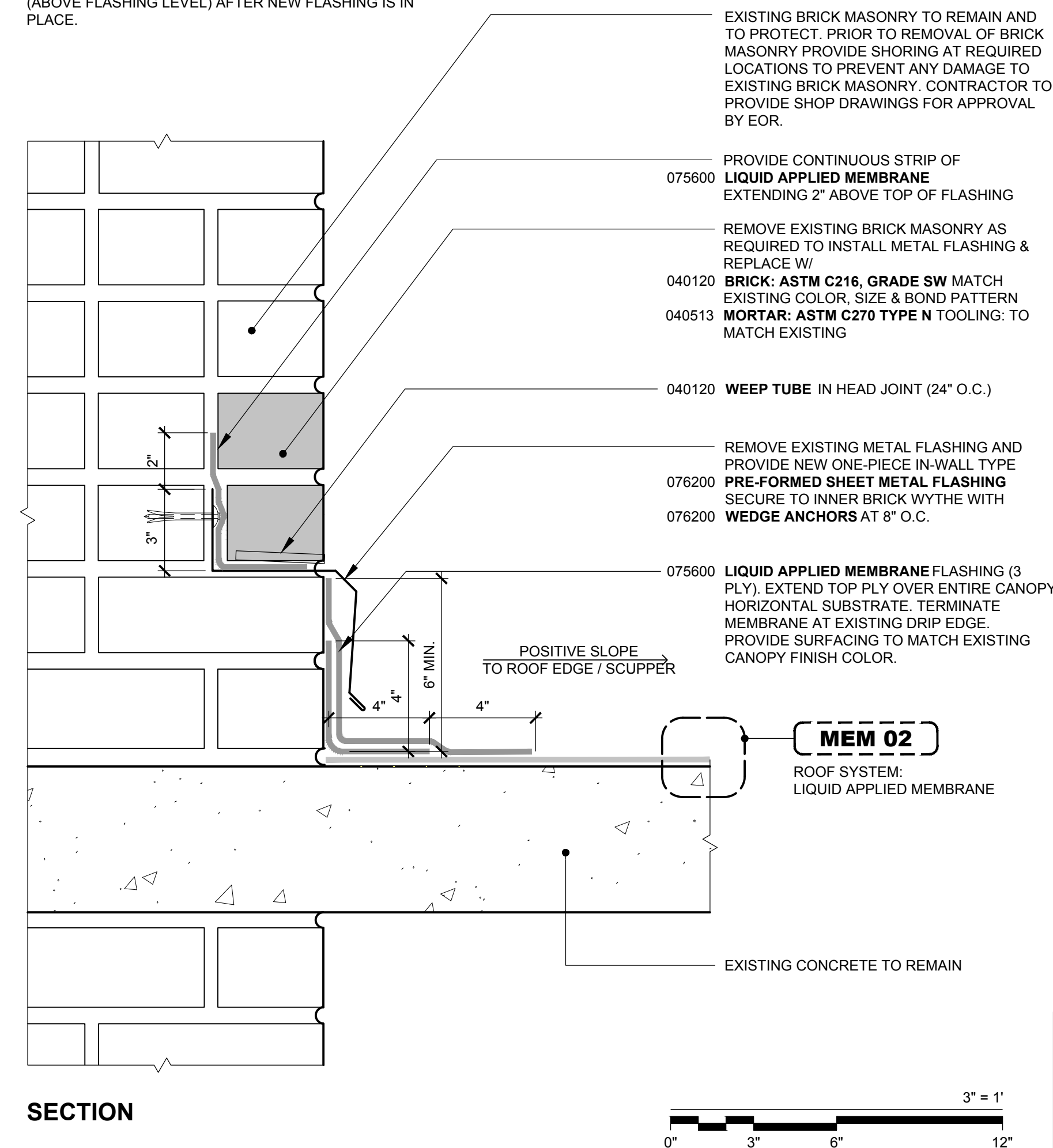


**FLA 22 CHIMNEY FLASHING AT WATER TOWER ROOF (LF)**

**PREFORMED SHEET METAL FLASHING DIMENSIONS**

- NOTE:
- DISCONNECT AS REQUIRED AND TEMPORARILY REMOVE EXISTING WIRES / CABLES ATTACHED TO BRICK WALL TO ALLOW FOR FLASHING INSTALLATION. RE-CONNECT AND RE-SECURE TO BRICK MASONRY (ABOVE FLASHING LEVEL) AFTER NEW FLASHING IS IN PLACE.

- LIQUID APPLIED MEMBRANE NOTES:
1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH
  2. **075600 PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
  3. PROVIDE **075600 SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.



**FLA 21 PERIMETER FLASHING AT CHIMNEY BASE (LF)**

**FLA 23 PERIMETER FLASHING AT CANOPY TO WALL (LF)**

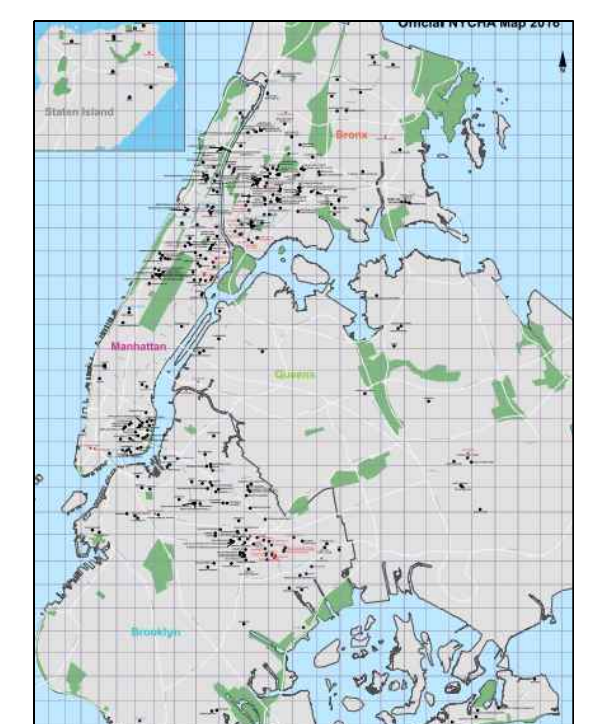


Date: Revision:

Date: Submissions:

**NEW YORK CITY HOUSING AUTHORITY**  
**DESIGN DEPARTMENT**  
 90 Church Street 10th floor, New York, NY 10007  
 Tel 212 306-3000 Fax (call)

Development: VARIOUS  
 Bldg. Addresses:  
 Building No: Oracle No:  
 Borough of: CITYWIDE



Key/ Location plan

Zoning Map: Zone:  
 Block No.: Lot No.:  
 Development No.: VARIOUS E.D.P No.:

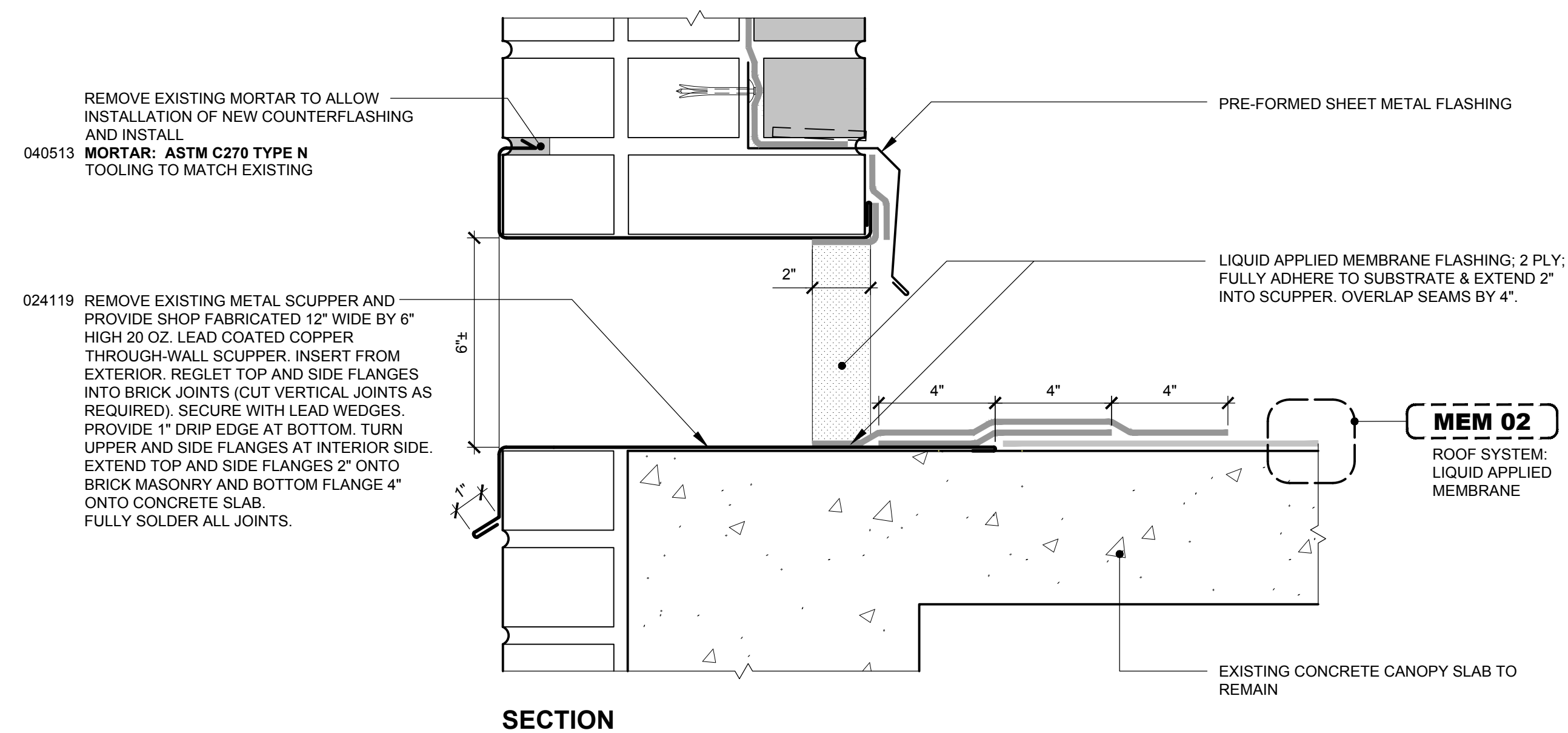
Contract Title:  
**ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

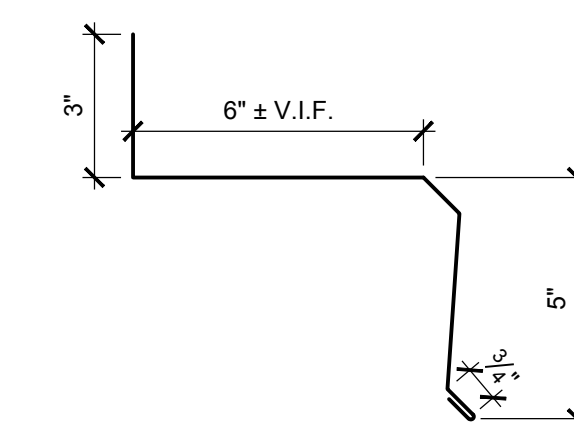
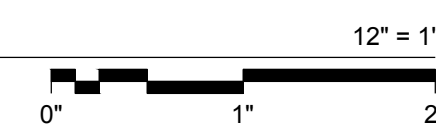
Drawing Title: Restoration Details:  
 FLA 24, FLA 25

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
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	Checked By: NS / VS
	Drawing No.: <b>A515.00</b>
	Sheet 30 of 64

DOB BSCAN STICKER

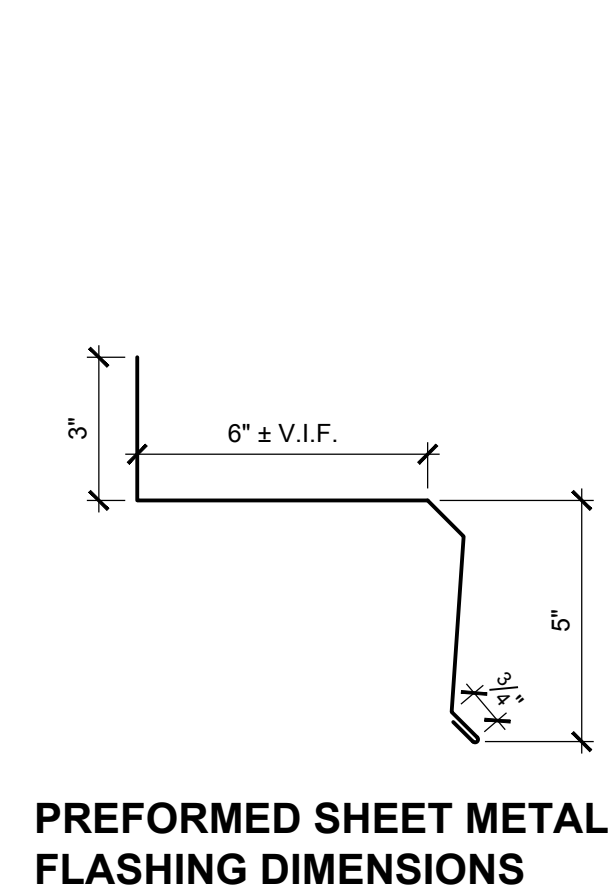


**SECTION A**  
 FLASHING AT SCUPPER



**PREFORMED SHEET METAL FLASHING DIMENSIONS**

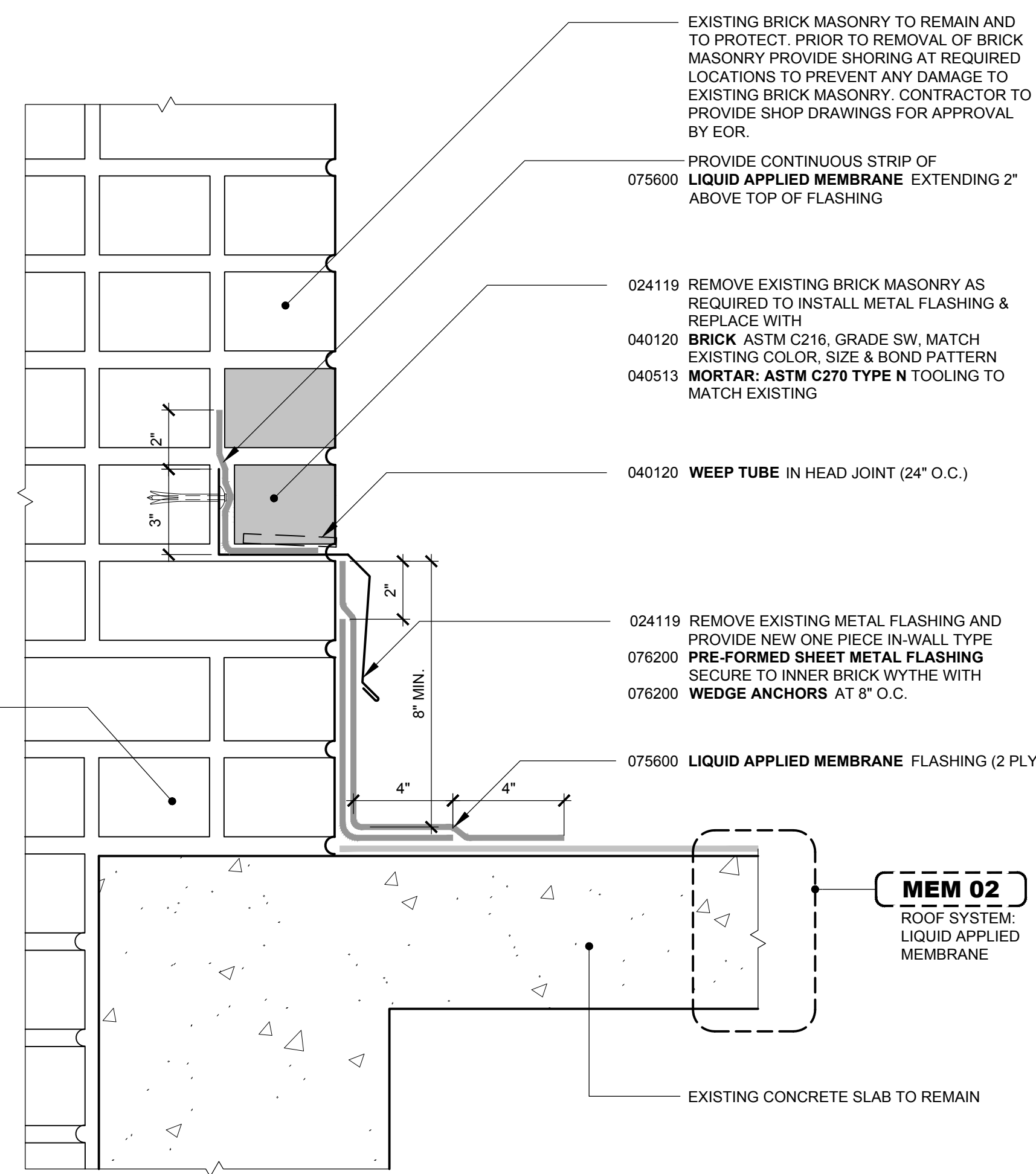
- LIQUID APPLIED MEMBRANE NOTES:**
1. PREPARE AND APPLY 075600 **SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
  2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH 075600 **PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
  3. PROVIDE 075600 **SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.



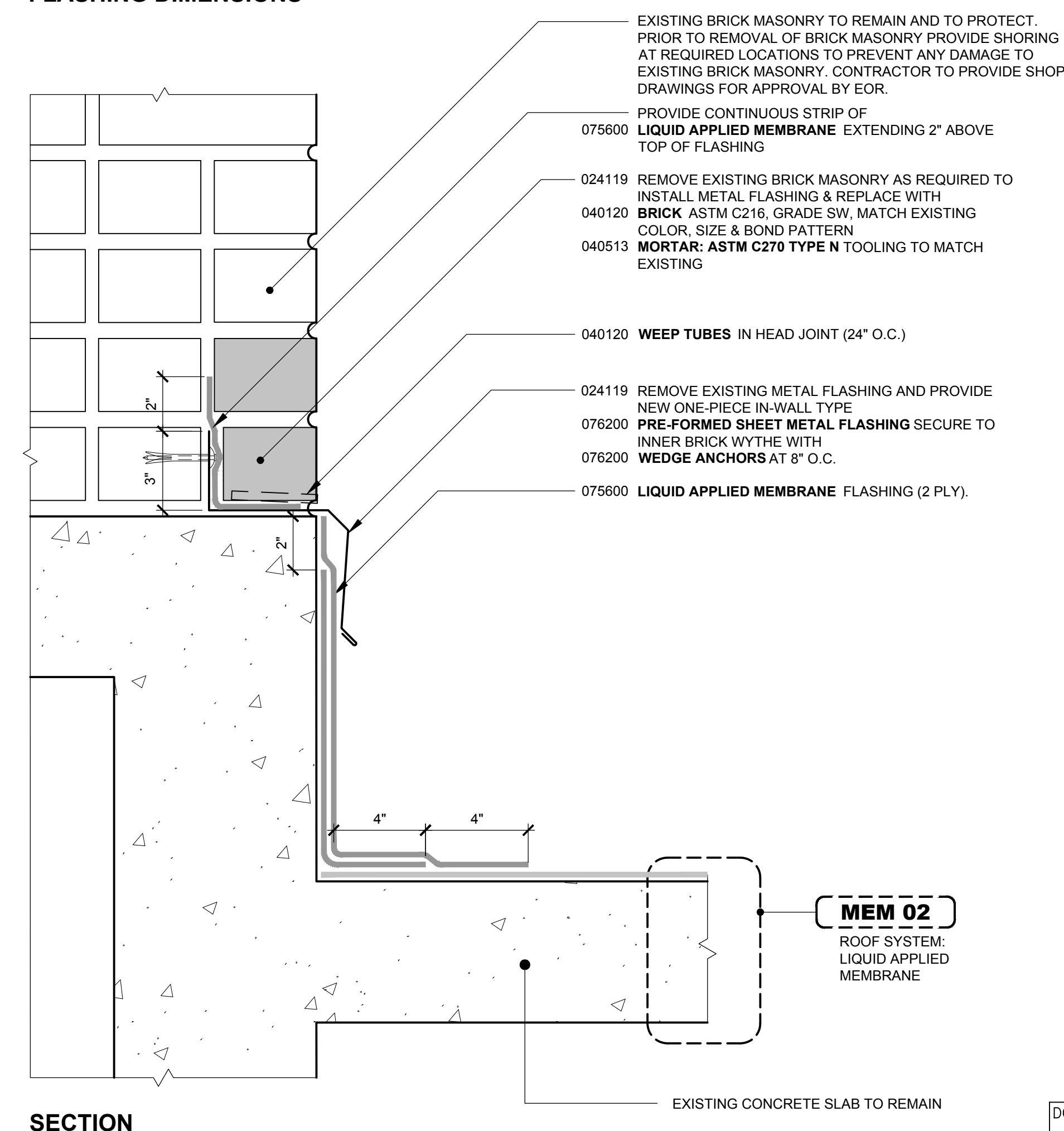
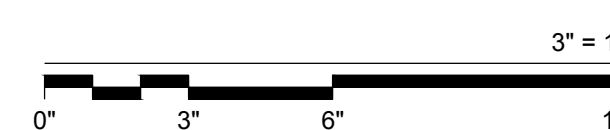
**PREFORMED SHEET METAL FLASHING DIMENSIONS**

**SECTION A**

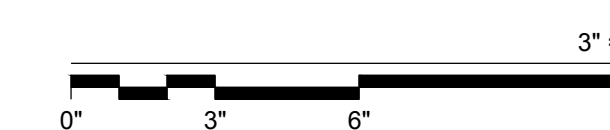
- LIQUID APPLIED MEMBRANE NOTES:**
1. PREPARE AND APPLY 075600 **SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
  2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH 075600 **PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
  3. PROVIDE 075600 **SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.



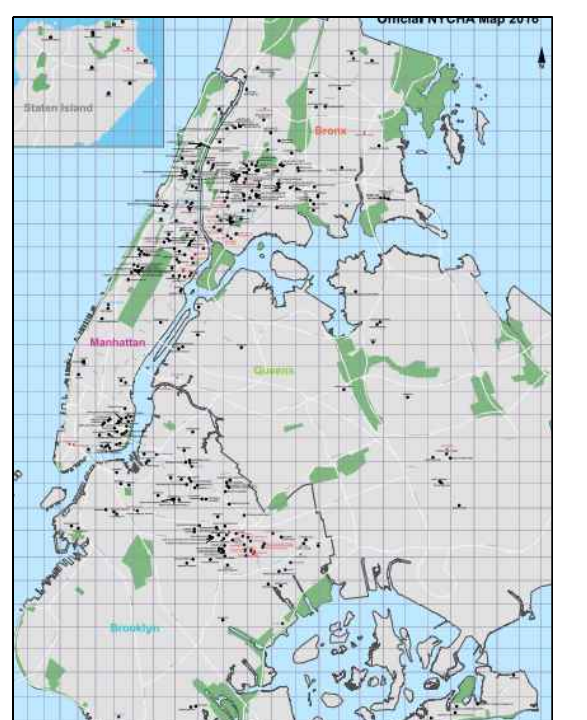
**SECTION**



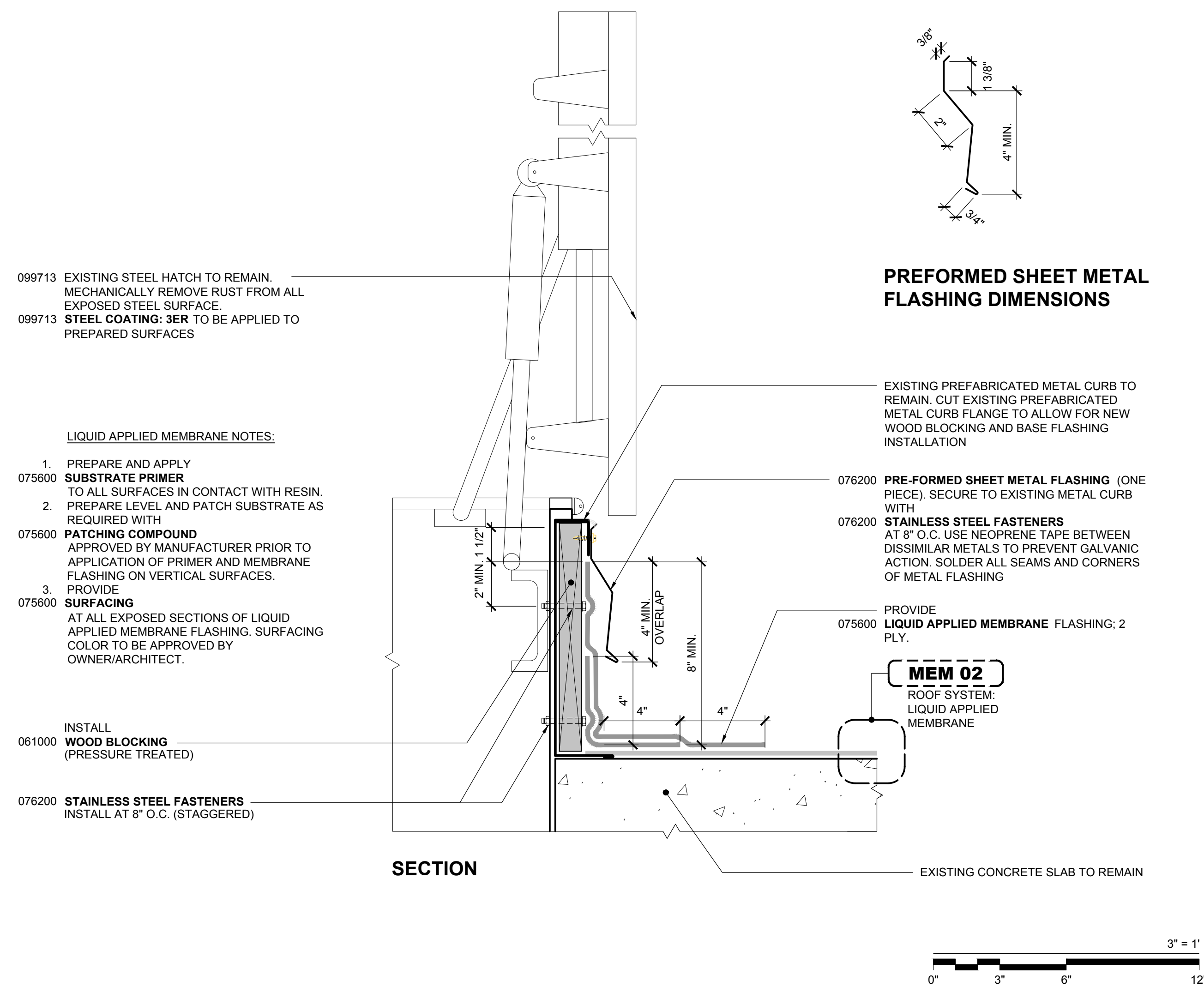
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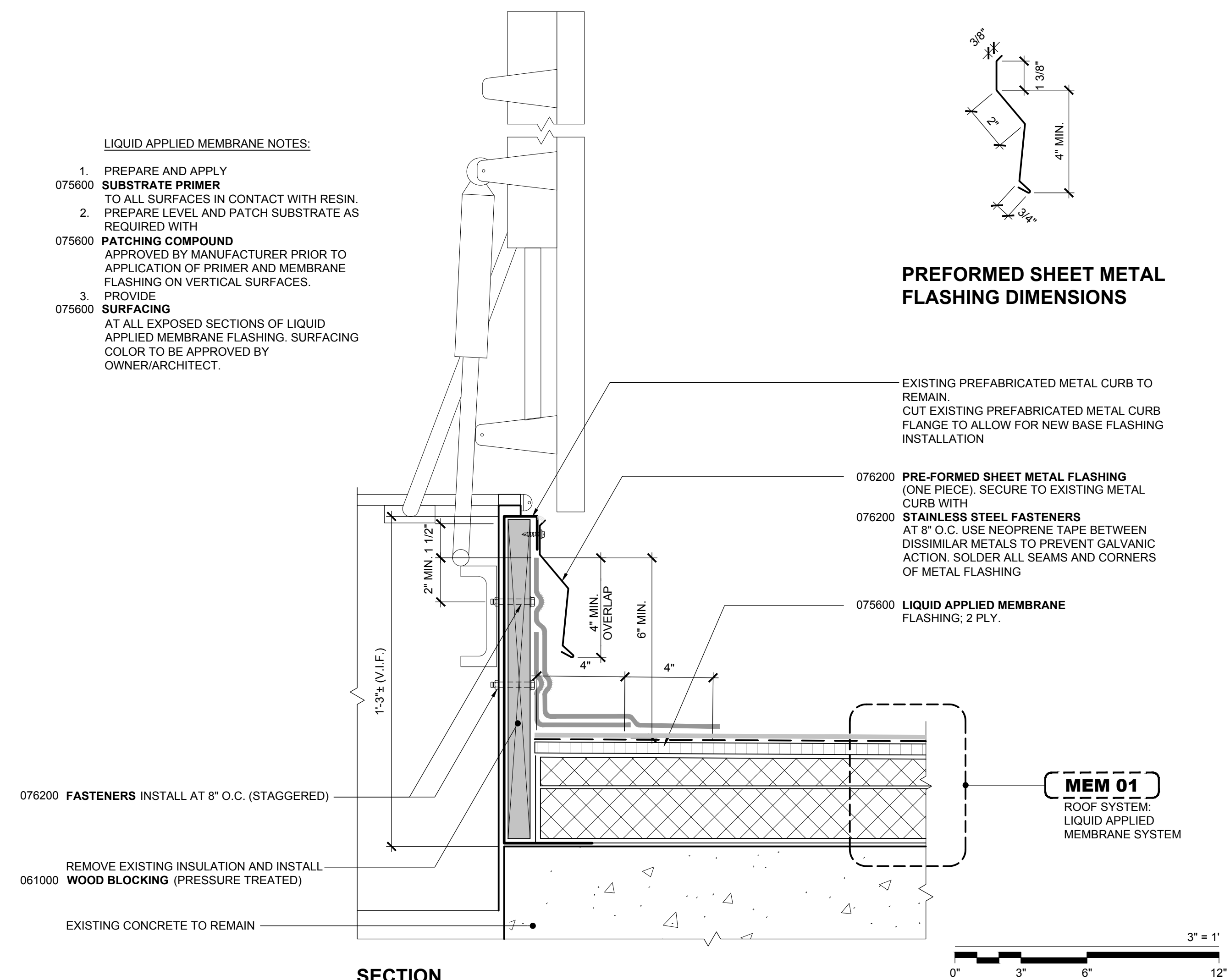
DOB Employee Stamps and Signatures



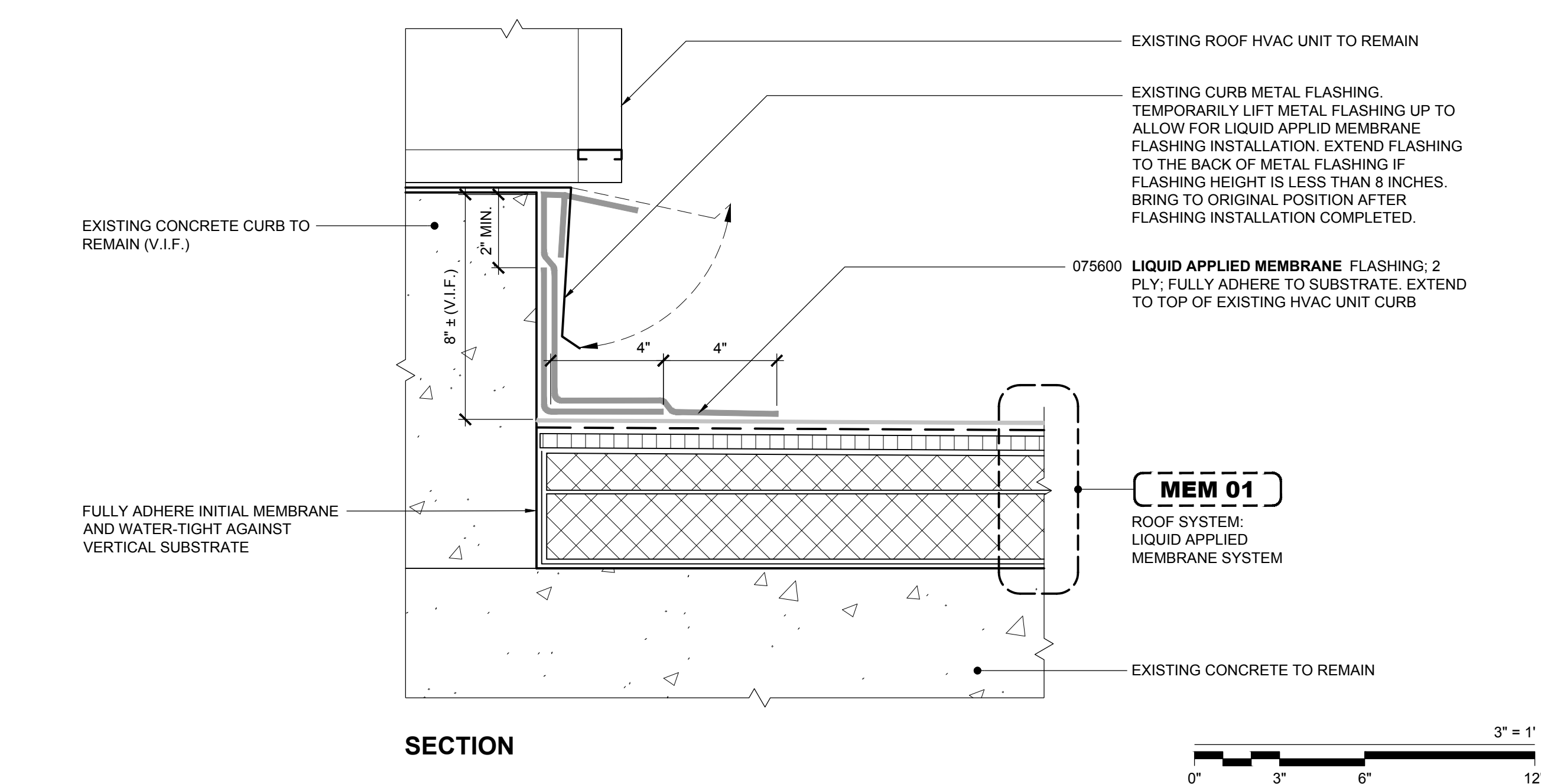
Key/ Location plan



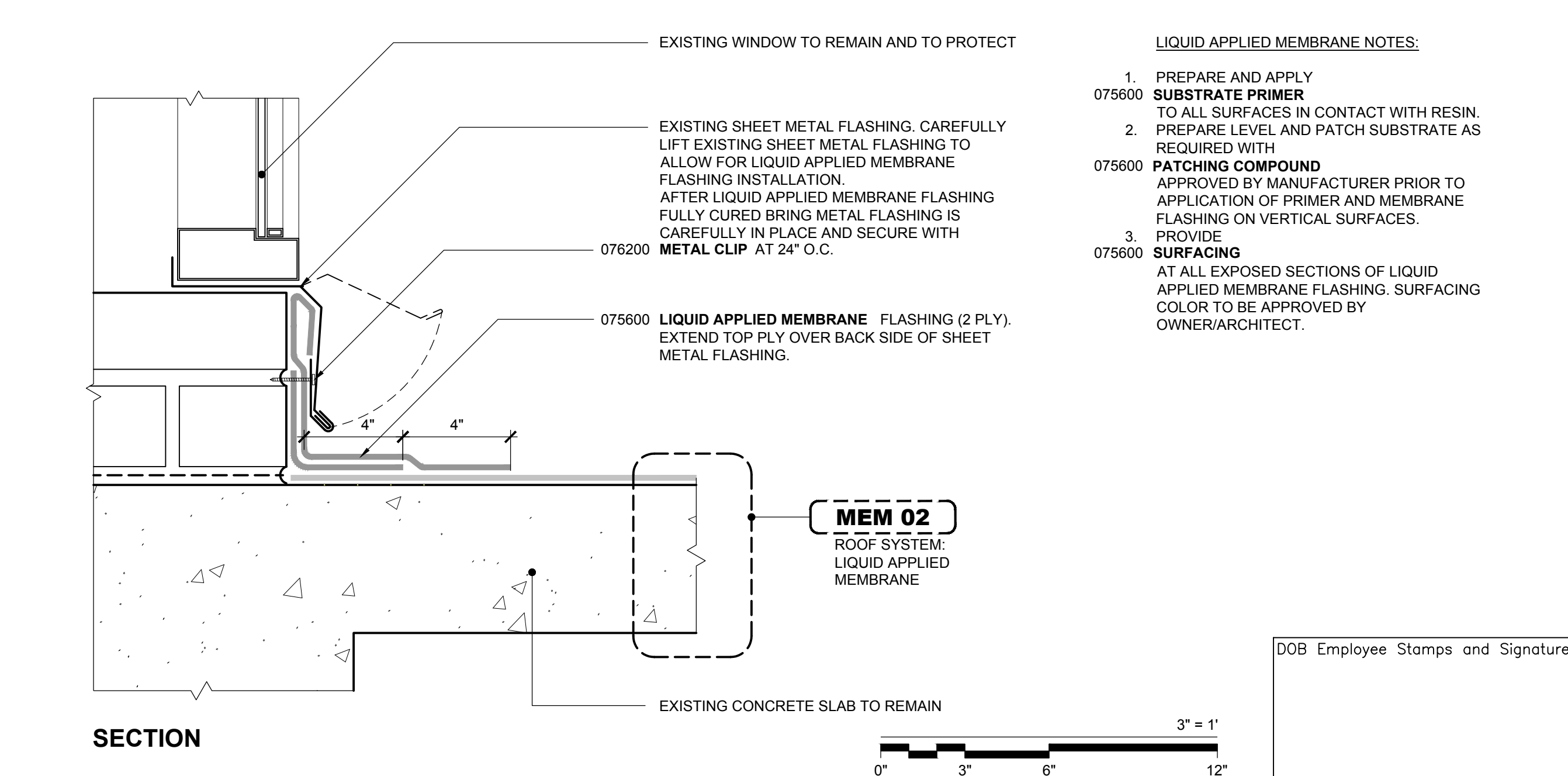
**FLA 28** **PENETRATION FLASHING - HATCH, LIQUID (EA)**



**FLA 29** **PENETRATION FLASHING - HATCH (EA)**



**FLA 26** **PENETRATION FLASHING - HVAC UNIT CURB (LF)**

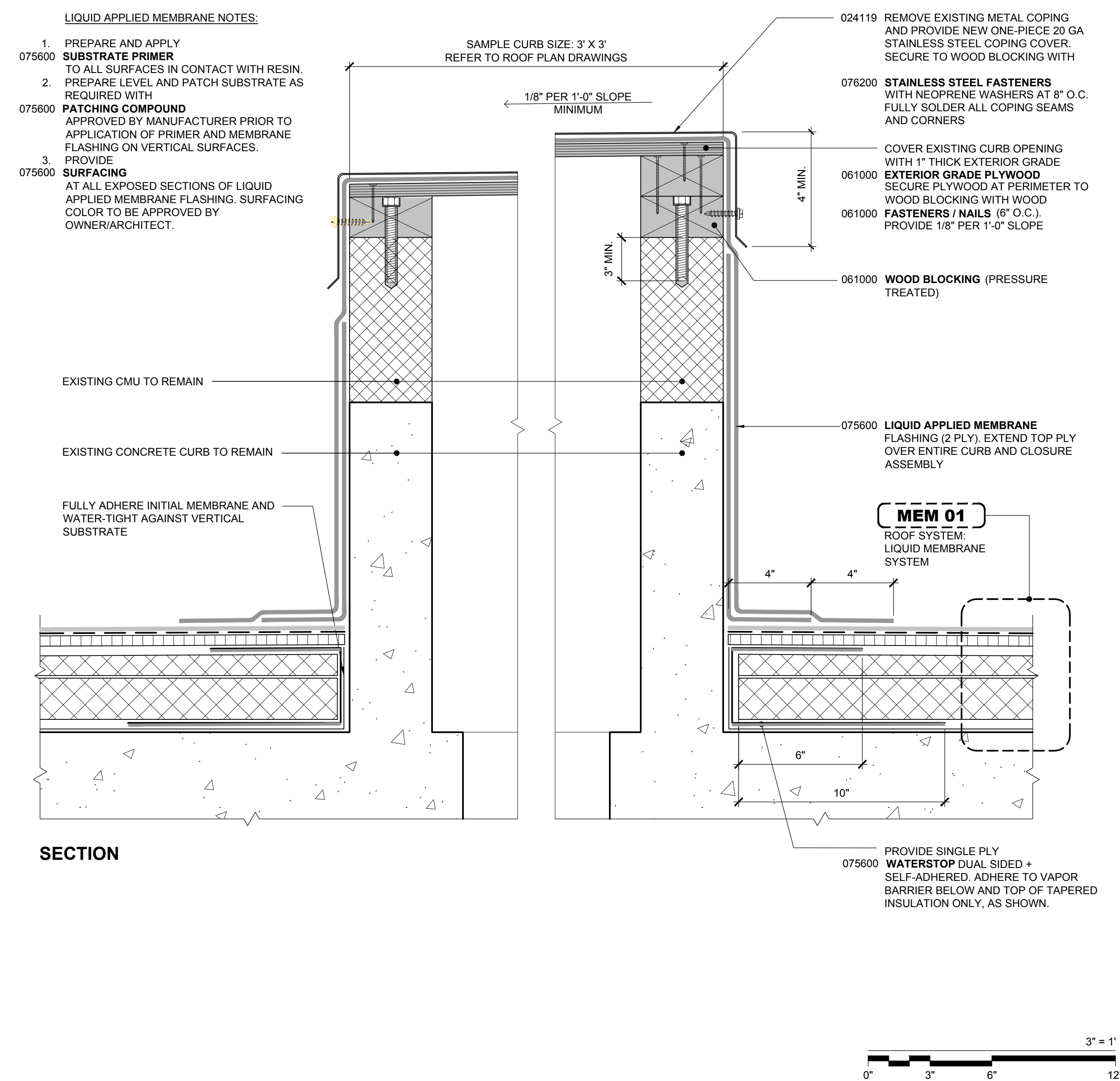


**FLA 27** **CANOPY PERIMETER FLASHING AT WINDOW (LF)**

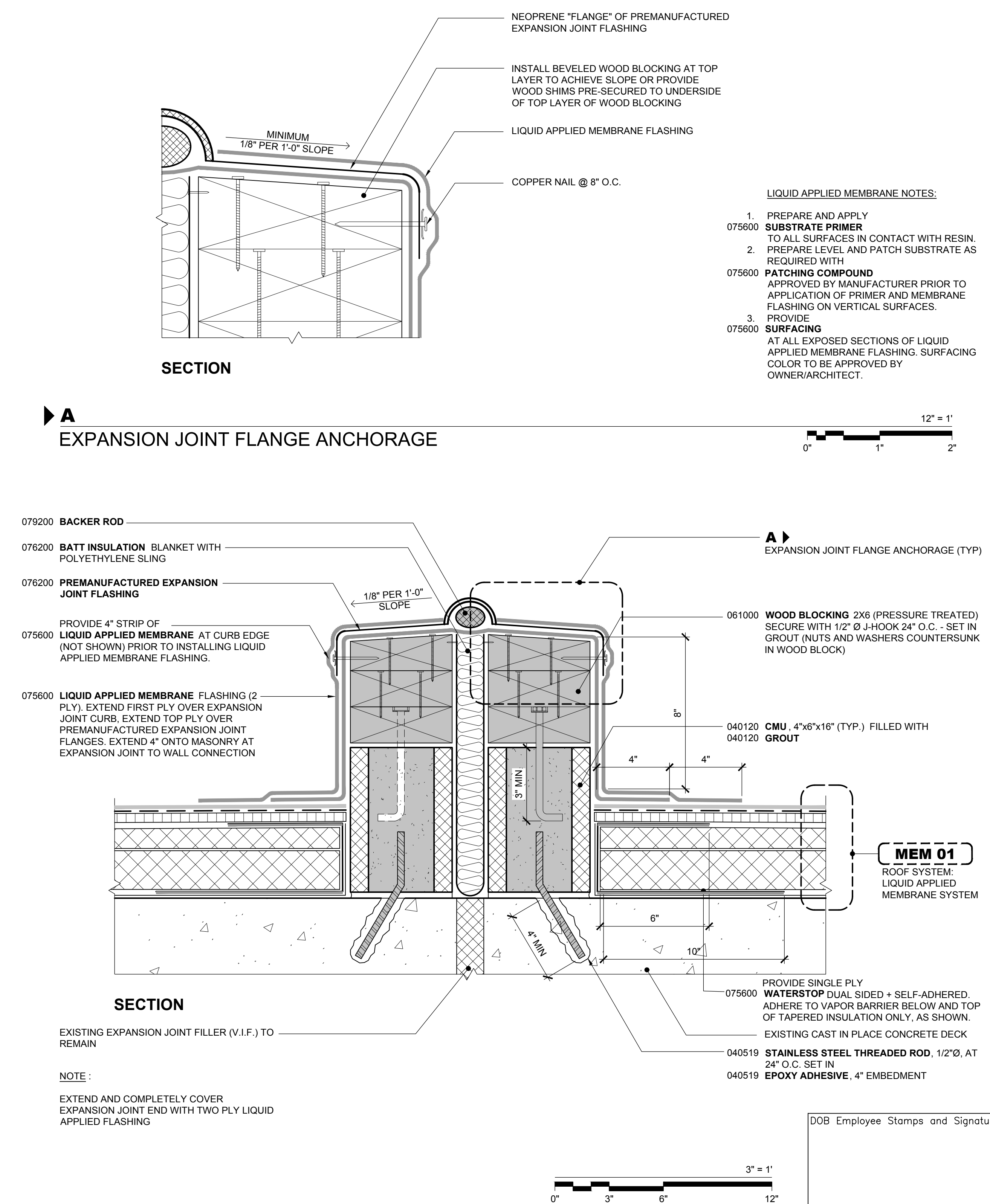
DOB Employee Stamps and Signatures



Key/ Location plan



**FLA 30 ABANDONED CURB CLOSURE AND FLASHING (EA)**



**FLA 31 EXPANSION JOINT FLASHING (LF)**

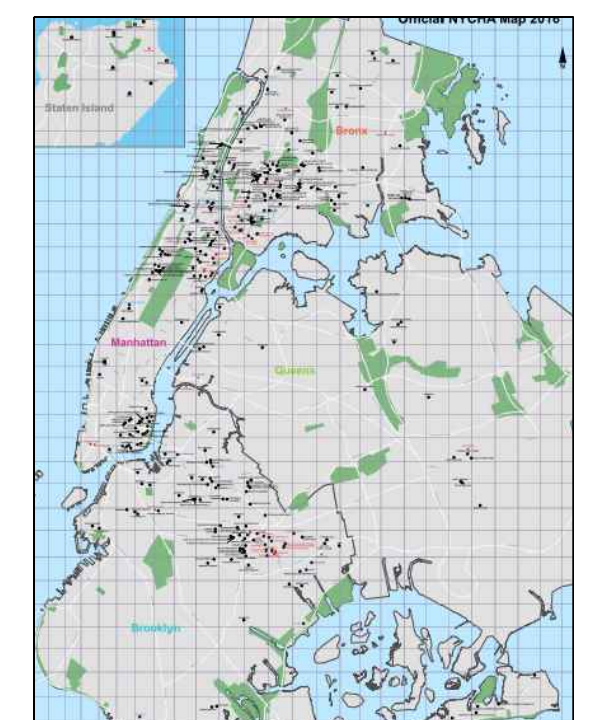
PROGRAM UNIT:  
 Project Management Team 1

Date: Revision:

Date: Submissions:

**NEW YORK CITY HOUSING AUTHORITY**  
**DESIGN DEPARTMENT**  
 90 Church Street 10th floor, New York, NY 10007  
 Tel 212 306-3000 Fax (call)

Development: VARIOUS  
 Bldg. Addresses:  
 Building No.: Oracle No:  
 Borough of: CITYWIDE



Key/ Location plan

Zoning Map: Zone:  
 Block No.: Lot No.:  
 Development No.: VARIOUS E.D.P No.:

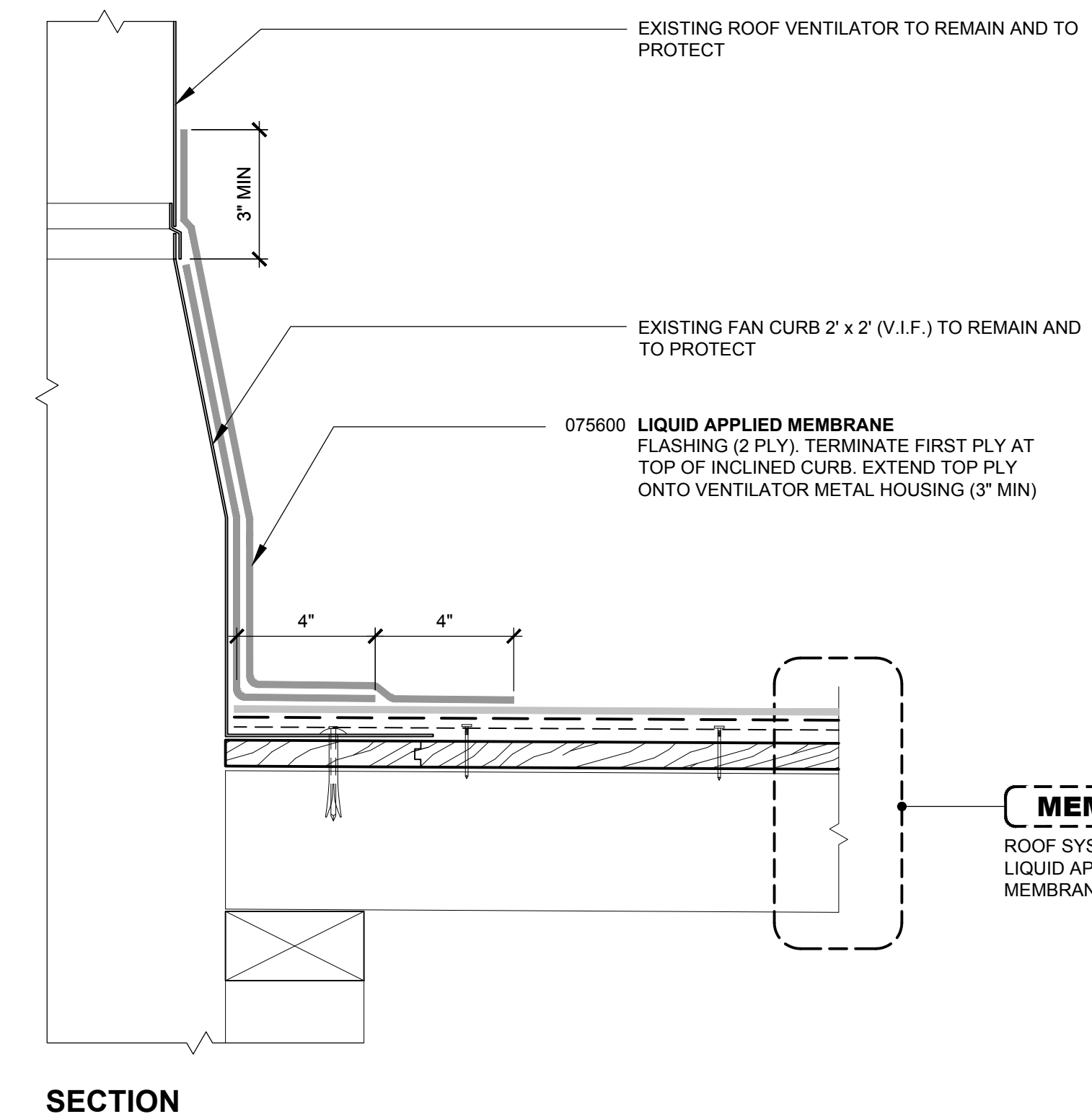
Contract Title:  
**ROOF REPLACEMENT AND  
 ROOFTOP STRUCTURE RENOVATION  
 REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

Drawing Title: Restoration Details:  
 FLA 32, FLA 33, FLA 34

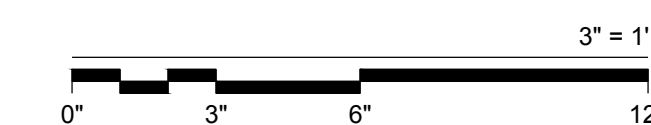
Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
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	Checked By: NS / VS
	Drawing No.:
	<b>A518.00</b>
	Sheet 33 of 64

DOB BSCAN STICKER

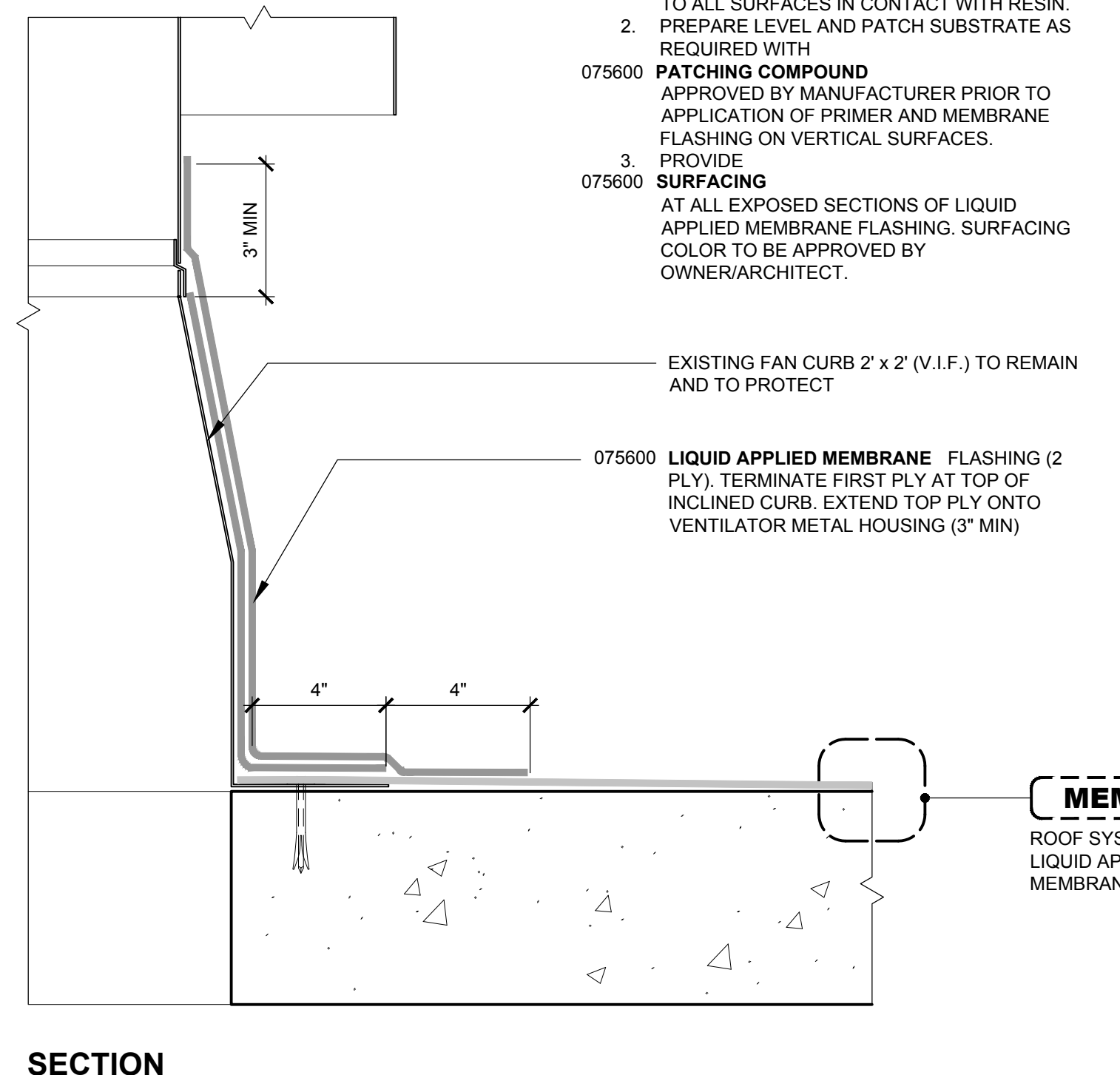


- LIQUID APPLIED MEMBRANE NOTES:**
1. PREPARE AND APPLY **SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
  2. PROVIDE **SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

**MEM 03**  
 ROOF SYSTEM:  
 LIQUID APPLIED  
 MEMBRANE AT WOOD-DECK

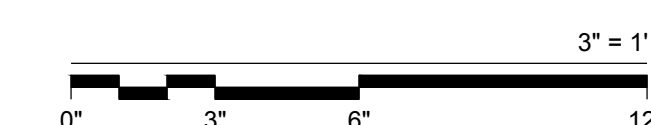


**FLA 34 PENETRATION FLASHING - FAN CURB, INCLINED, WOOD DECK (EA)**



- LIQUID APPLIED MEMBRANE NOTES:**
1. PREPARE AND APPLY **SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
  2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
  3. PROVIDE **SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

**MEM 02**  
 ROOF SYSTEM:  
 LIQUID APPLIED  
 MEMBRANE



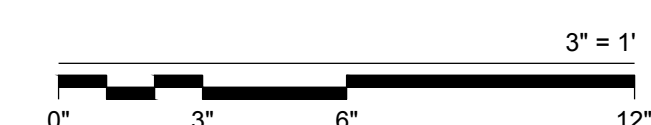
**FLA 33 PENETRATION FLASHING - FAN CURB, INCLINED (EA)**

- LIQUID APPLIED MEMBRANE NOTES:**
1. PREPARE AND APPLY **SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
  2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
  3. PROVIDE **SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

- 024119 TEMPORARILY REMOVE EXISTING ROOF VENTILATOR, METAL HOUSING AND DISCONNECT ELECTRIC AS REQUIRED. REINSTALL AFTER CURB IS RAISED AND FLASHING IS IN PLACE. SECURE WITH STAINLESS STEEL FASTENERS OVER NEW METAL FLASHING THROUGH EXISTING HOLES
- 076200 **POP RIVETS** (STAINLESS STEEL) IN ORIGINAL VENTILATOR FLANGE (MIN. 2 PER SIDE)
- 076200 **PRE-FORMED SHEET METAL FLASHING** (ONE PIECE). SECURE TO EXISTING CONCRETE CURB W/ POP RIVETS

- 075600 **LIQUID APPLIED MEMBRANE FLASHING** (2 PLY). EXTEND TOP PLY 4" MIN. HORIZONTALLY ONTO ROOFING MEMBRANE
- NOTE:**  
 TEMPORARILY REMOVE EXISTING FAN ATTACHMENT STRAPS (NOT SHOWN). RE-SECURE AFTER NEW FLASHING IS IN PLACE AND FAN UNIT IS RESET. APPLY 6" X 6" LIQUID APPLIED FLASHING OVER STRAP ATTACHMENT ANCHORS

**MEM 01**  
 ROOF SYSTEM:  
 LIQUID MEMBRANE  
 SYSTEM



**PREFORMED SHEET METAL FLASHING DIMENSIONS**

**LIQUID APPLIED MEMBRANE NOTES:**

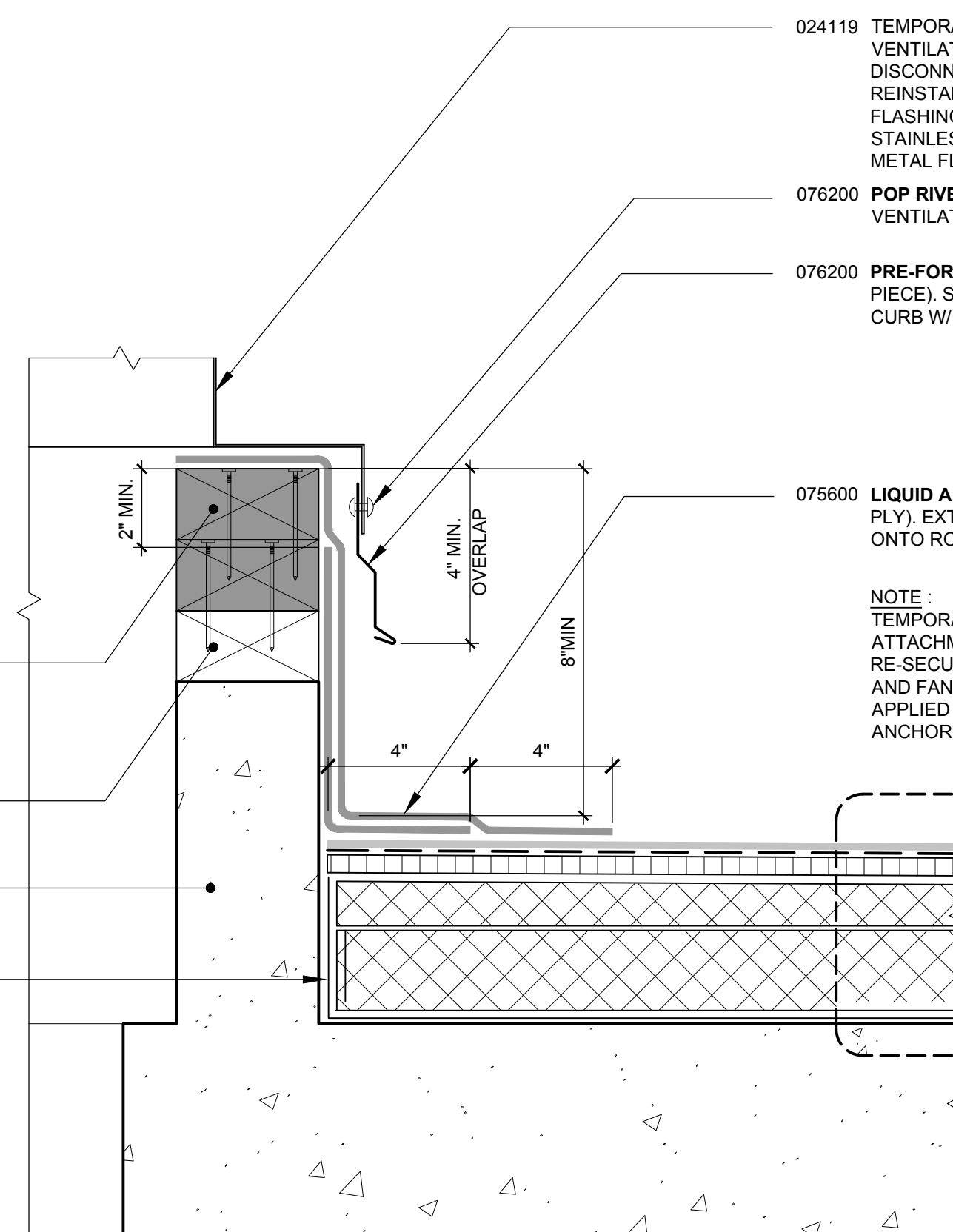
1. PREPARE AND APPLY **SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
3. PROVIDE **SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

- 061000 **WOOD BLOCKING** (PRESSURE TREATED) TO PROVIDE 8" MIN BASE FLASHING HEIGHT

EXISTING WOOD BLOCKING TO REMAIN

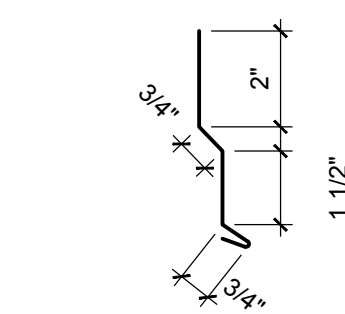
EXISTING 2' X 2' CONCRETE CURB TO REMAIN

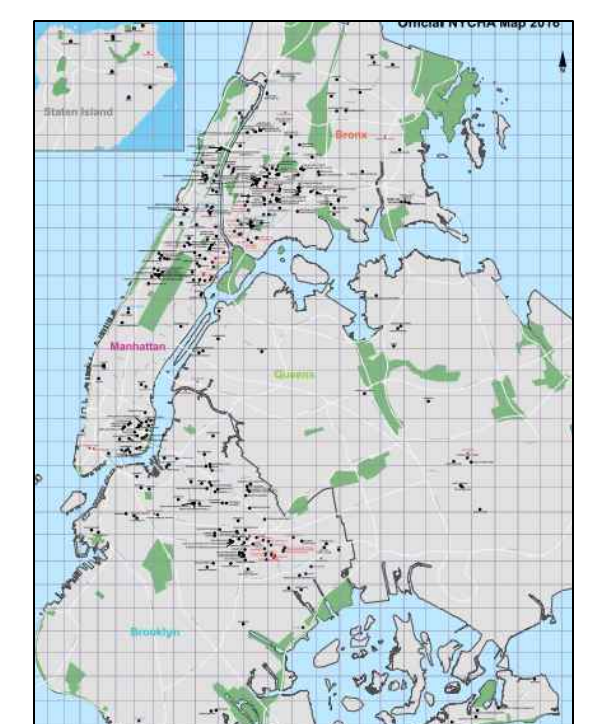
FULLY ADHERE INITIAL MEMBRANE AND WATER-TIGHT AGAINST VERTICAL SUBSTRATE



SECTION

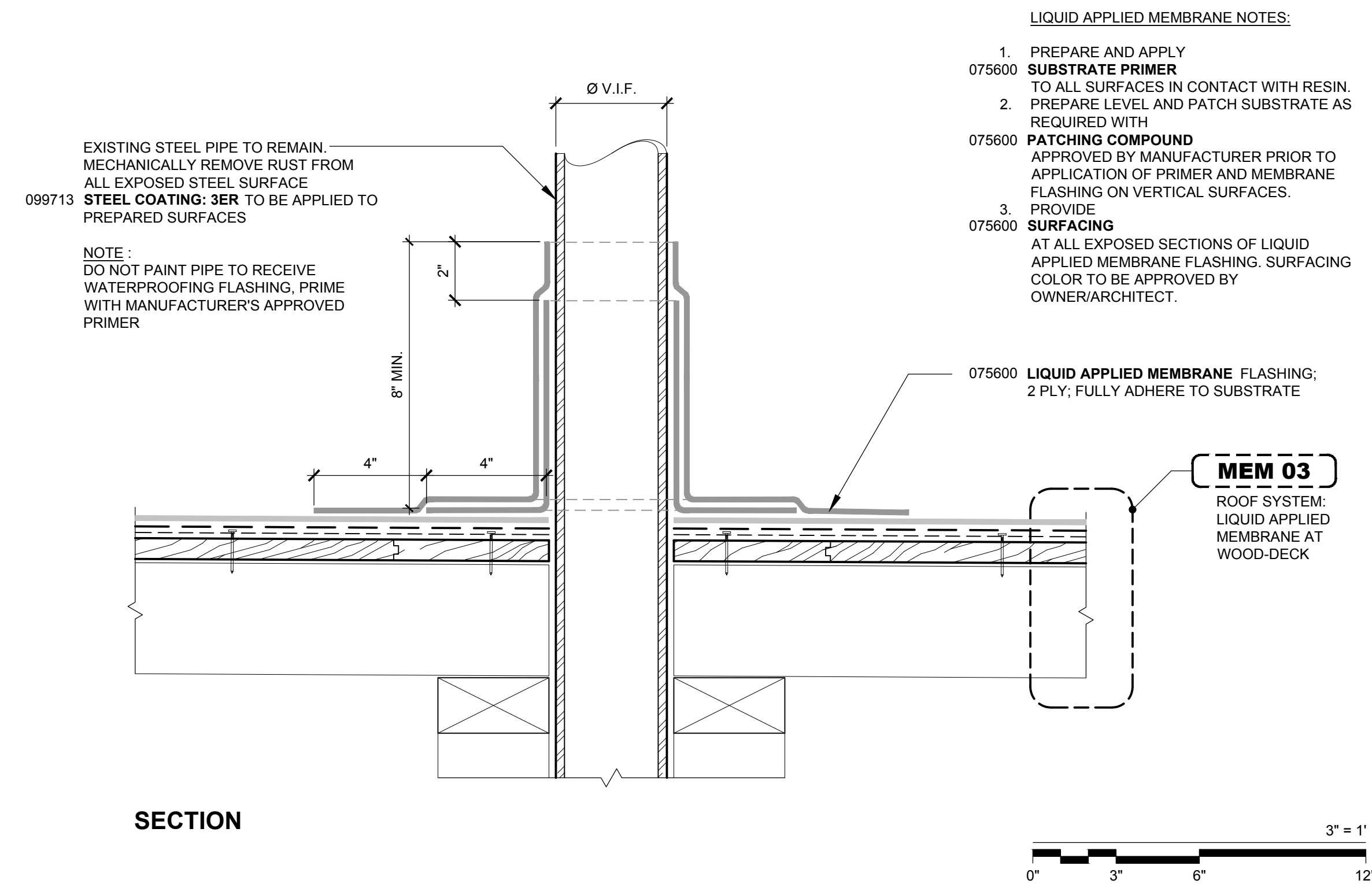
**FLA 32 PENETRATION FLASHING - FAN CURB (EA)**



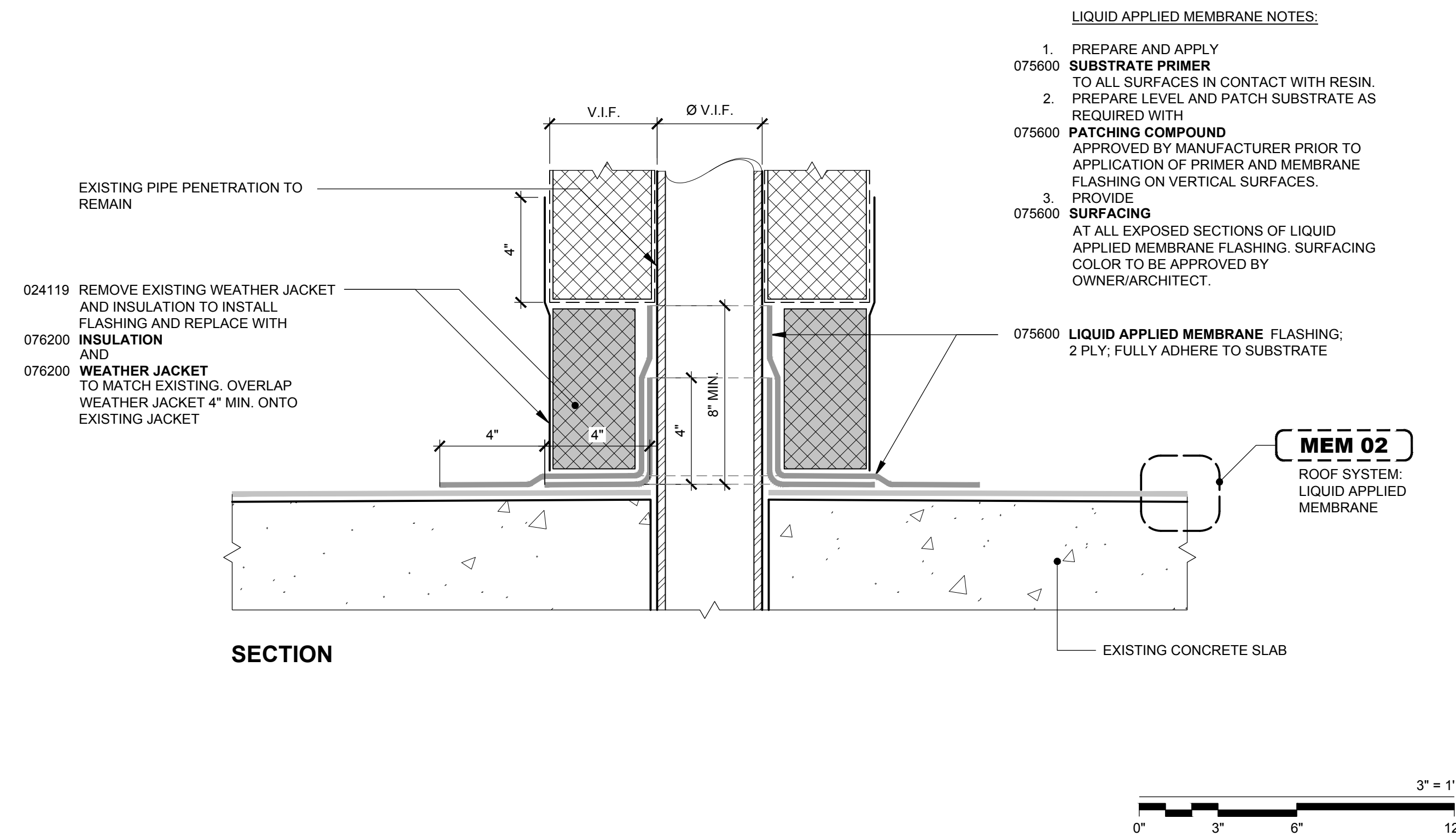


Key/ Location plan

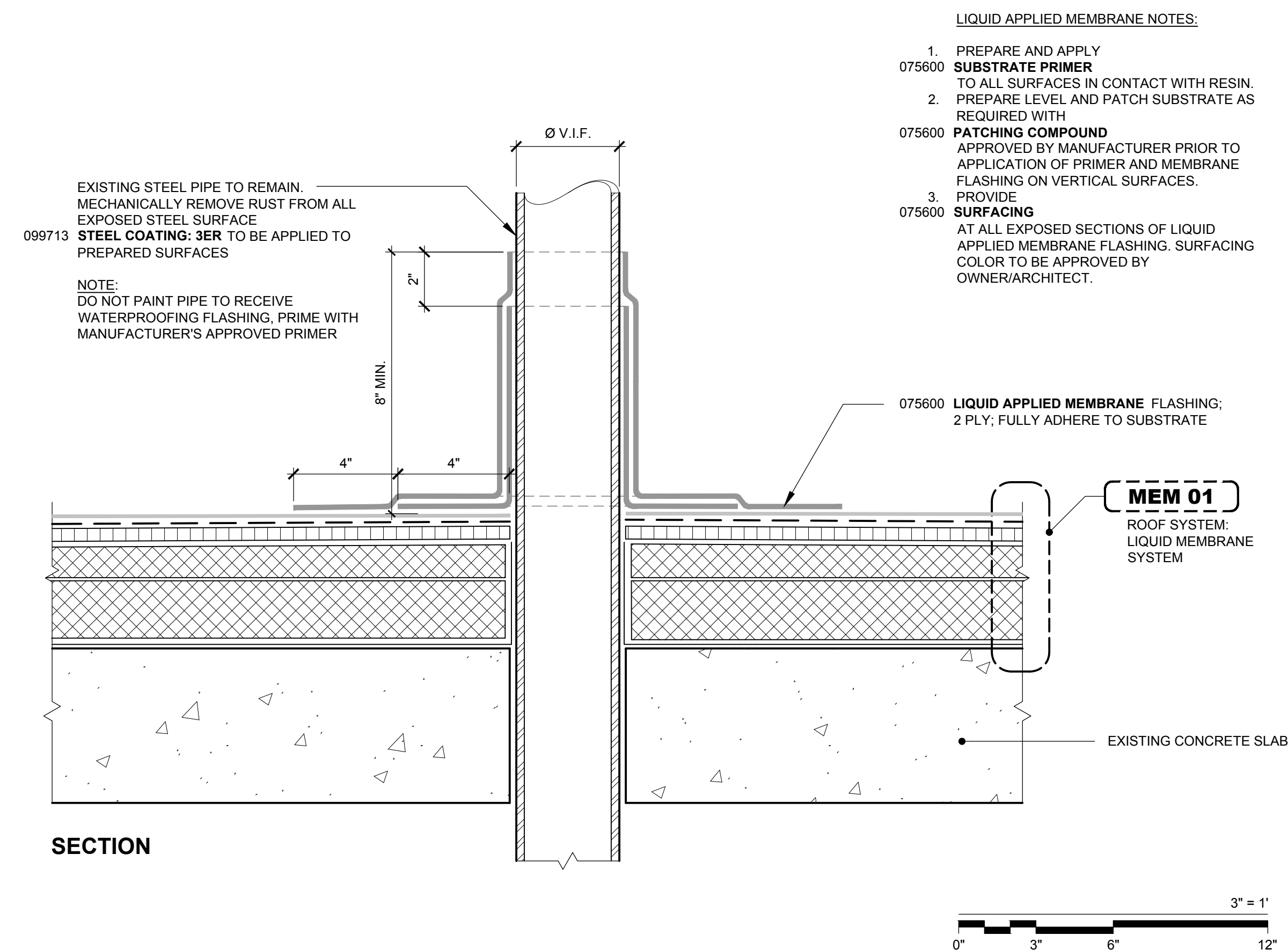
Seal / Signature:	Issue Date: 12.04.2018
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	Drawing No.: <b>A51900</b>
	Sheet 34 of 64



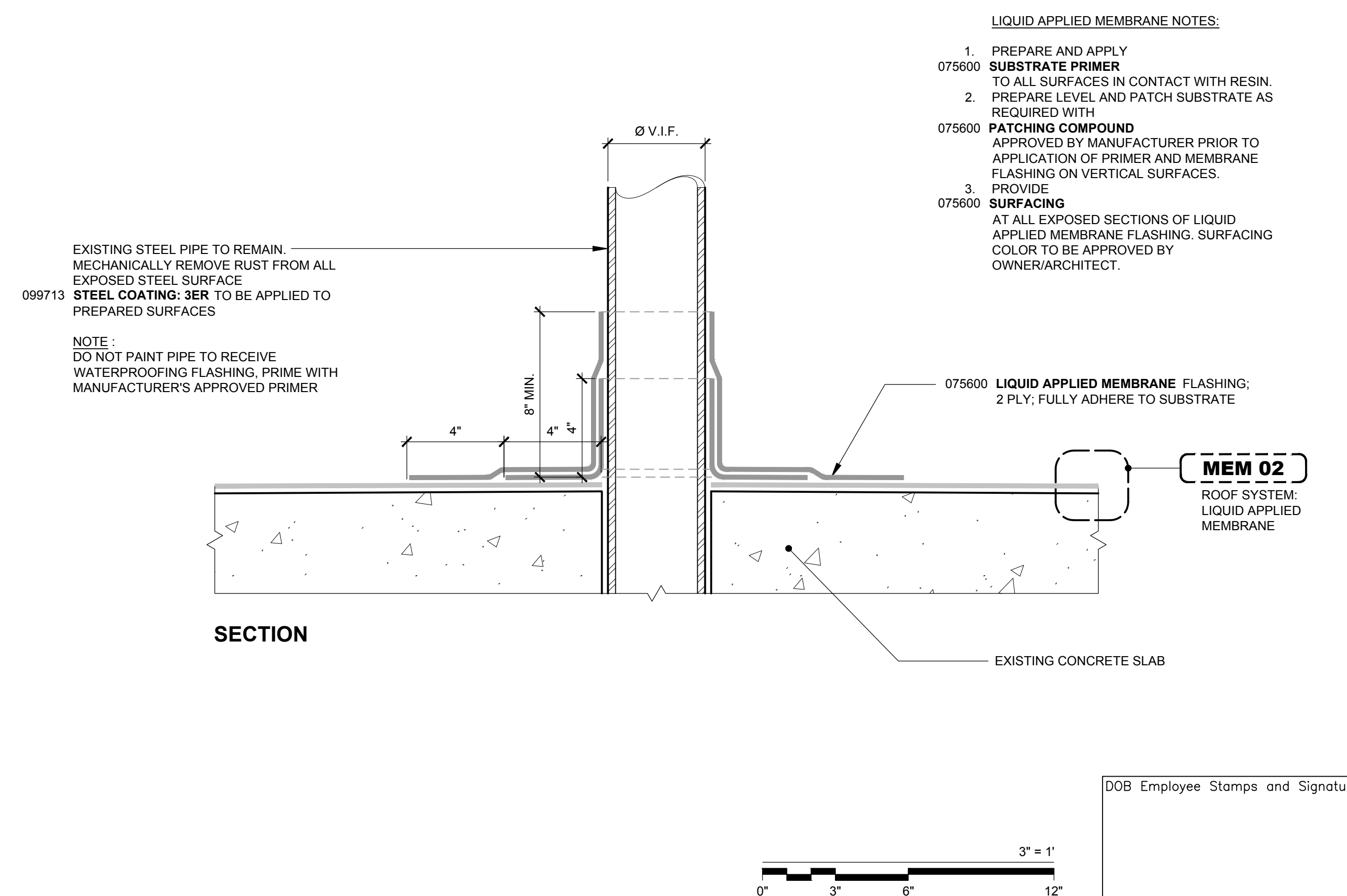
**FLA 37 PENETRATION FLASHING - PIPE, WOOD DECK (EA)**



**FLA 38 PENETRATION FLASHING - INSULATED PIPE (EA)**

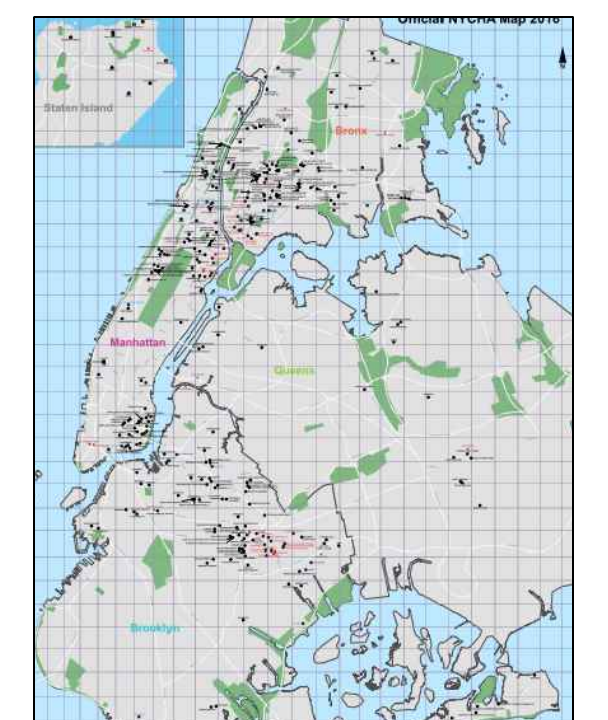


**FLA 35 PENETRATION FLASHING - PIPE (EA)**

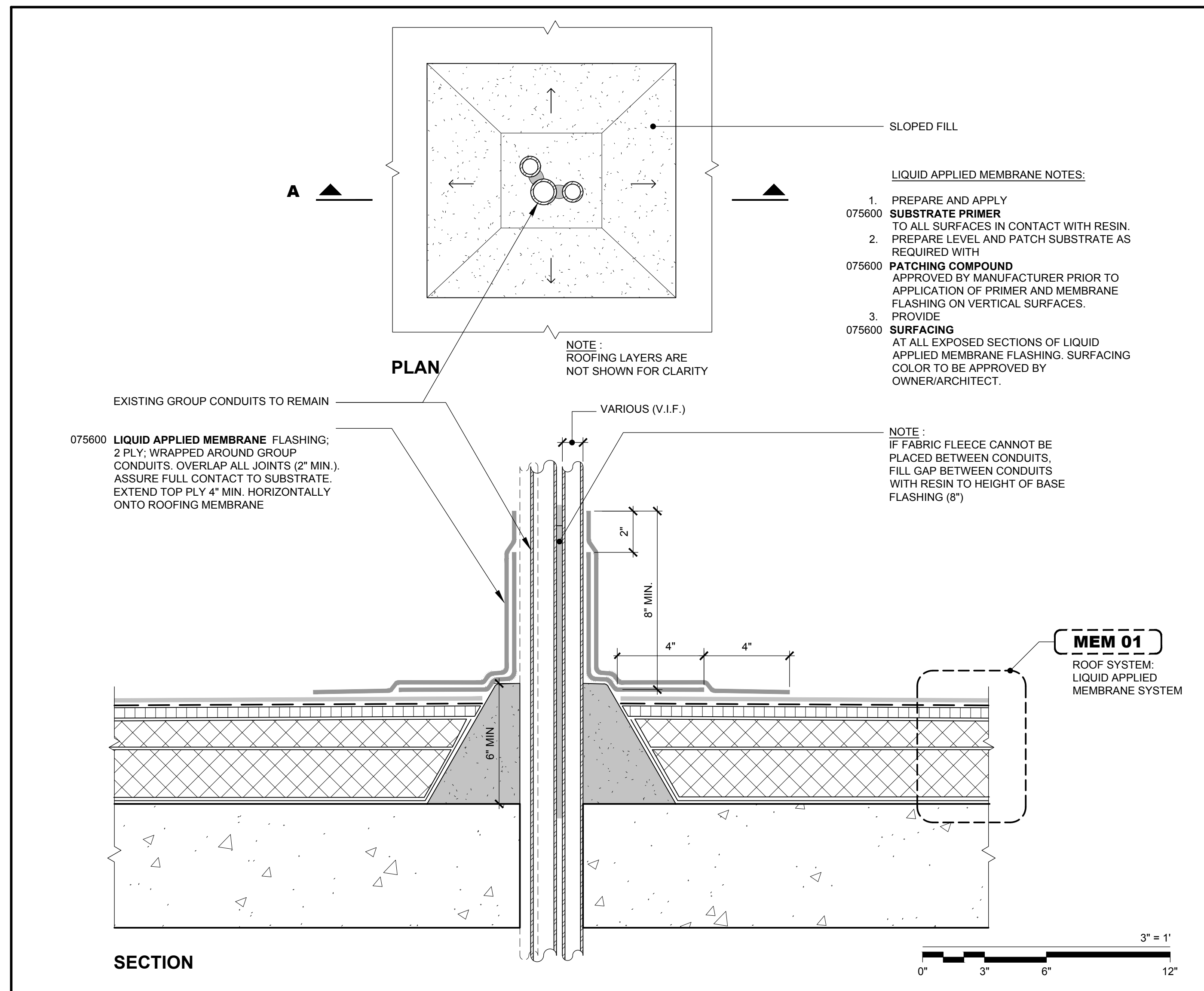


**FLA 36 PENETRATION FLASHING - PIPE, LIQUID (EA)**

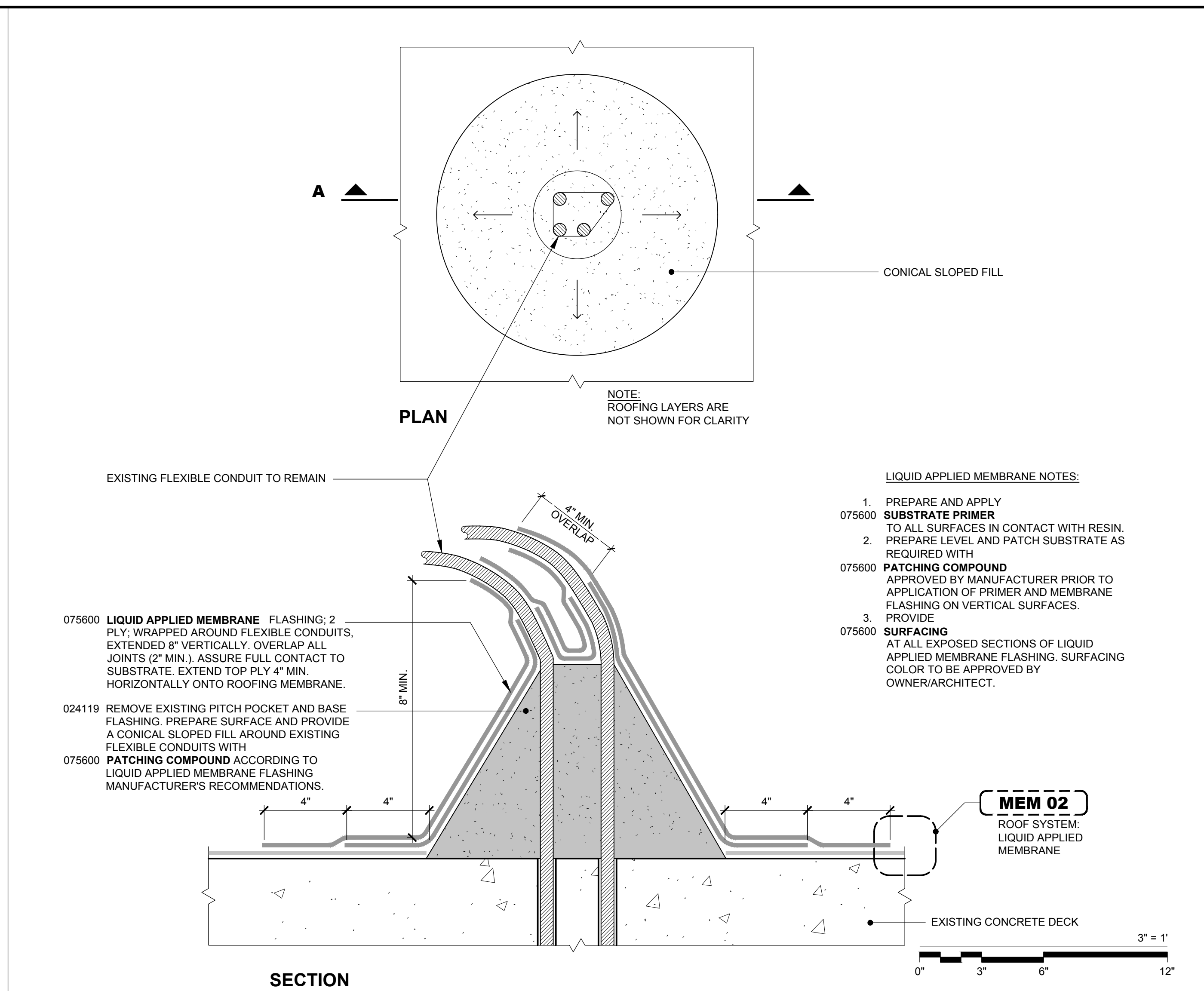
DOB Employee Stamps and Signatures



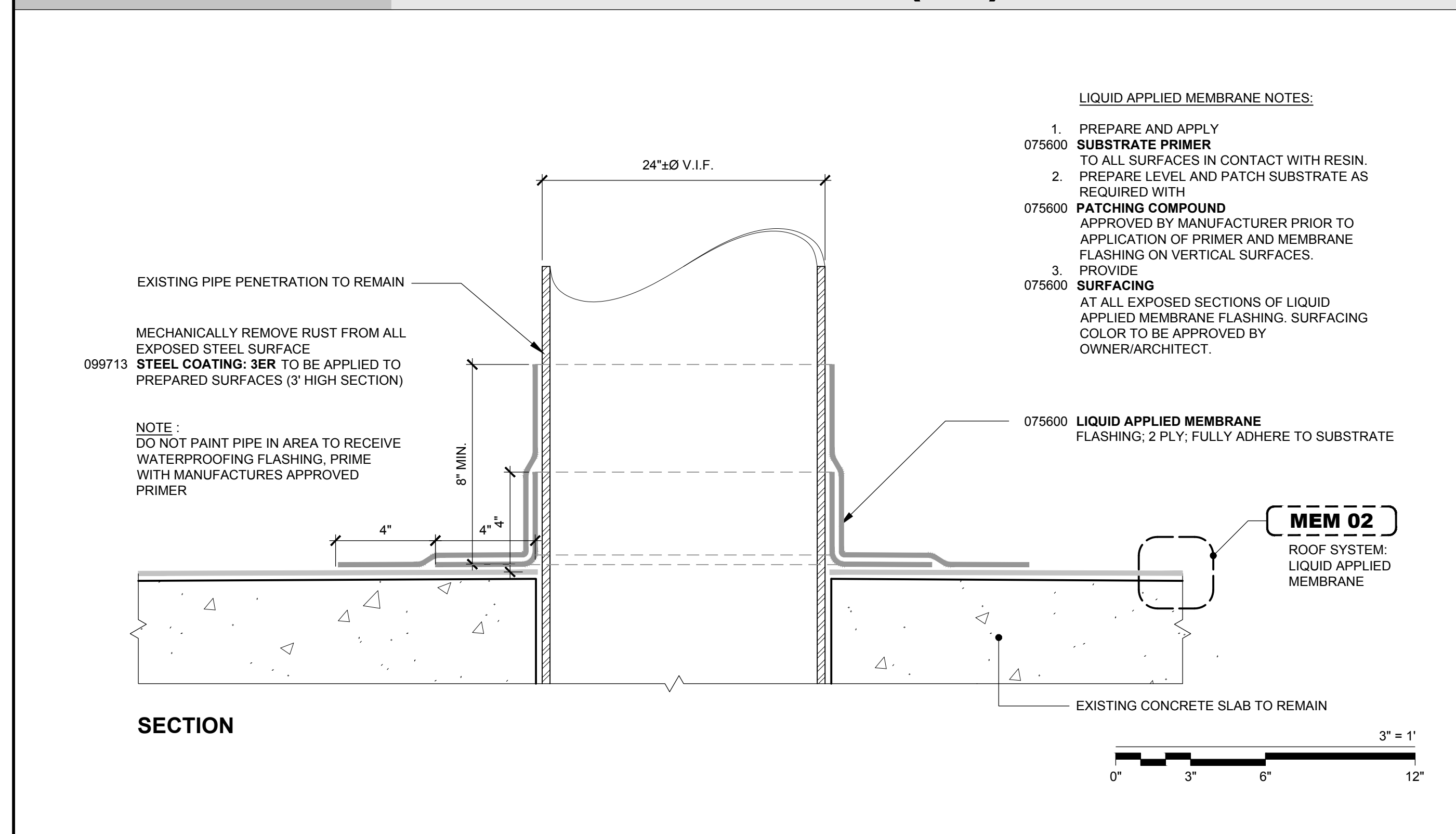
Key/ Location plan



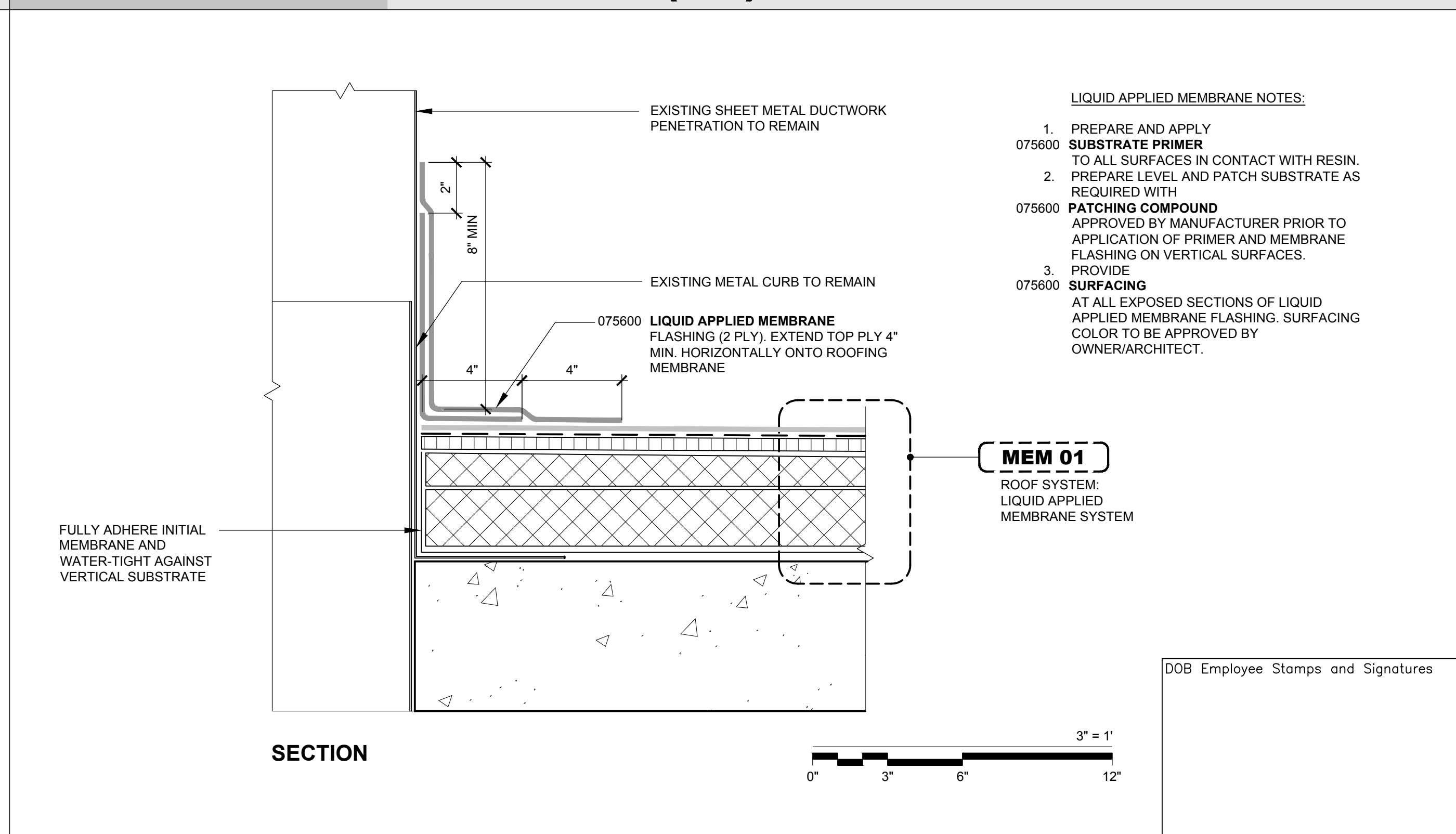
**FLA 41 PENETRATION FLASHING - IRREGULARLY SHAPED / CONDUIT (EA)**



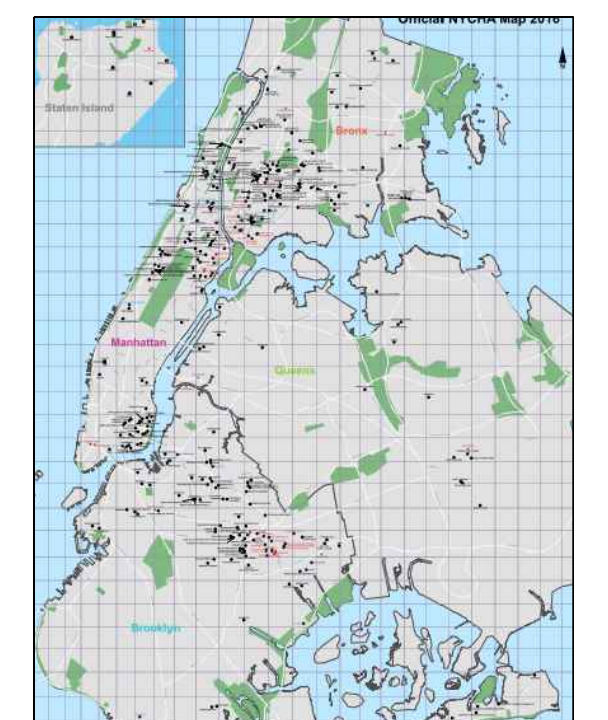
**FLA 42 PENETRATION FLASHING - FLEXIBLE CONDUIT (EA)**



**FLA 39 PENETRATION FLASHING - LARGE PIPE (EA)**



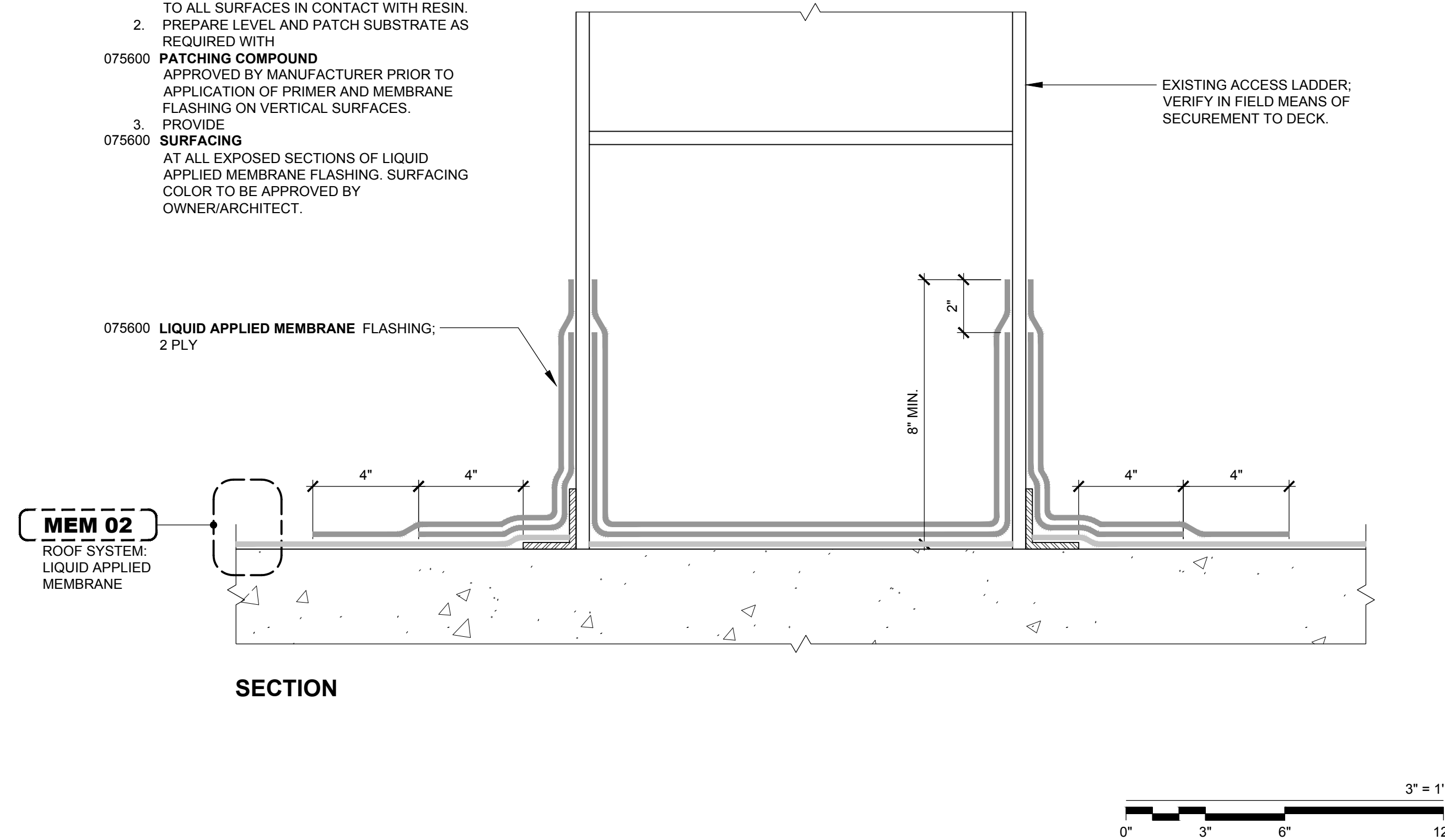
**FLA 40 PENETRATION FLASHING - DUCTWORK (LF)**



Key/ Location plan

**LIQUID APPLIED MEMBRANE NOTES:**

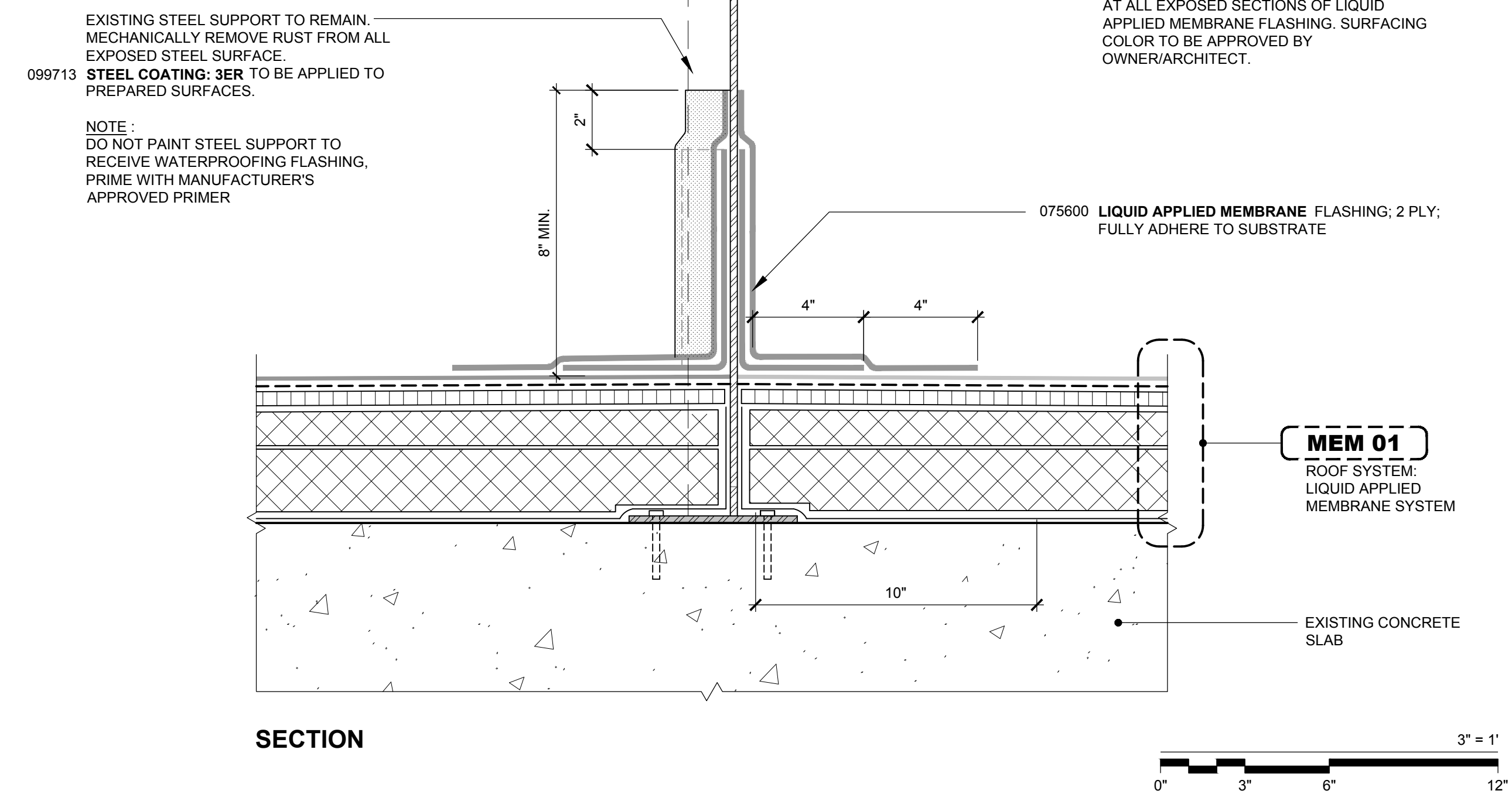
1. PREPARE AND APPLY  
 075600 **SUBSTRATE PRIMER**  
 TO ALL SURFACES IN CONTACT WITH RESIN.  
 PREPARE LEVEL AND PATCH SUBSTRATE AS  
 REQUIRED WITH
2. 075600 **PATCHING COMPOUND**  
 APPROVED BY MANUFACTURER PRIOR TO  
 APPLICATION OF PRIMER AND MEMBRANE  
 FLASHING ON VERTICAL SURFACES.
3. PROVIDE  
 075600 **SURFACING**  
 AT ALL EXPOSED SECTIONS OF LIQUID  
 APPLIED MEMBRANE FLASHING. SURFACING  
 COLOR TO BE APPROVED BY  
 OWNER/ARCHITECT.



**FLA 45 LADDER PENETRATION FLASHING (EA)**

**LIQUID APPLIED MEMBRANE NOTES:**

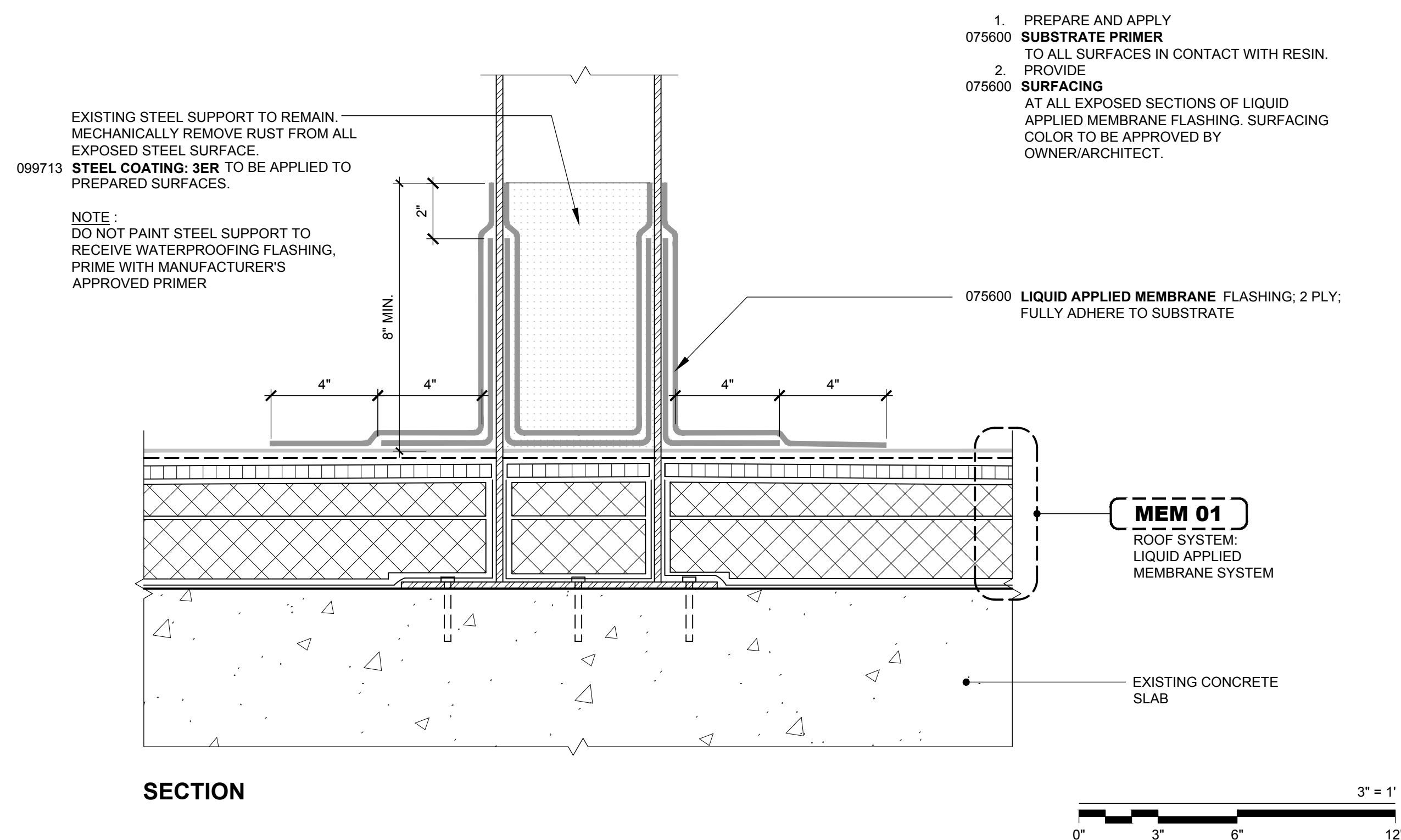
1. PREPARE AND APPLY  
 075600 **SUBSTRATE PRIMER**  
 TO ALL SURFACES IN CONTACT WITH RESIN.
2. PROVIDE  
 075600 **SURFACING**  
 AT ALL EXPOSED SECTIONS OF LIQUID  
 APPLIED MEMBRANE FLASHING. SURFACING  
 COLOR TO BE APPROVED BY  
 OWNER/ARCHITECT.



**FLA 46 DUCT SUPPORT ANGLE FLASHING (EA)**

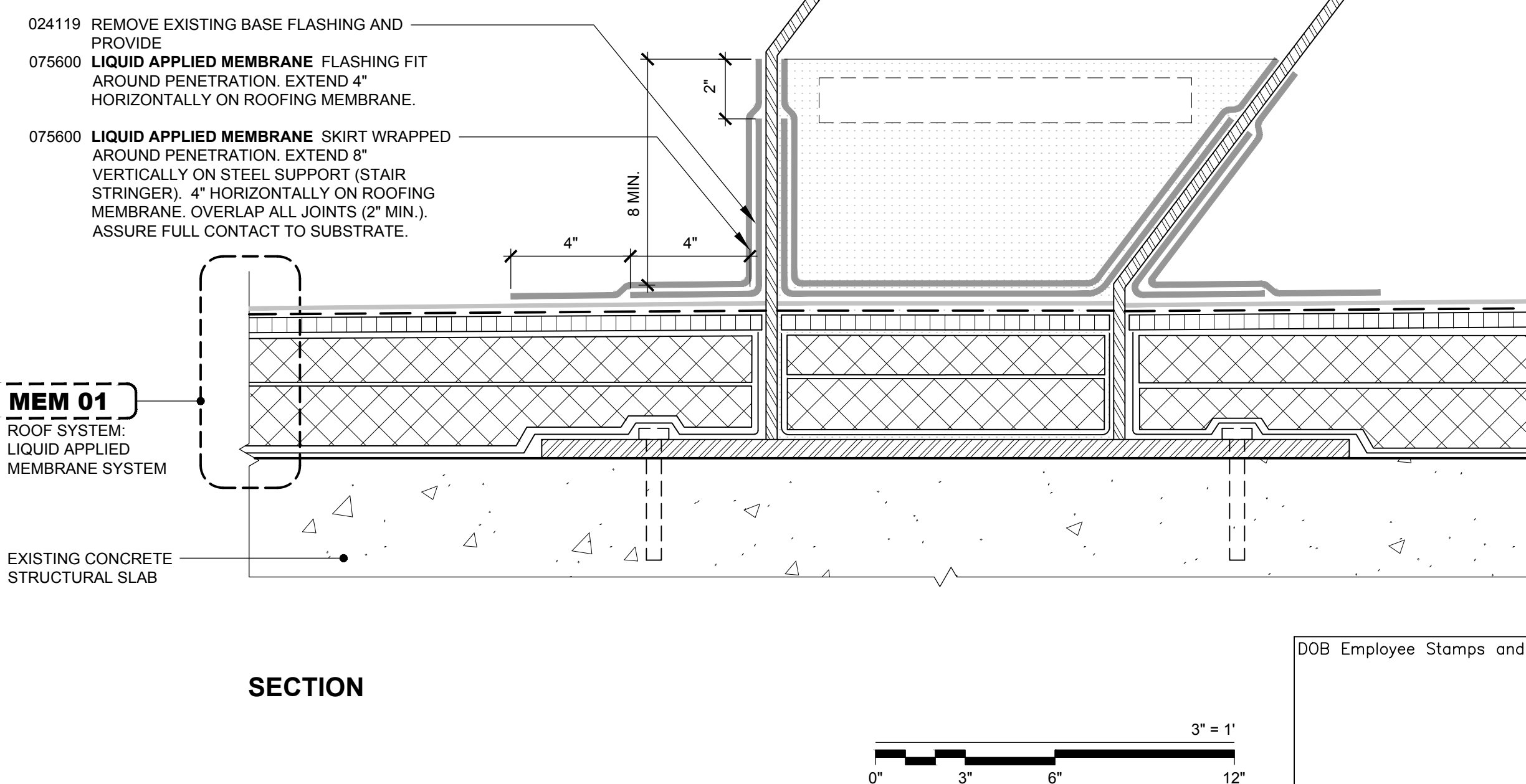
**LIQUID APPLIED MEMBRANE NOTES:**

1. PREPARE AND APPLY  
 075600 **SUBSTRATE PRIMER**  
 TO ALL SURFACES IN CONTACT WITH RESIN.
2. PROVIDE  
 075600 **SURFACING**  
 AT ALL EXPOSED SECTIONS OF LIQUID  
 APPLIED MEMBRANE FLASHING. SURFACING  
 COLOR TO BE APPROVED BY  
 OWNER/ARCHITECT.



**FLA 43 DUNNAGE SUPPORT WIDE FLANGE FLASHING (EA)**

- 099713 EXISTING STAIR SUPPORT. MECHANICALLY REMOVE RUST FROM ALL EXPOSED STEEL SURFACE.
- 099713 **STEEL COATING: 3ER** TO BE APPLIED TO PREPARED SURFACES (ENTIRE EXISTING STAIR SYSTEM)
- NOTE : DO NOT PAINT STEEL SURFACE TO RECEIVE WATERPROOFING FLASHING. PRIME WITH MANUFACTURER'S APPROVED PRIMER



**FLA 44 STAIR SUPPORT FLASHING (EA)**

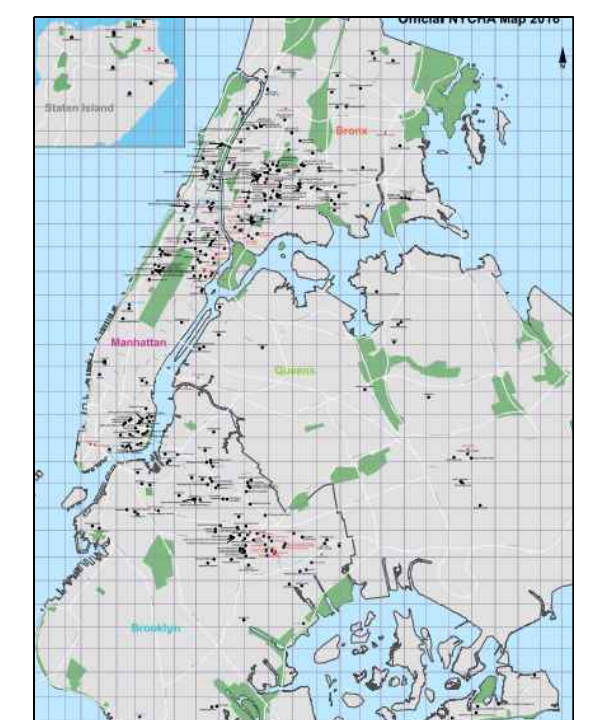
DOB Employee Stamps and Signatures

Date: Revision:

Date: Submissions:

**NEW YORK CITY HOUSING AUTHORITY**  
**DESIGN DEPARTMENT**  
 90 Church Street 10th floor, New York, NY 10007  
 Tel 212 306-3000 Fax (call)

Development: VARIOUS  
 Bldg. Addresses:  
 Building No.: Oracle No:  
 Borough of: CITYWIDE



Key/ Location plan

Zoning Map: Zone:  
 Block No.: Lot No.:  
 Development No.: VARIOUS E.D.P. No.:

Contract Title:  
**ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

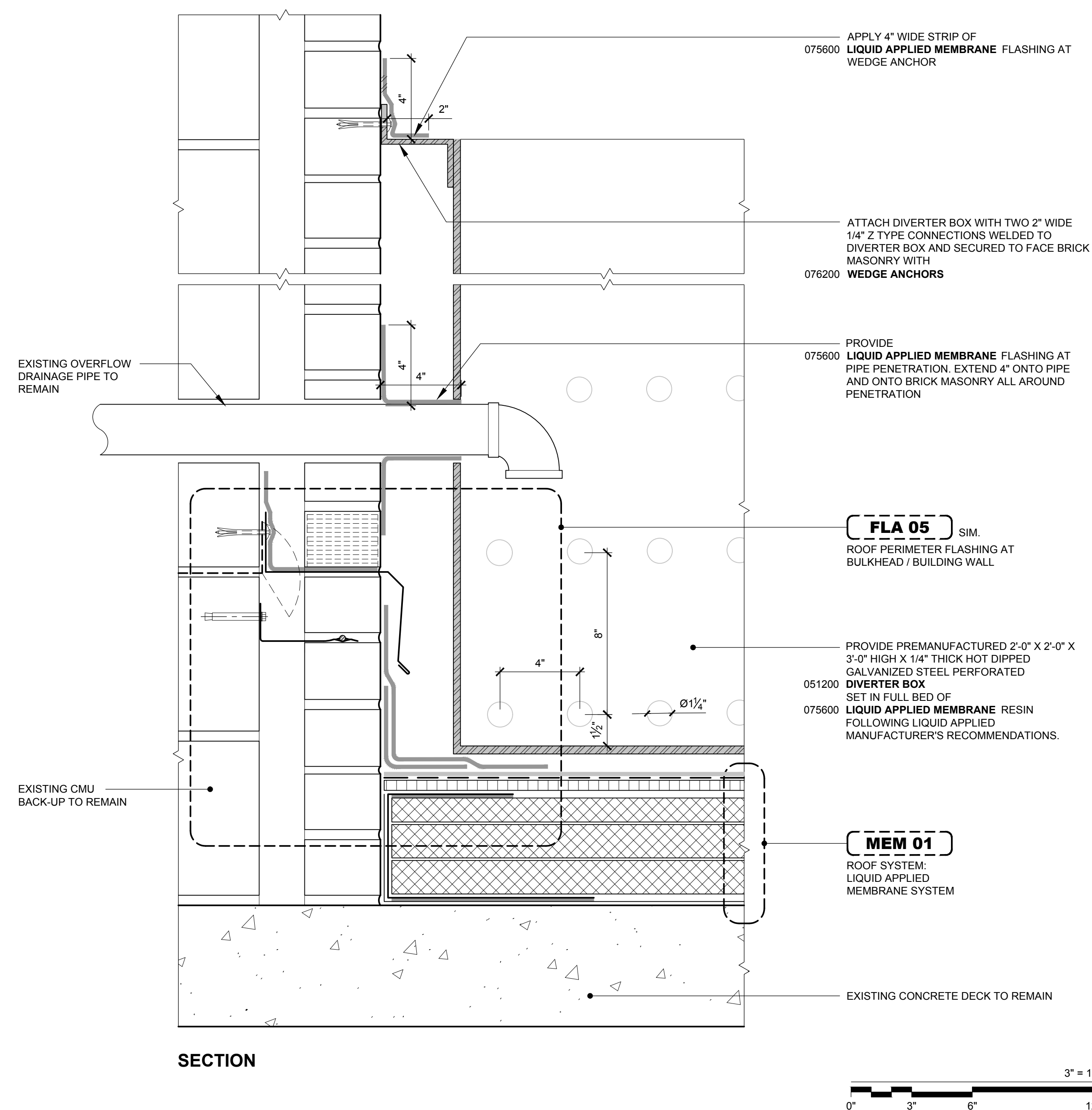
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 FLA 47, FLA 48

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.:
	<b>A522.00</b>
	Sheet 37 of 64

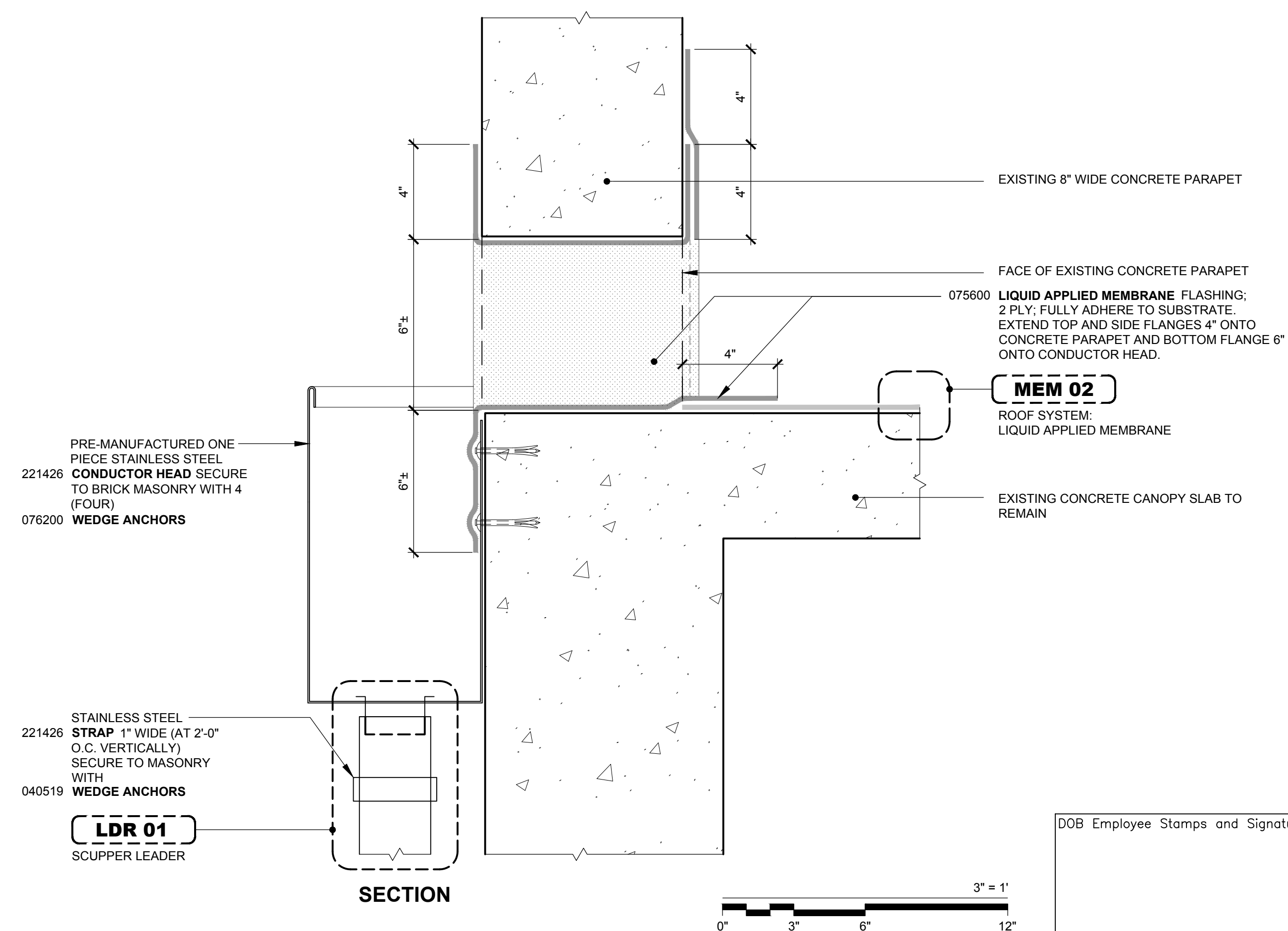
DOB BSCAN STICKER

**LIQUID APPLIED MEMBRANE NOTES:**

1. PREPARE AND APPLY  
 075600 **SUBSTRATE PRIMER**  
 TO ALL SURFACES IN CONTACT WITH RESIN.  
 PREPARE LEVEL AND PATCH SUBSTRATE AS  
 REQUIRED WITH
2. **PATCHING COMPOUND**  
 APPROVED BY MANUFACTURER PRIOR TO  
 APPLICATION OF PRIMER AND MEMBRANE  
 FLASHING ON VERTICAL SURFACES.
3. PROVIDE  
 075600 **SURFACING** AT ALL EXPOSED SECTIONS OF  
 LIQUID APPLIED MEMBRANE FLASHING.  
 SURFACING COLOR TO BE APPROVED BY  
 OWNER/ARCHITECT.



**FLA 47 DIVERTER REPLACEMENT (EA)**



**FLA 48 SCUPPER FLASHING AT WATER TOWER (EA)**

DOB Employee Stamps and Signatures

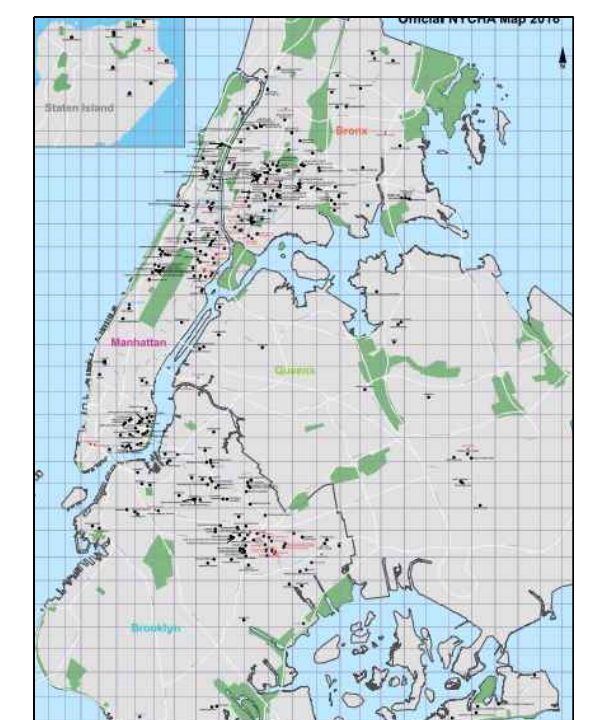


Date: Revision:

Date: Submissions:

**NEW YORK CITY HOUSING AUTHORITY**  
**DESIGN DEPARTMENT**  
 90 Church Street 10th floor, New York, NY 10007  
 Tel 212 306-3000 Fax (call)

Development: VARIOUS  
 Bldg. Addresses:  
 Building No: Oracle No:  
 Borough of: CITYWIDE



Key/ Location plan

Zoning Map: Zone:  
 Block No.: Lot No.:  
 Development No.: VARIOUS E.D.P No.:

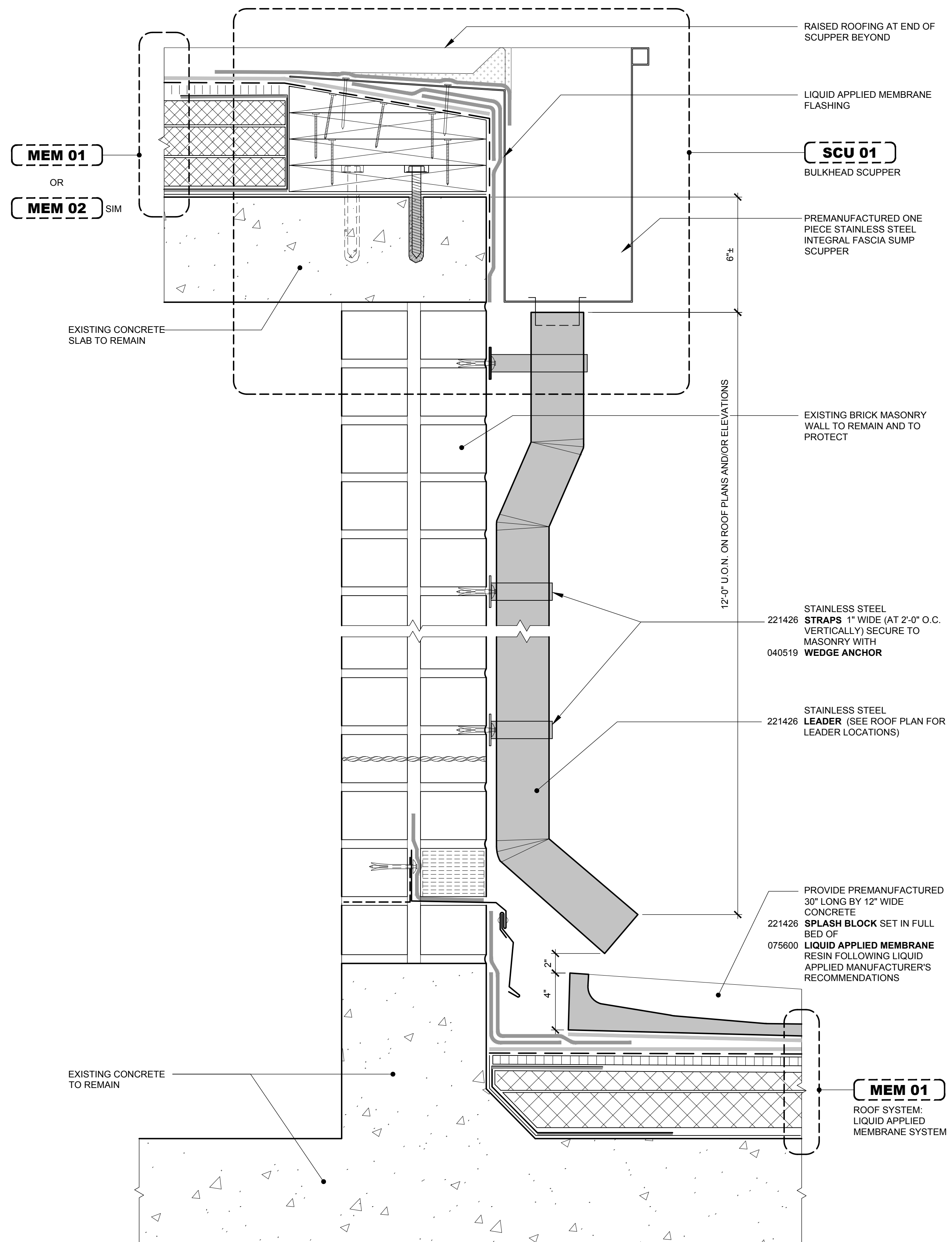
Contract Title:  
**ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

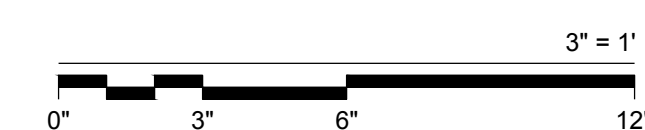
Drawing Title: Restoration Details:  
 LDR 01, LDR 02

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>A523.00</b>
	Sheet 38 of 64

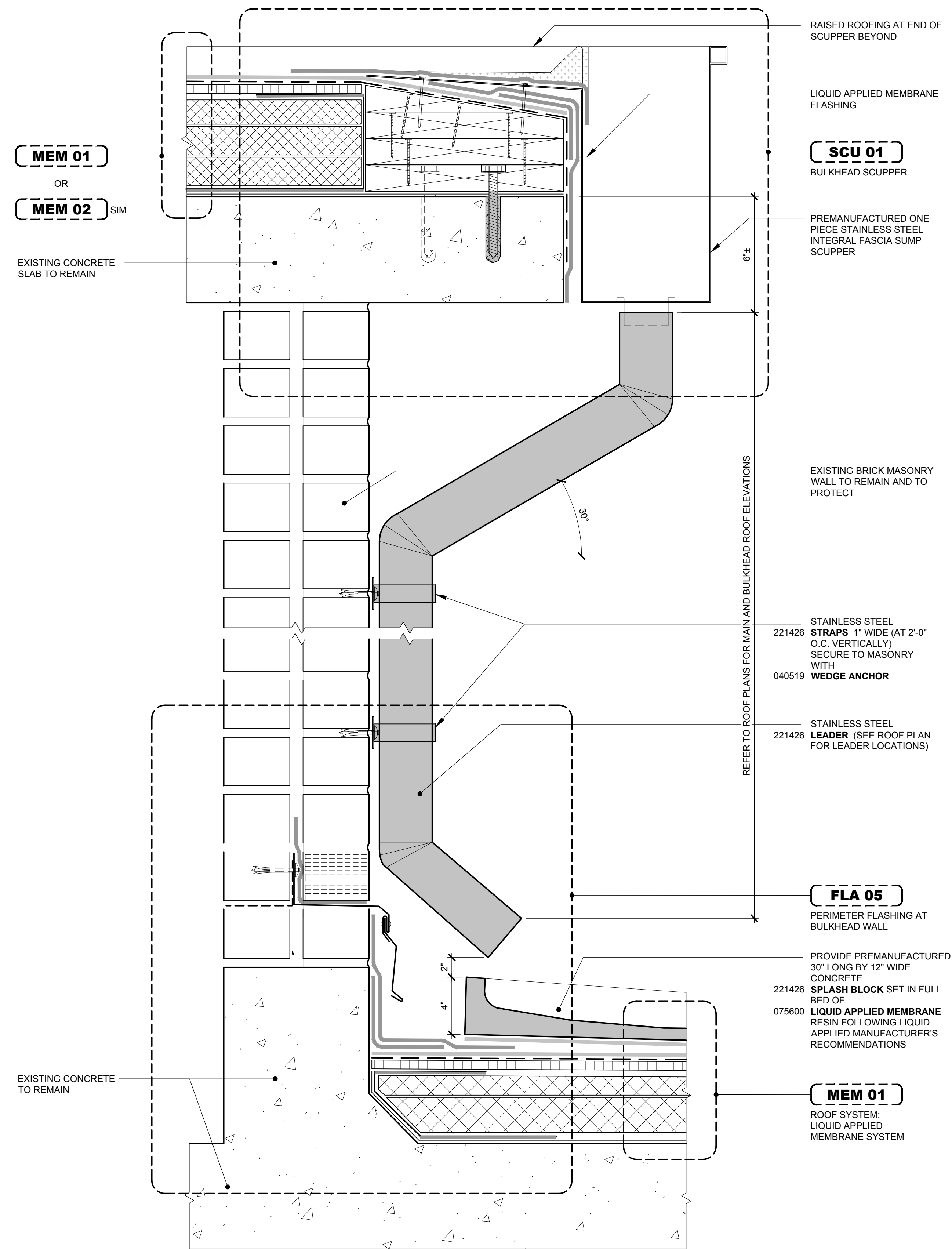
DOB BSCAN STICKER



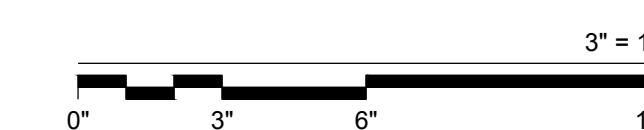
SECTION



**LDR 01 SCUPPER LEADER (EA)**

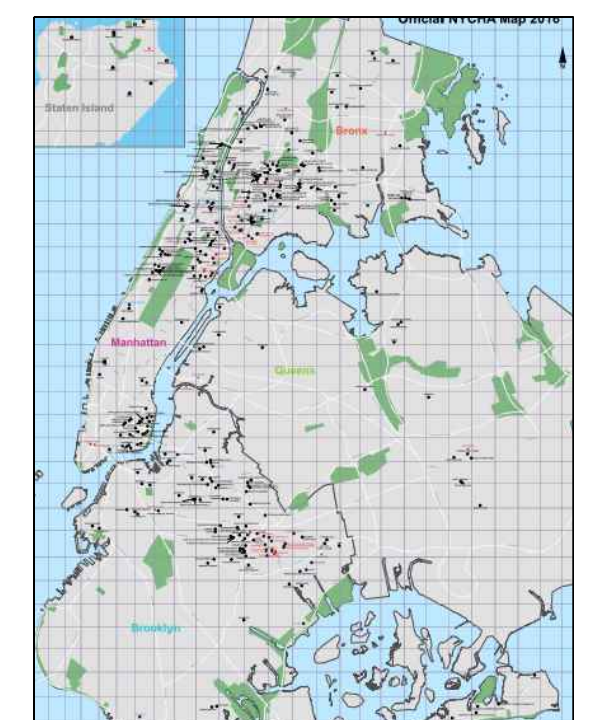


SECTION



**LDR 02 SCUPPER LEADER AT PROJECTING SLAB (EA)**

DOB Employee Stamps and Signatures



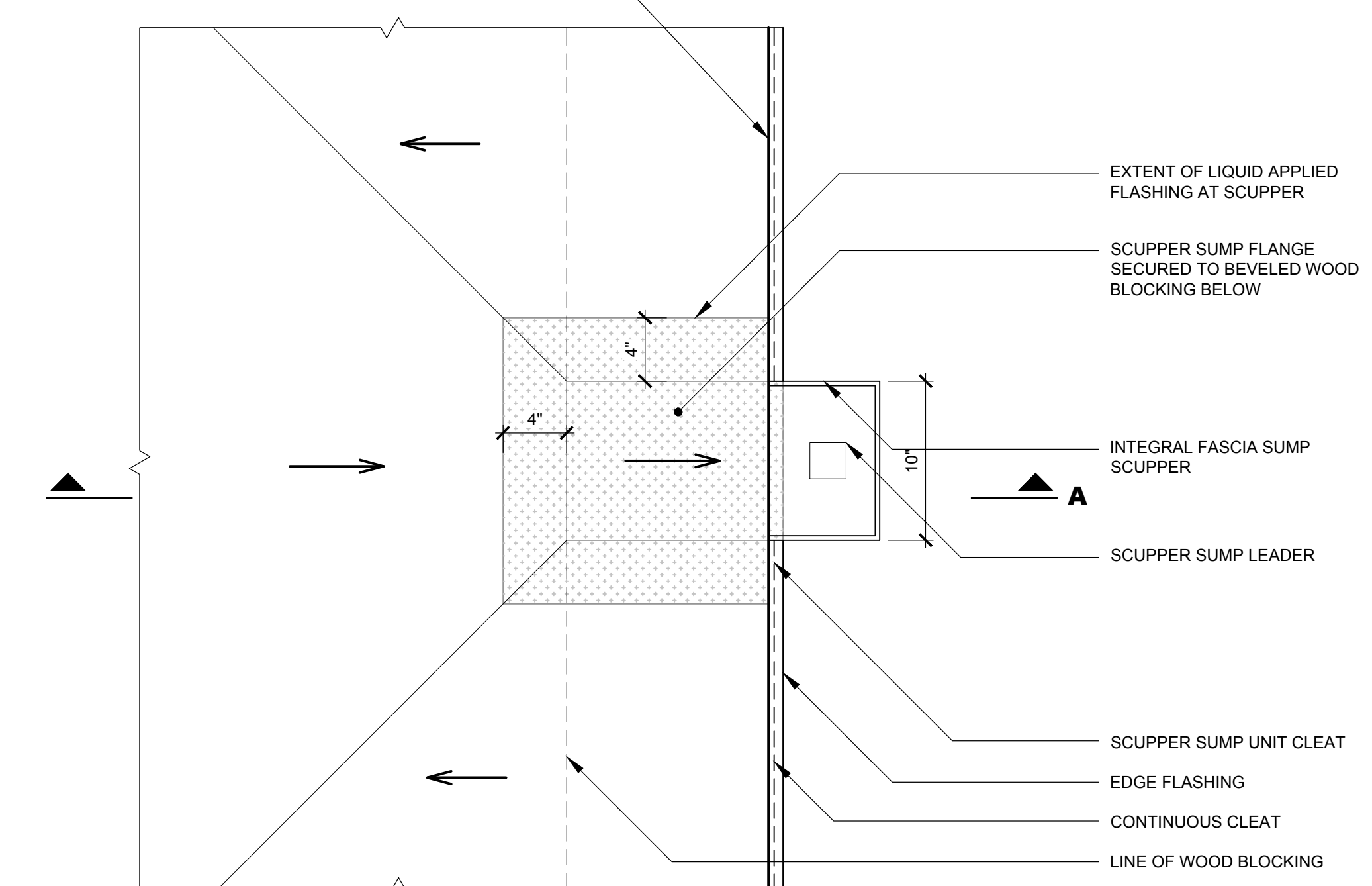
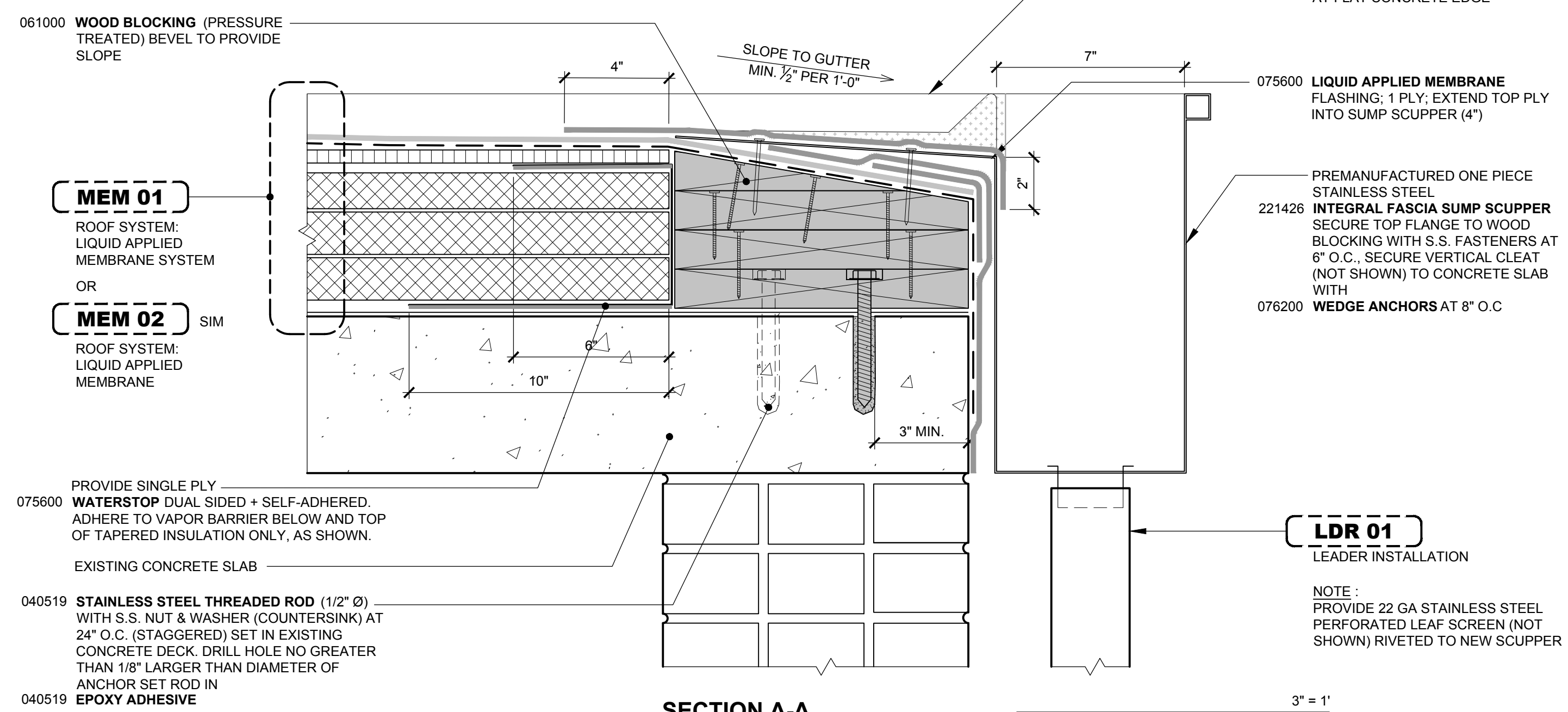
Key/ Location plan

**LIQUID APPLIED MEMBRANE NOTES:**

1. PREPARE AND APPLY  
 075600 **SUBSTRATE PRIMER**  
 TO ALL SURFACES IN CONTACT WITH RESIN.
2. PROVIDE  
 075600 **SURFACING**  
 AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING  
 COLOR TO BE APPROVED BY OWNER/ARCHITECT.

**GENERAL NOTES:**

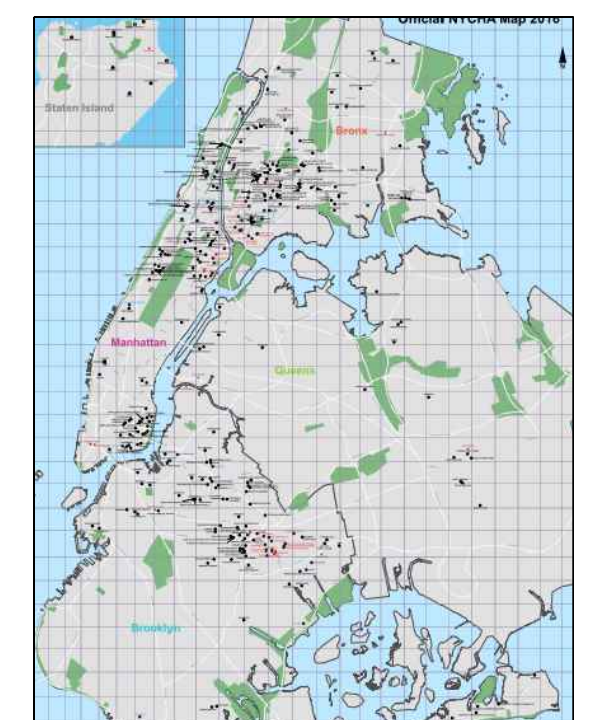
TEMPORARILY DISCONNECT EXISTING CONDUIT, PIPES, ETC. AS  
 REQUIRED TO INSTALL NEW ROOF FLASHING. RECONNECT AFTER  
 NEW FLASHING IS IN PLACE. RECONNECTION SHALL BE DONE BY  
 NYS LICENSED PLUMBER/ELECTRICIAN AND COORDINATED WITH  
 FACILITIES (TYP.).



**SECTION A-A** 3" = 1'  
 0' 3' 6' 12'

**PLAN** 1-1/2" = 1'  
 0' 6' 12'

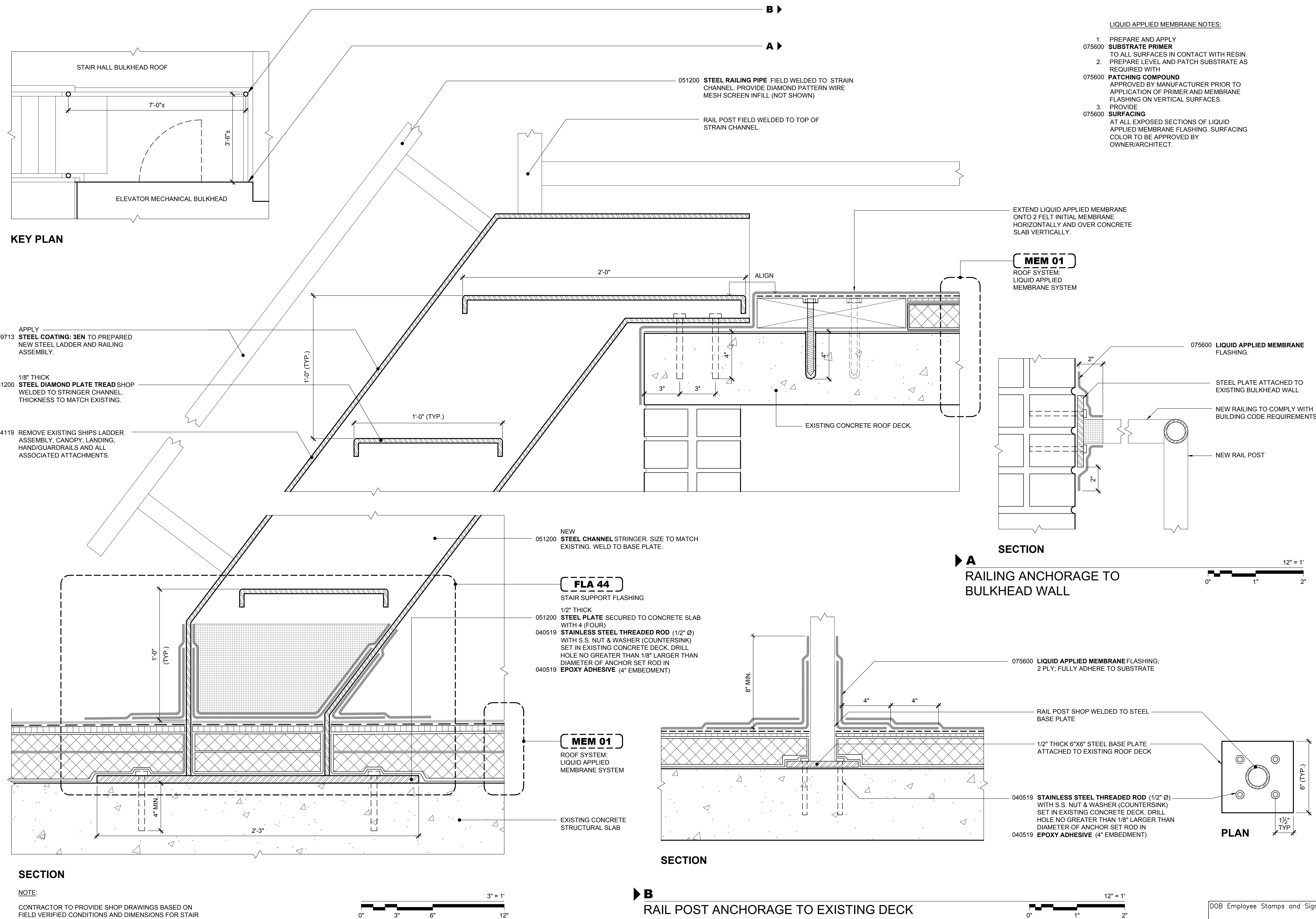
**SCU 01 BULKHEAD ROOF EDGE SCUPPER AND FLASHING (EA)**



Key/ Location plan

**LIQUID APPLIED MEMBRANE NOTES:**

1. PREPARE AND APPLY **075600 SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **075600 PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
3. PROVIDE **075600 SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.



**KEY PLAN**

**MEM 01**  
 ROOF SYSTEM:  
 LIQUID APPLIED  
 MEMBRANE SYSTEM

**SECTION A**

**RAILING ANCHORAGE TO BULKHEAD WALL**

**SECTION B**

**RAIL POST ANCHORAGE TO EXISTING DECK**

**SECTION**

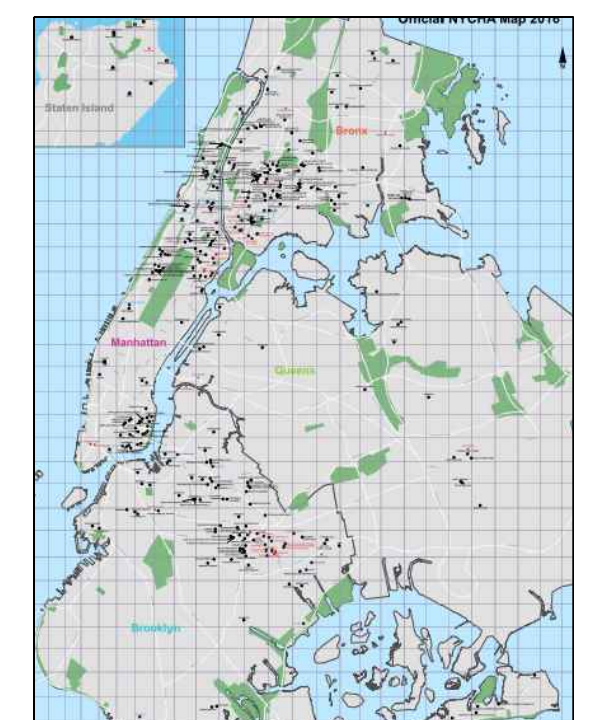
NOTE:  
 CONTRACTOR TO PROVIDE SHOP DRAWINGS BASED ON FIELD VERIFIED CONDITIONS AND DIMENSIONS FOR STAIR DESIGN AND CUSTOMIZATION.

Date: Revision:

Date: Submissions:

**NEW YORK CITY HOUSING AUTHORITY**  
**DESIGN DEPARTMENT**  
 90 Church Street 10th floor, New York, NY 10007  
 Tel 212 306-3000 Fax (call)

Development: VARIOUS  
 Bldg. Addresses:  
 Building No.: Oracle No:  
 Borough of: CITYWIDE



Key/ Location plan

Zoning Map: Zone:  
 Block No.: Lot No.:  
 Development No.: VARIOUS E.D.P. No.:

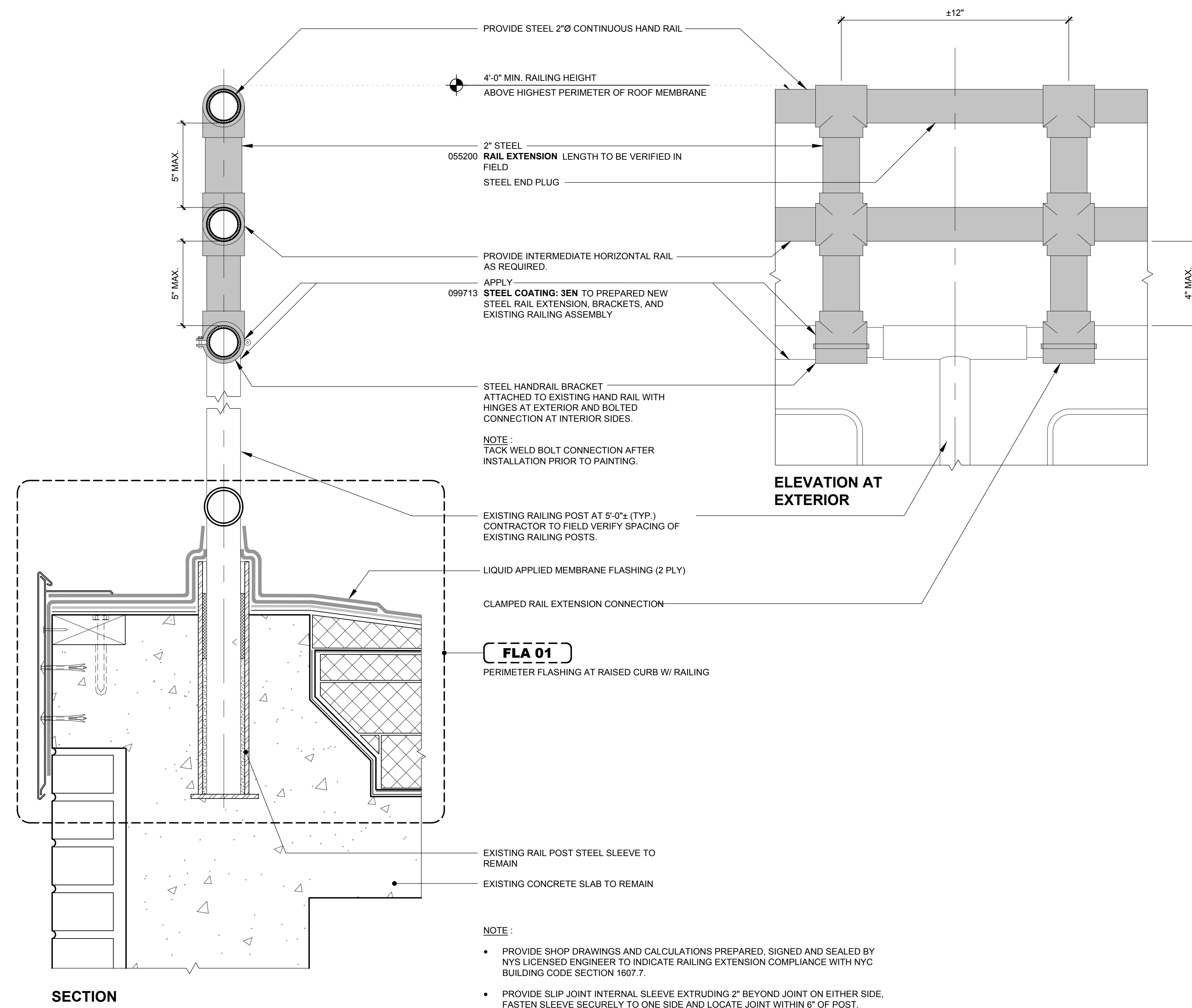
Contract Title:  
**ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

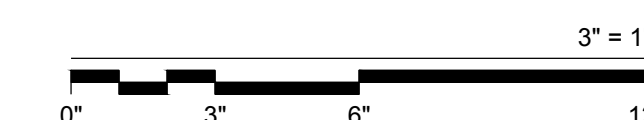
Drawing Title: Restoration Details:  
 EXT 01

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>A526.00</b> Sheet 41 of 64

DOB BSCAN STICKER

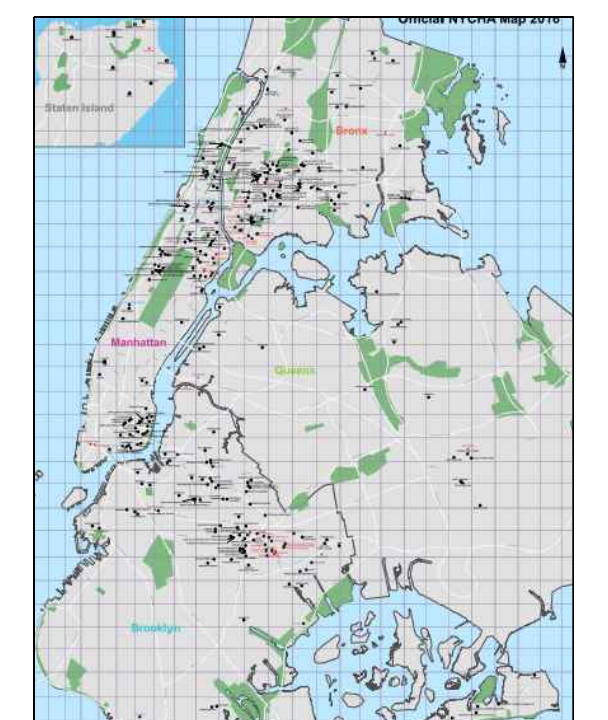


- NOTE:**
- PROVIDE SHOP DRAWINGS AND CALCULATIONS PREPARED, SIGNED AND SEALED BY NYS LICENSED ENGINEER TO INDICATE RAILING EXTENSION COMPLIANCE WITH NYC BUILDING CODE SECTION 1607.7.
  - PROVIDE SLIP JOINT INTERNAL SLEEVE EXTRUDING 2" BEYOND JOINT ON EITHER SIDE. FASTEN SLEEVE SECURELY TO ONE SIDE AND LOCATE JOINT WITHIN 6" OF POST.

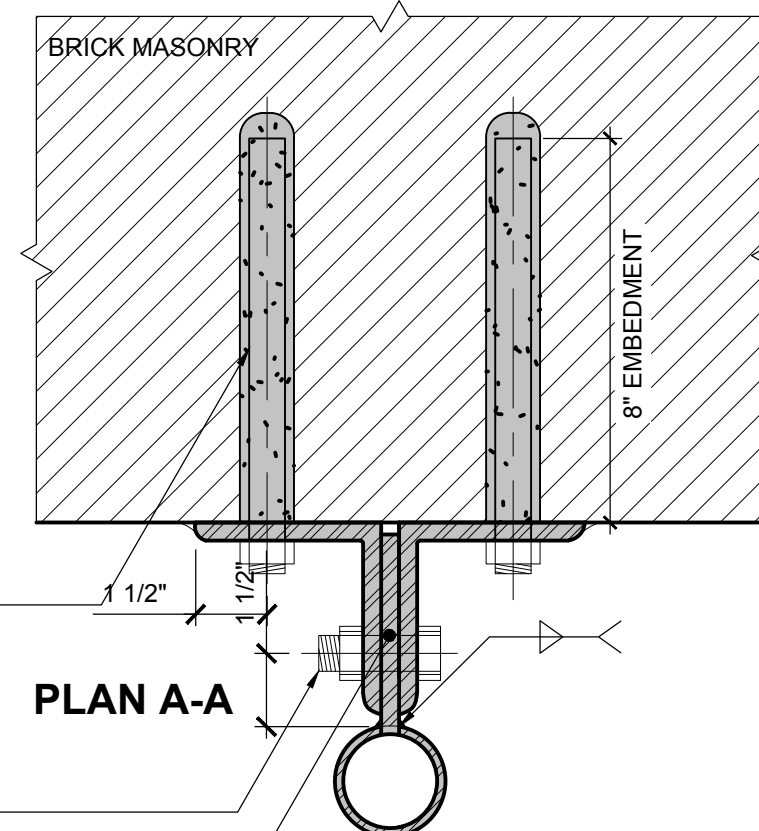
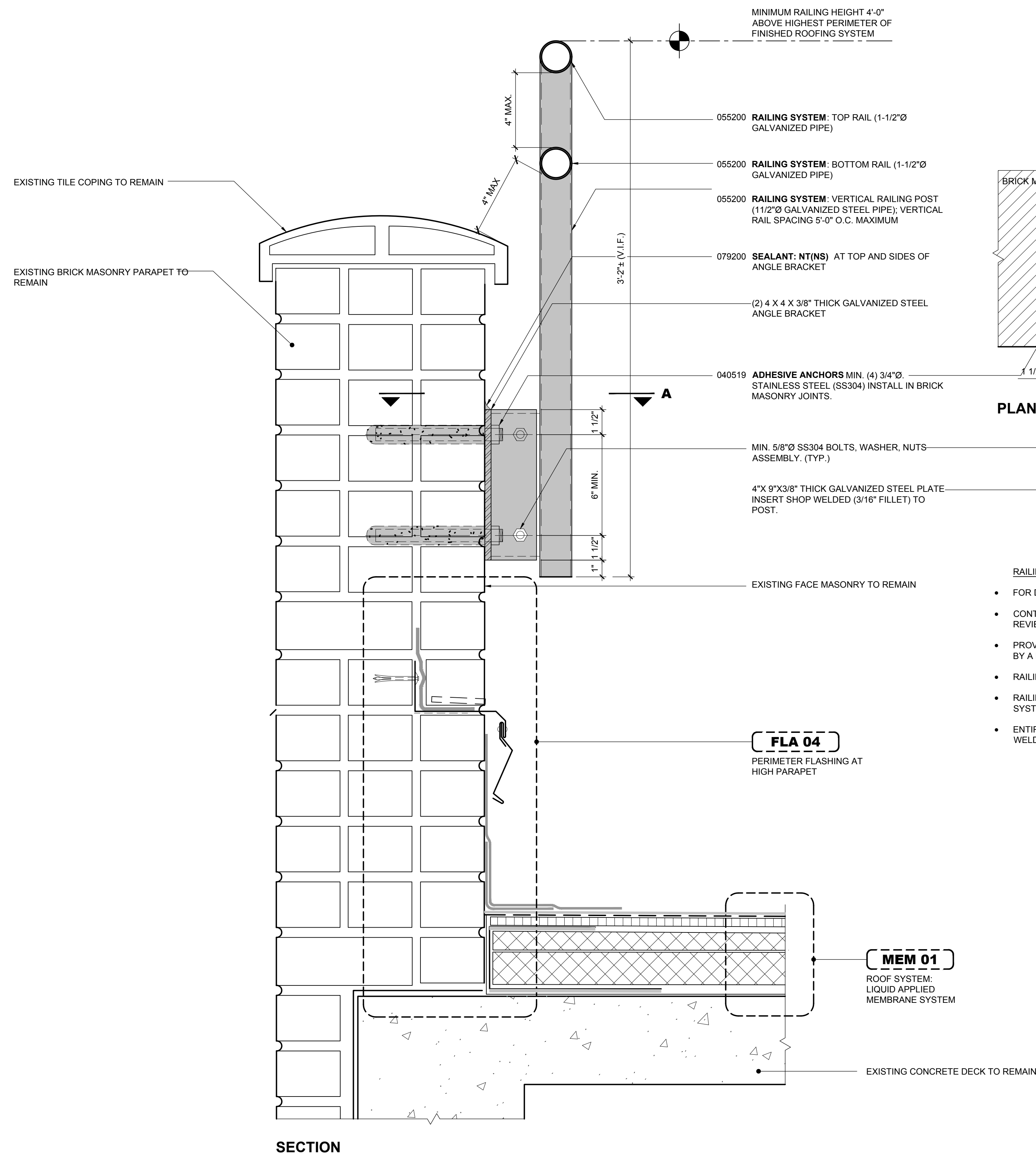


DOB Employee Stamps and Signatures

**EXT 01 EXISTING RAILING EXTENSION (LF)**



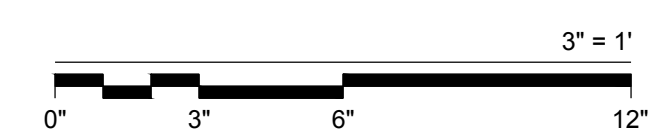
Key/ Location plan



- RAILING NOTES:**
- FOR DESIGN CRITERIA LOADS, SEE SPECIFICATION SECTION 055200, SECTION 1.04.B
  - CONTRACTOR TO PROVIDE SHOP DRAWINGS AND CALCULATIONS FOR RAILING, FOR REVIEW AND APPROVAL PRIOR TO RAILING FABRICATION.
  - PROVIDE RAILING SHOP DRAWINGS & STRUCTURAL CALCULATIONS, SIGNED & SEALED BY A PROFESSIONAL ENGINEER LICENSED IN N.Y. STATE.
  - RAILING SYSTEM SHALL COMPLY WITH 2014 NYC BUILDING CODE.
  - RAILING INSTALLATION MUST BE COORDINATED WITH REPLACEMENT OF THE ROOFING SYSTEM.
  - ENTIRE RAILING ASSEMBLY SHALL BE HOT DIP GALVANIZED. COMPONENTS SHALL BE WELDED AND FINISHED IN SHOP PRIOR TO HOT-DIP GALVANIZING.

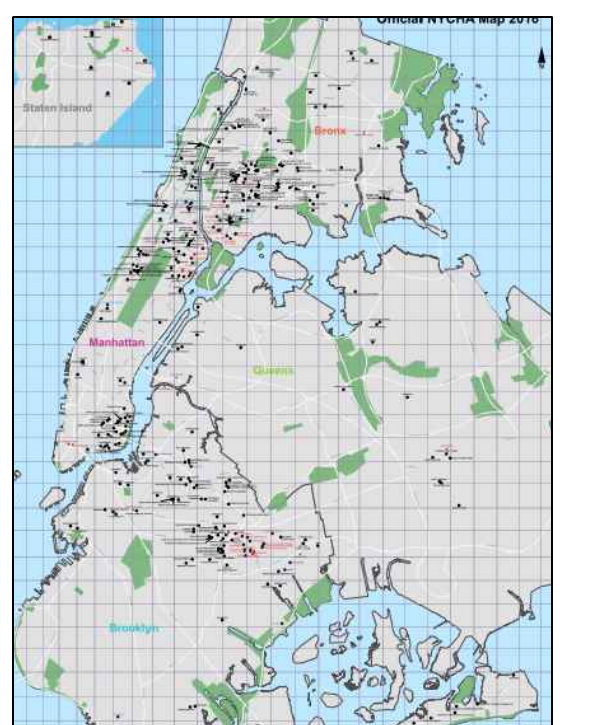
**FLA 04**  
 PERIMETER FLASHING AT HIGH PARAPET

**MEM 01**  
 ROOF SYSTEM:  
 LIQUID APPLIED  
 MEMBRANE SYSTEM



DOB Employee Stamps and Signatures

**RAL 01 SIDE MOUNTED RAILING INSTALLATION (LF)**



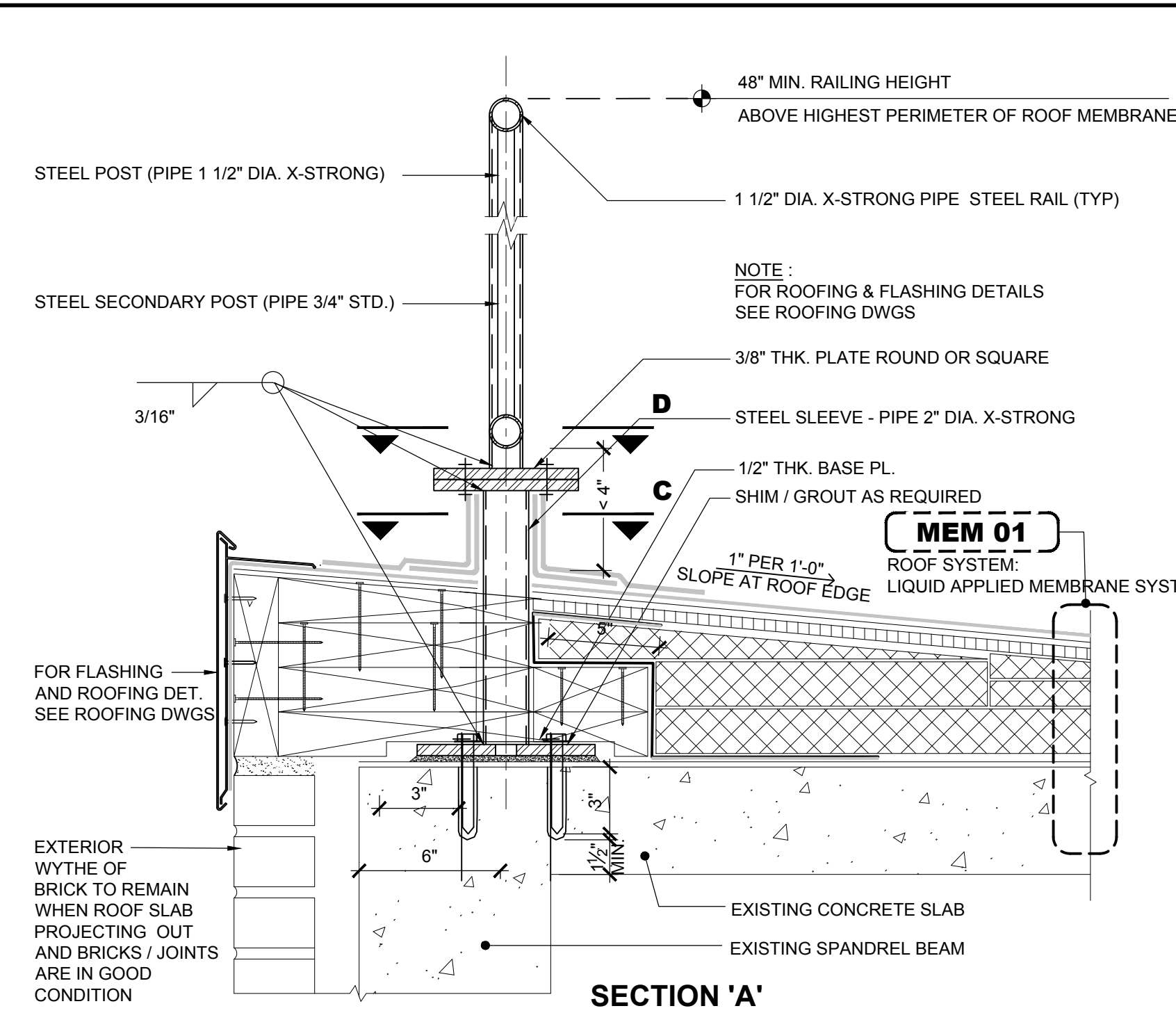
Key/ Location plan

**Contract Title:  
 ROOF REPLACEMENT AND  
 ROOFTOP STRUCTURE RENOVATION  
 REQUIREMENT CONTRACT**

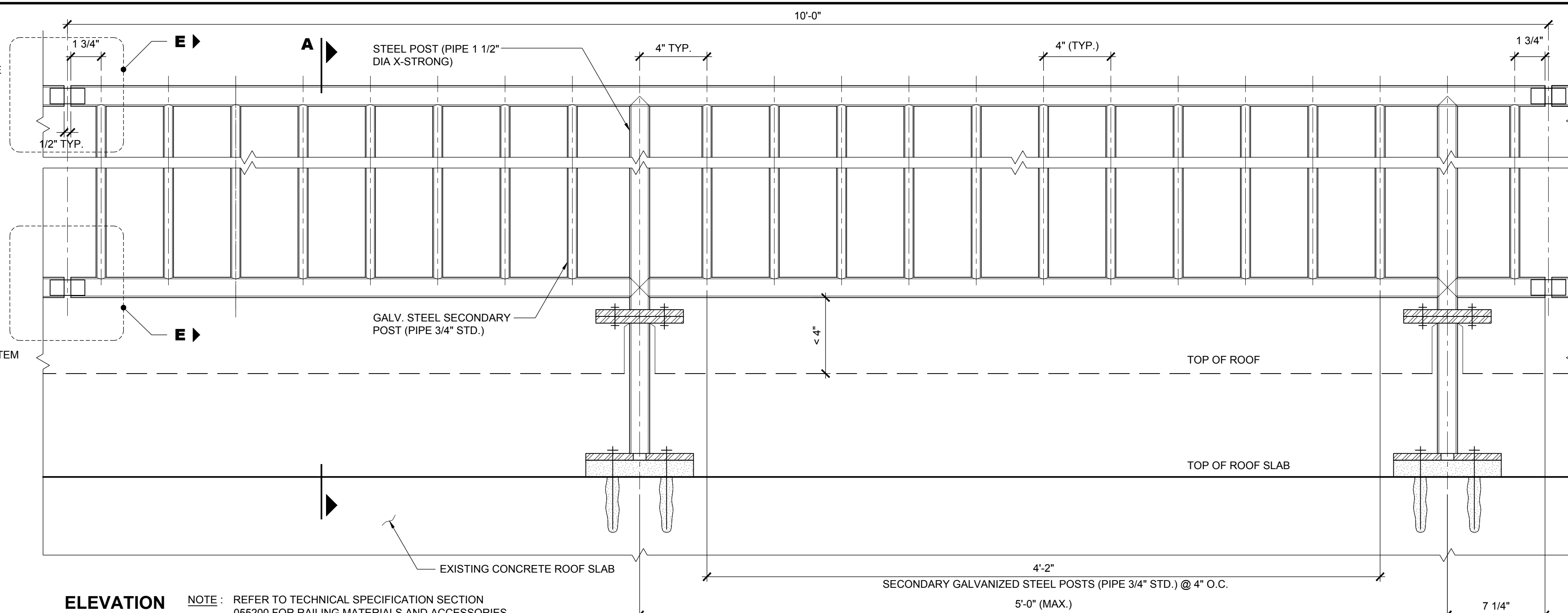
Contract No.:  
**RF 1805337**

Drawing Title: Restoration Details:  
 RAL 02 1 of 2

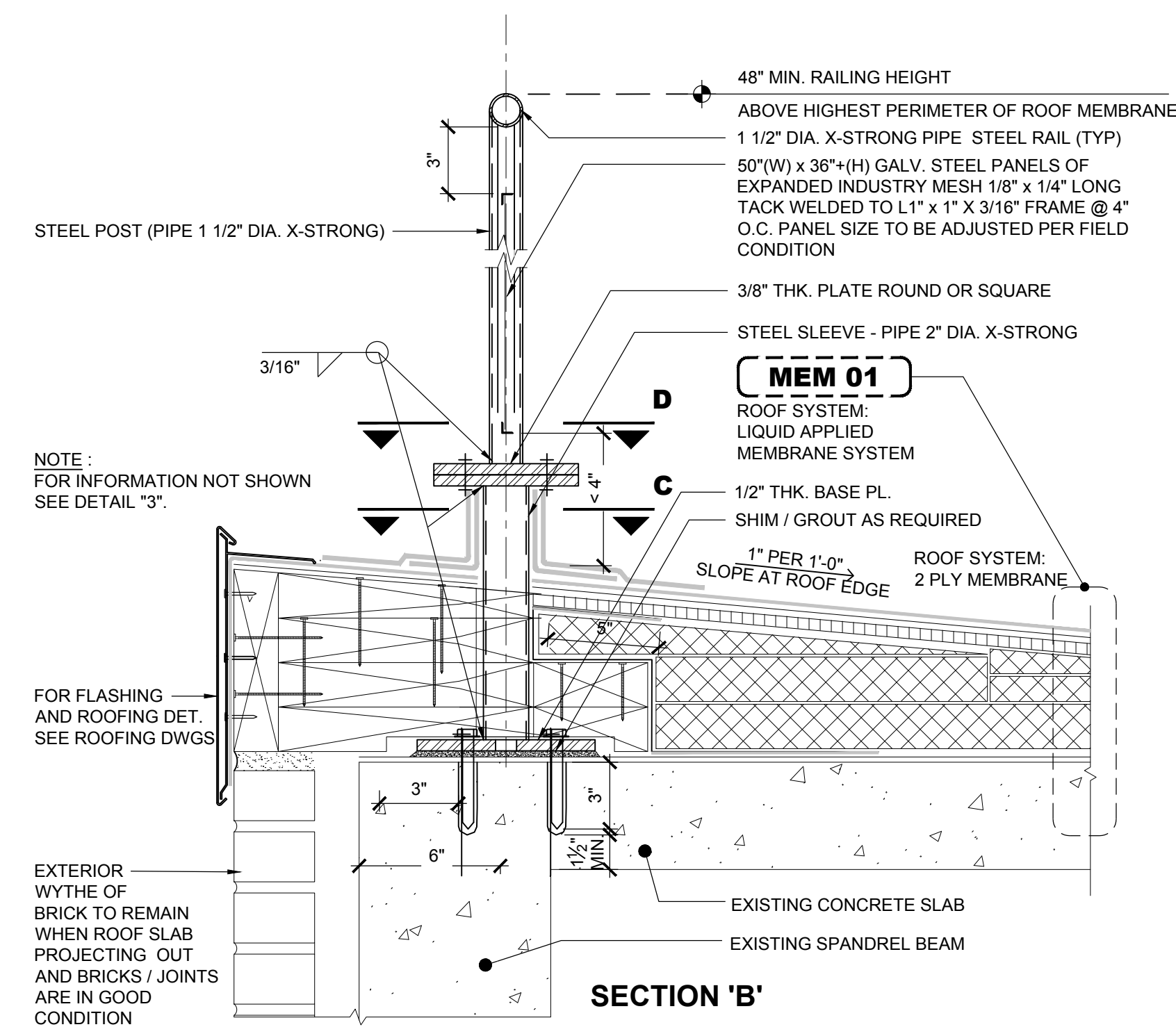
Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>A528.00</b>
	Sheet 43 of 64



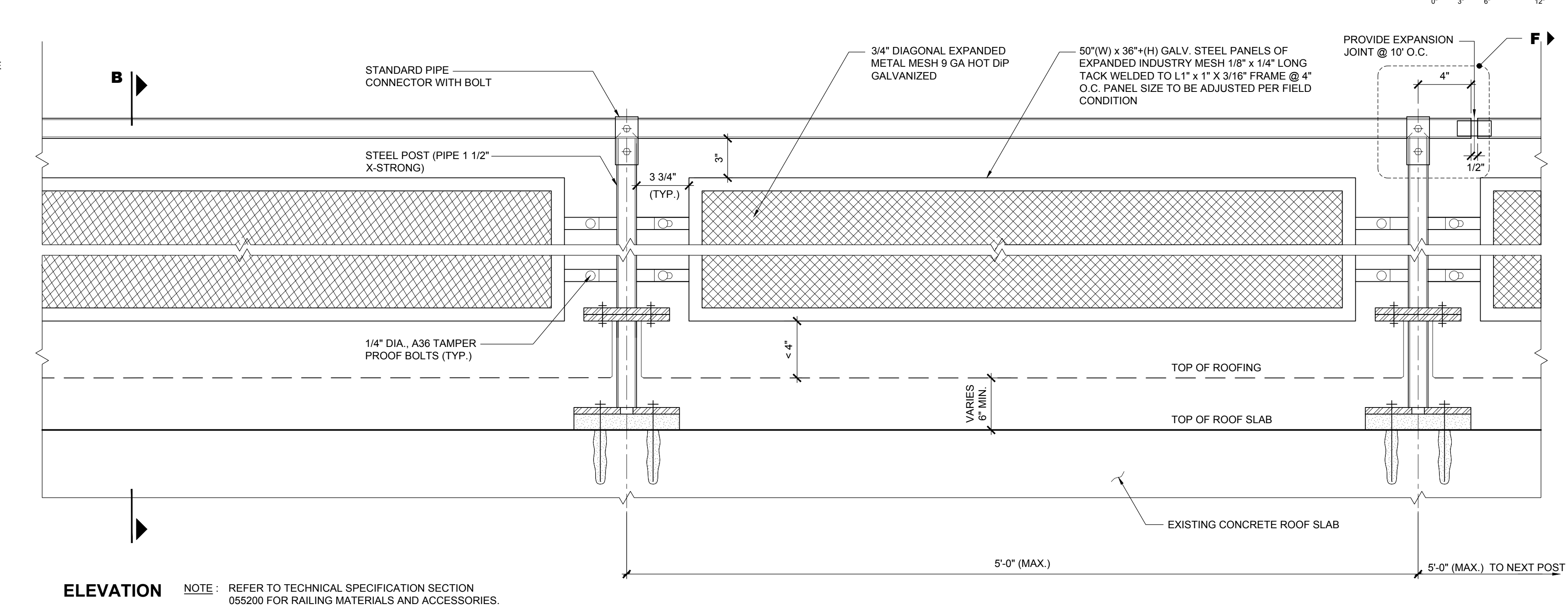
**OPTION 1: ROOF RAILING WITH SECONDARY POSTS**



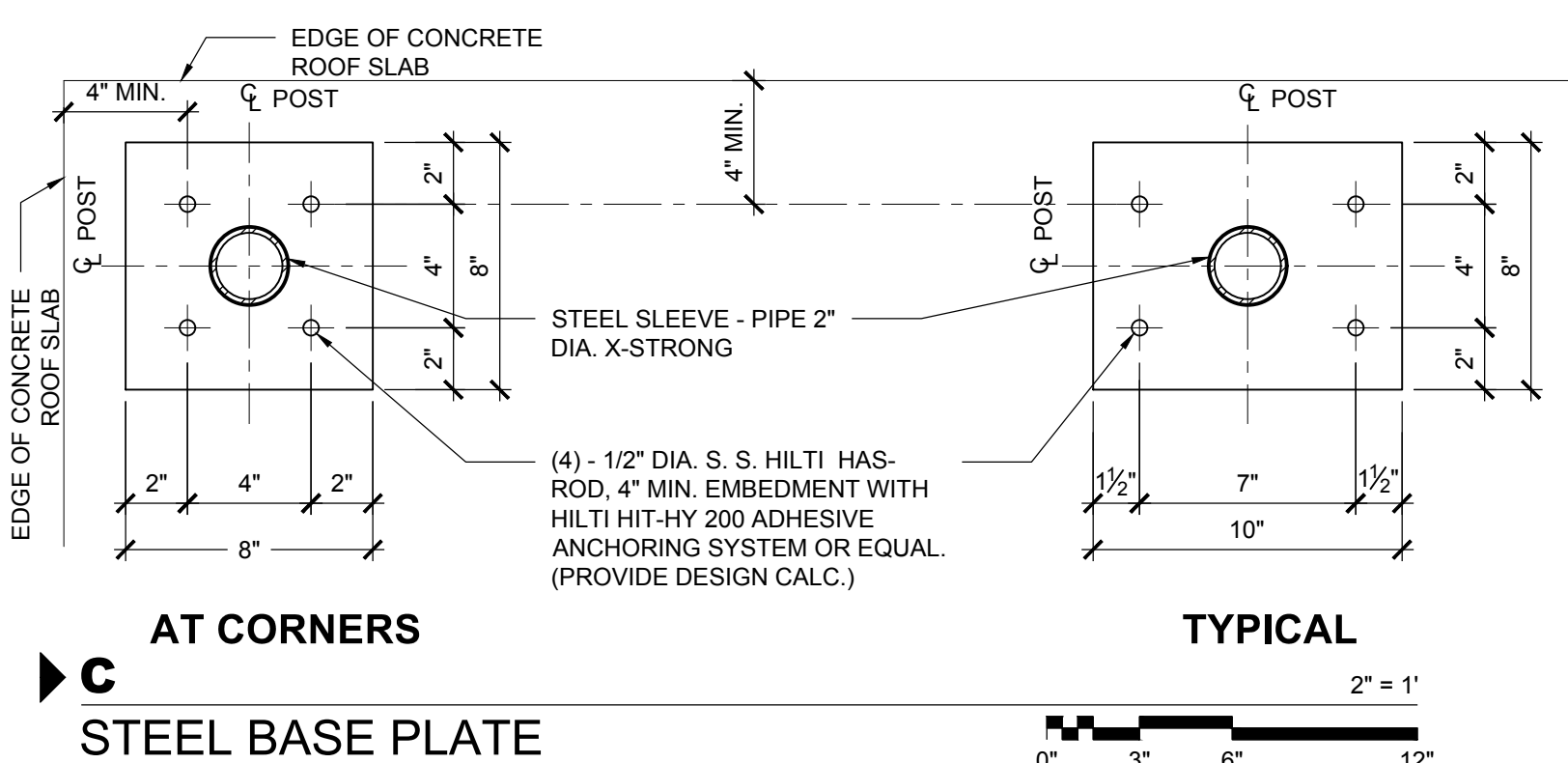
**ELEVATION** NOTE: REFER TO TECHNICAL SPECIFICATION SECTION 055200 FOR RAILING MATERIALS AND ACCESSORIES.



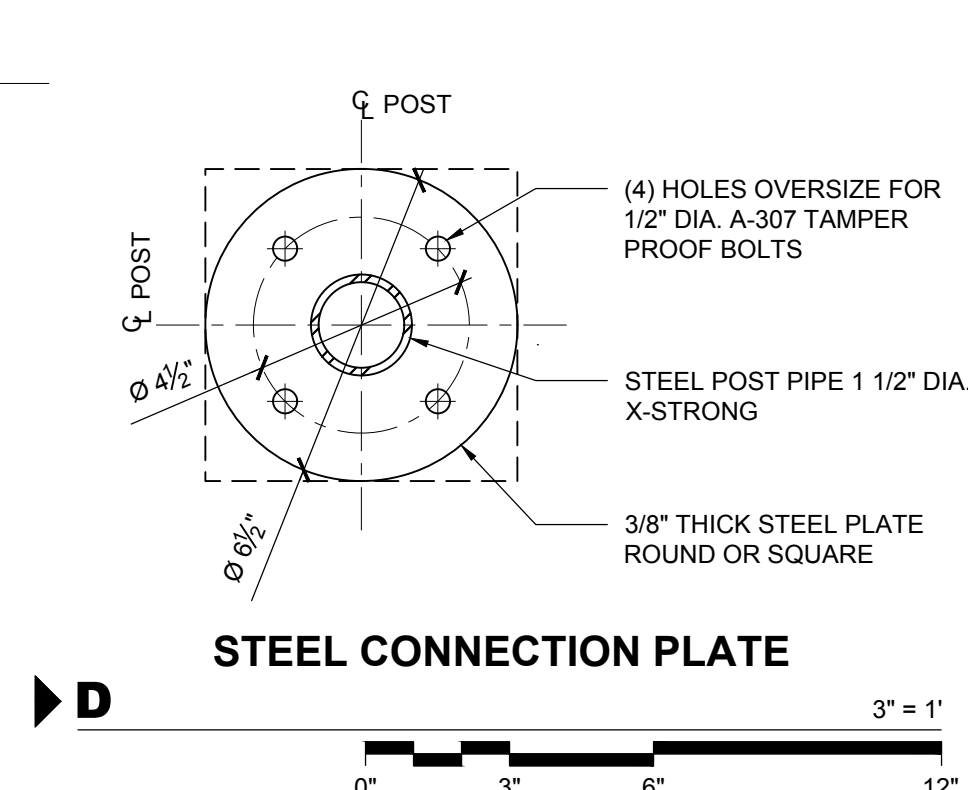
**OPTION 2: ROOF RAILING WITH FRAME/MESH PANELS**



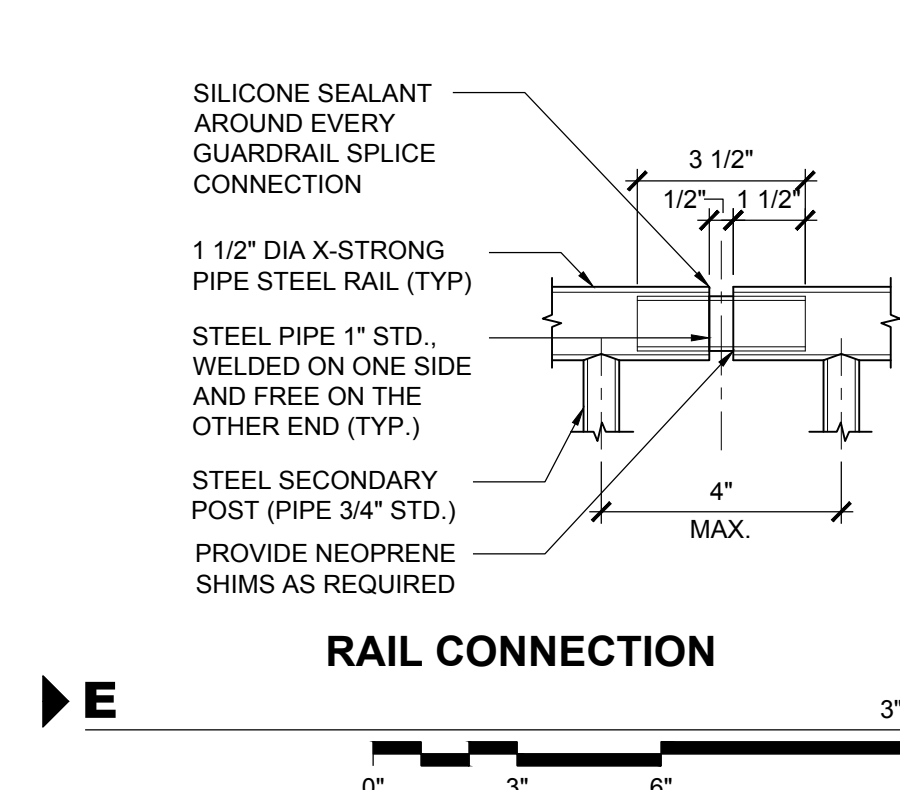
**ELEVATION** NOTE: REFER TO TECHNICAL SPECIFICATION SECTION 055200 FOR RAILING MATERIALS AND ACCESSORIES.



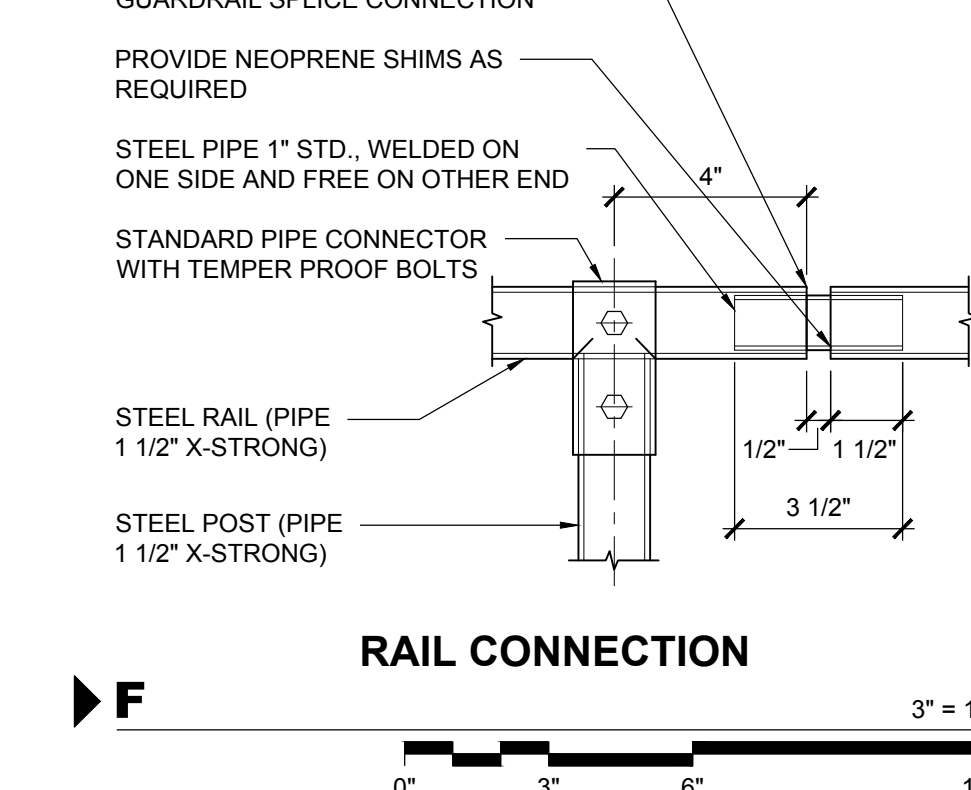
**AT CORNERS**  
**STEEL BASE PLATE**



**STEEL CONNECTION PLATE**



**RAIL CONNECTION**



**RAIL CONNECTION**

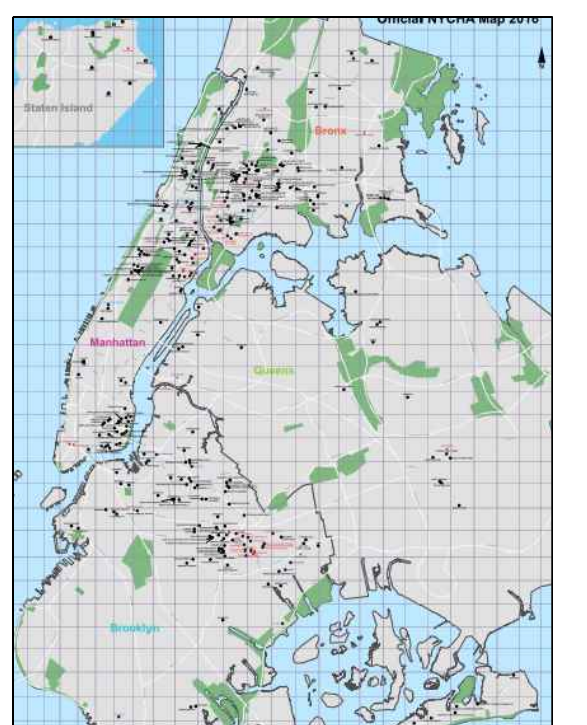
- ALL STEEL INCLUDING BOLTS TO BE HOT DIPPED GALVANIZED.
- ALL CONNECTIONS TO BE FIELD BOLTED.
- ALL WELDING IS TO BE CARRIED OUT IN THE SHOP. FIELD WELDING IS ALLOWED ONLY WITH WRITTEN APPROVAL OF THE E.O.R.
- HEIGHT OF POST STUB TO BE COORDINATED WITH THE THICKNESS OF THE ROOF BUILD-UP/HEIGHT AS PER DESIGN.
- TUBE & PANEL TYPE ROOF RAIL SYSTEM SHOWN FOR SCHEMATIC PURPOSES ONLY. CONSULTANT TO CONFIRM FINAL DESIGN.

DOB Employee Stamps and Signatures

**NEW YORK CITY HOUSING AUTHORITY  
 DESIGN DEPARTMENT**

90 Church Street 10th floor, New York, NY 10007  
 Tel 212 306-3000 Fax (call)

Development: VARIOUS  
 Bldg. Addresses:  
 Building No: Oracle No:  
 Borough of: CITYWIDE



Key/ Location plan

Zoning Map: Zone:  
 Block No.: Lot No.:  
 Development No.: VARIOUS E.D.P No.:

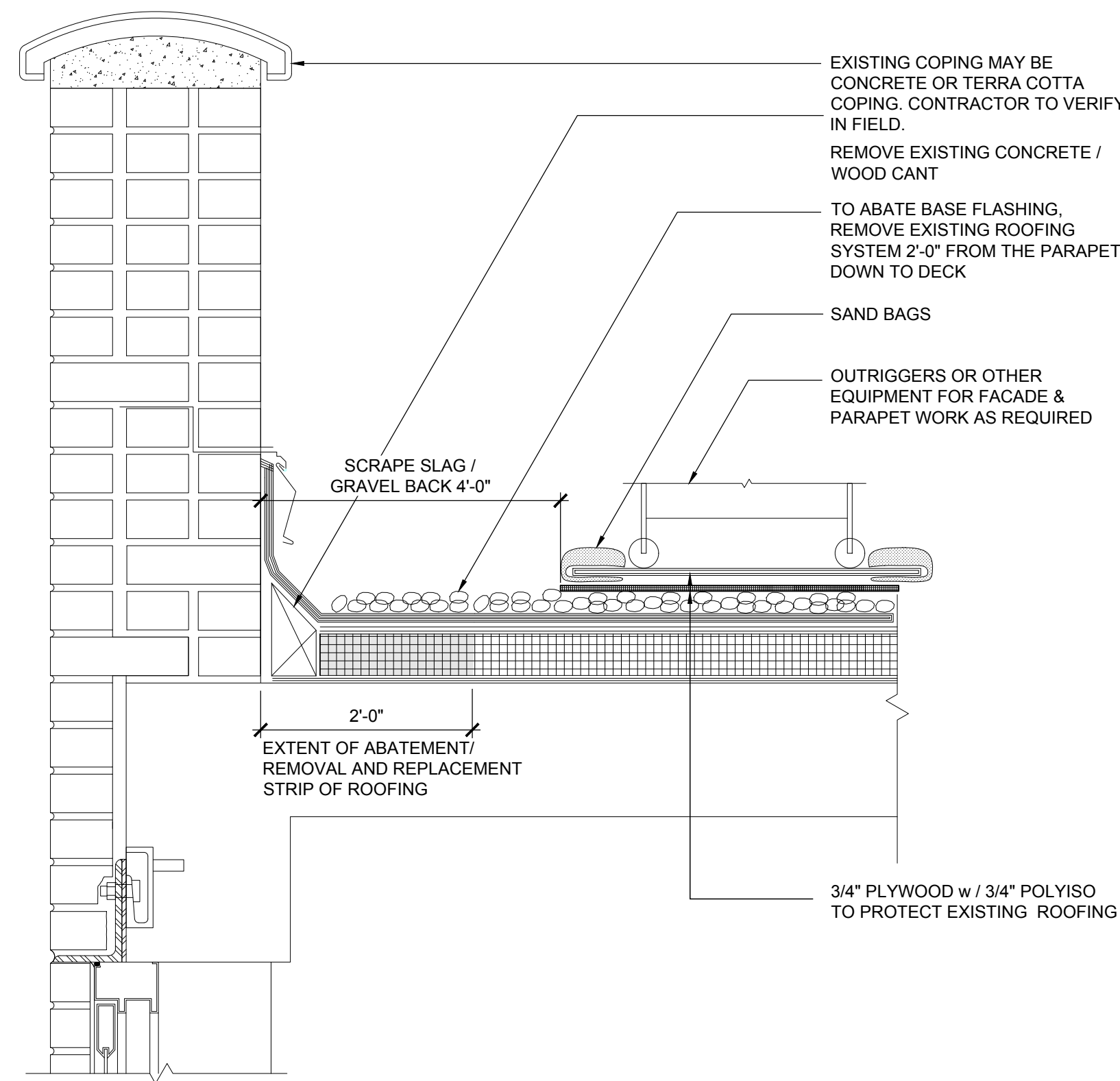
**Contract Title:  
 ROOF REPLACEMENT AND  
 ROOFTOP STRUCTURE RENOVATION  
 REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

Drawing Title: Restoration Details:  
 RAL 02 2 of 2

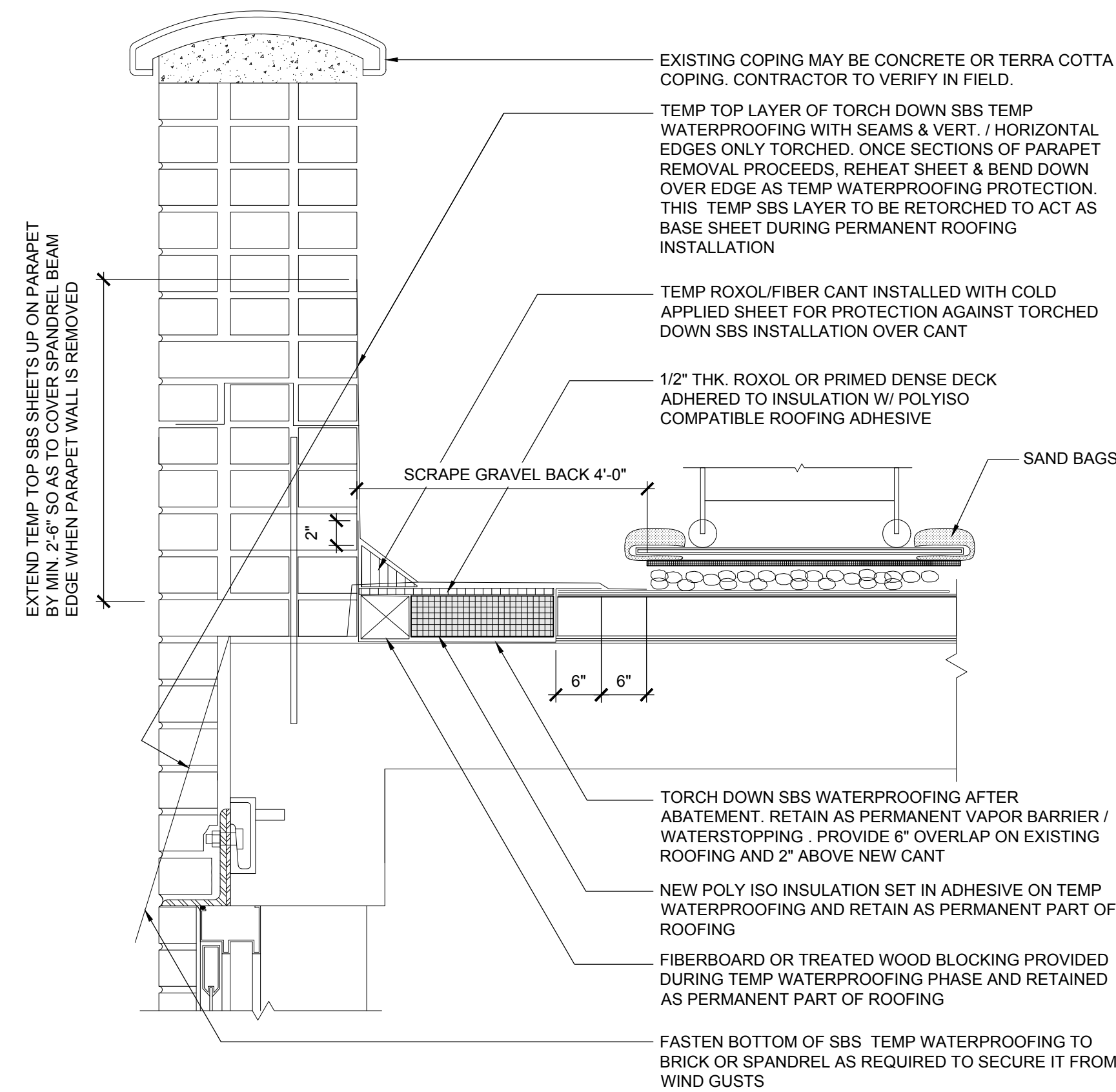
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 Scale: AS NOTED  
 Drawn By: AO / YZ / VP  
 Checked By: NS / VS  
 Drawing No.:  
**A529.00**  
 Sheet 44 of 64

DOB BSCAN STICKER



STEP 1 :

SETTING UP PROTECTION TO EXISTING ROOF & ABATEMENT OF BASE FLASHING (CONCRETE DECKS OR WOOD DECKS)



STEP 2 :

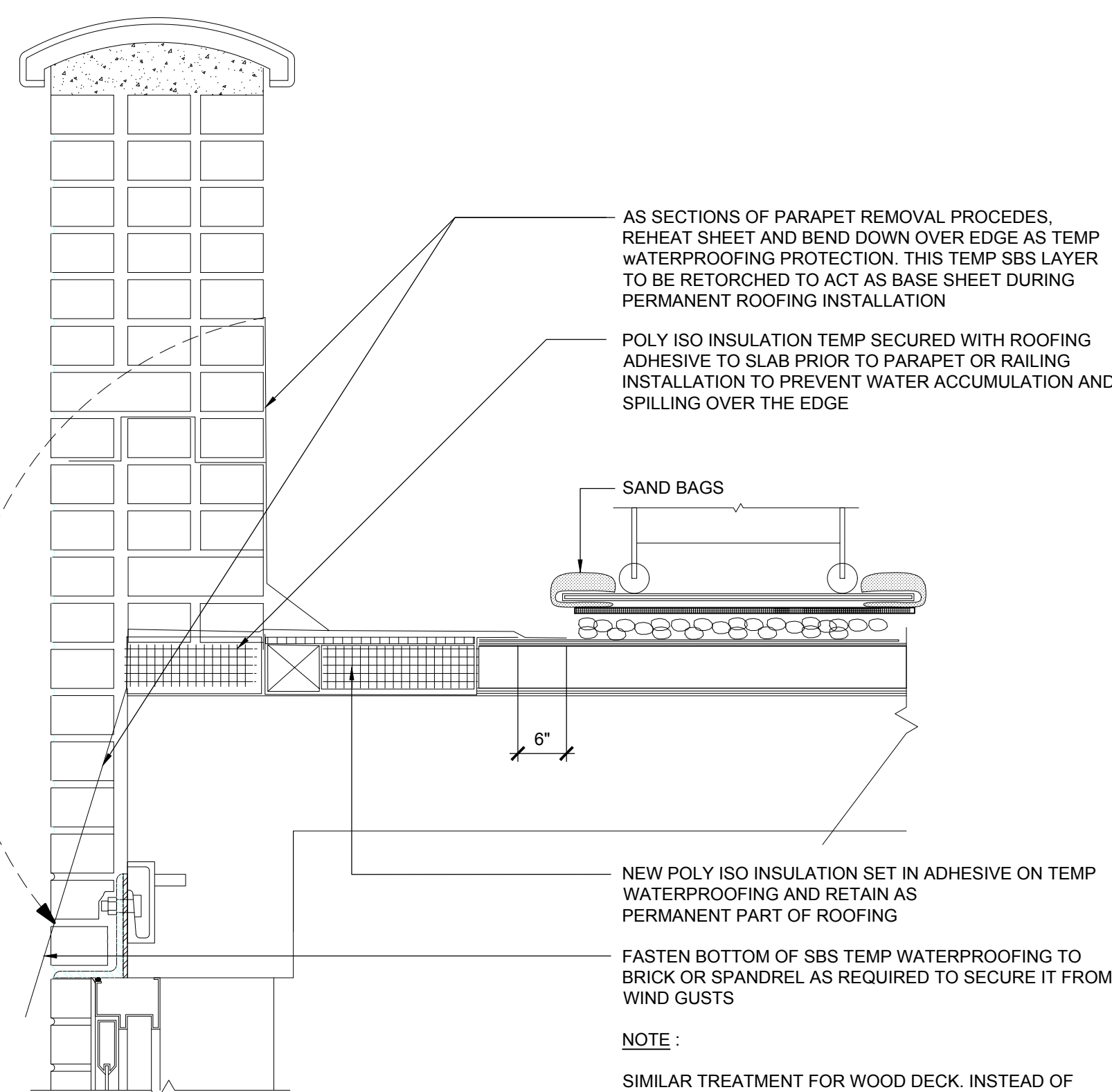
TEMPORARY WATERPROOFING (CONCRETE DECKS)

OR

STEP 2 :

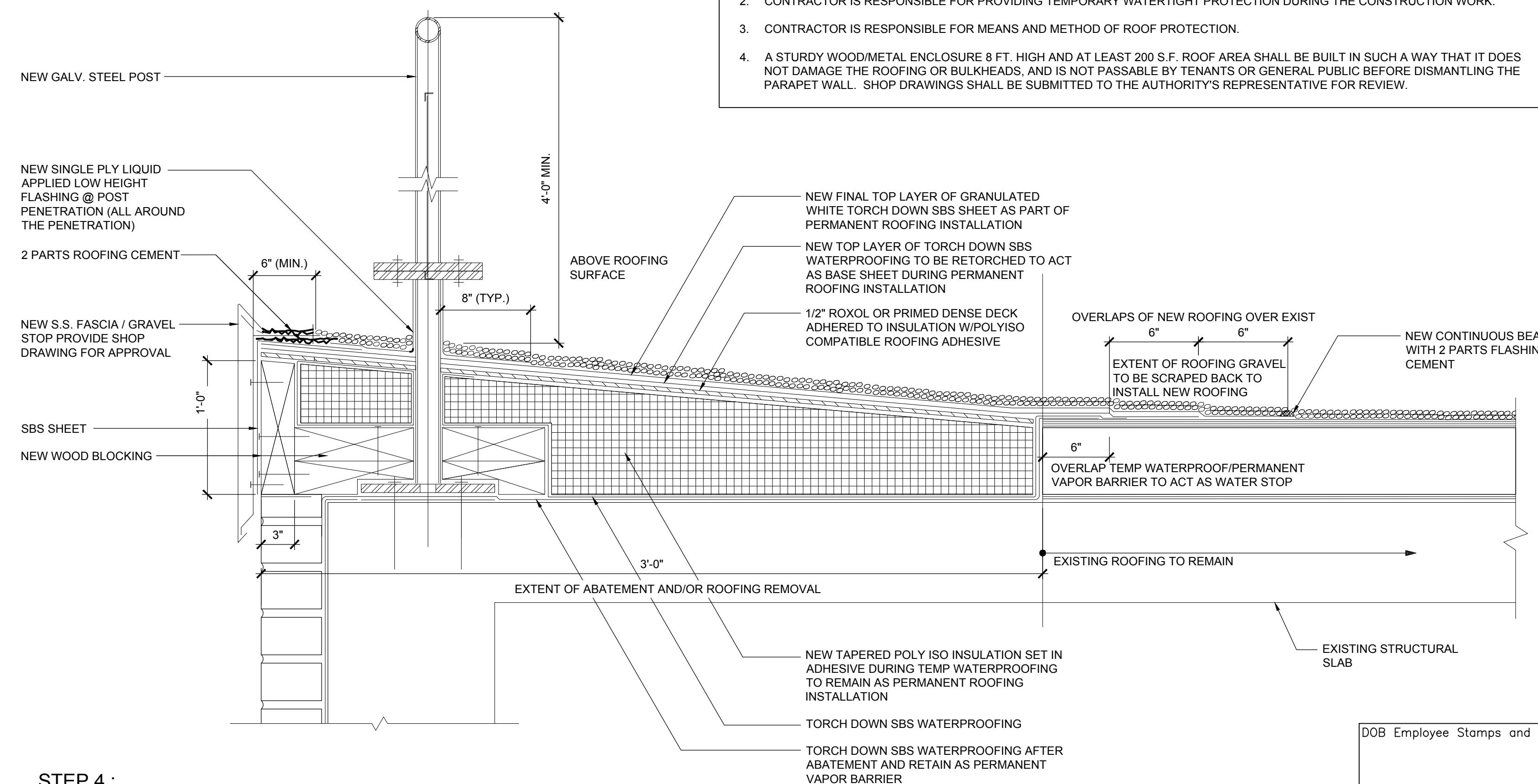
TEMPORARY WATERPROOFING (WOOD DECKS)

- REPAIR STEPS :**
- THESE DETAILS ARE FOR CONTRACTOR'S REFERENCE ONLY.
  - CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY WATERTIGHT PROTECTION DURING THE CONSTRUCTION WORK.
  - CONTRACTOR IS RESPONSIBLE FOR MEANS AND METHOD OF ROOF PROTECTION.
  - A STURDY WOOD/METAL ENCLOSURE 8 FT. HIGH AND AT LEAST 200 S.F. ROOF AREA SHALL BE BUILT IN SUCH A WAY THAT IT DOES NOT DAMAGE THE ROOFING OR BULKHEADS, AND IS NOT PASSABLE BY TENANTS OR GENERAL PUBLIC BEFORE DISMANTLING THE PARAPET WALL. SHOP DRAWINGS SHALL BE SUBMITTED TO THE AUTHORITY'S REPRESENTATIVE FOR REVIEW.



STEP 3 :

PARAPET REMOVAL AND TEMPORARY WATERPROOFING (CONCRETE DECKS)



STEP 4 :

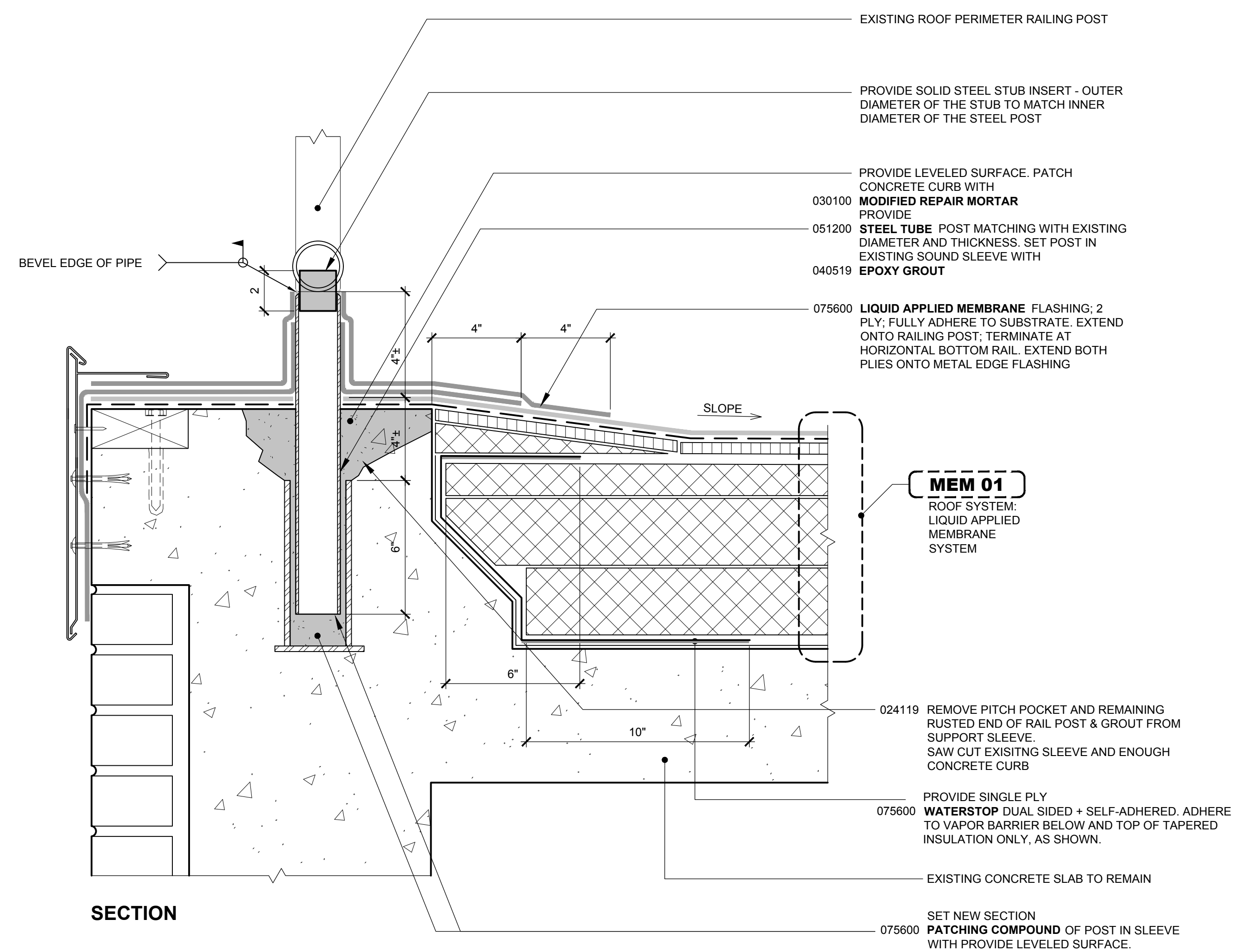
PERMANENT ROOFING W/ RAILING REPLACEMENT AFTER PARAPET HAS BEEN REMOVED  
 FOR NEW RAILING, ROOFING, AND CAST STONE DETAILS SEE DRAWINGS S-001.00 & S-002.00.

DOB Employee Stamps and Signatures



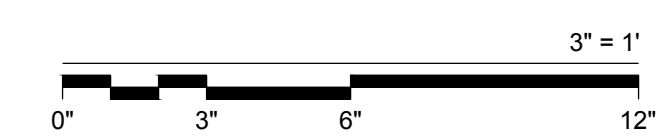
Key/ Location plan

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>A530.00</b> Sheet 45 of 64



- LIQUID APPLIED MEMBRANE NOTES:**
1. PREPARE AND APPLY **SUBSTRATE PRIMER** TO ALL SURFACES IN CONTACT WITH RESIN.
  2. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH **PATCHING COMPOUND** APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
  3. PROVIDE **SURFACING** AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.

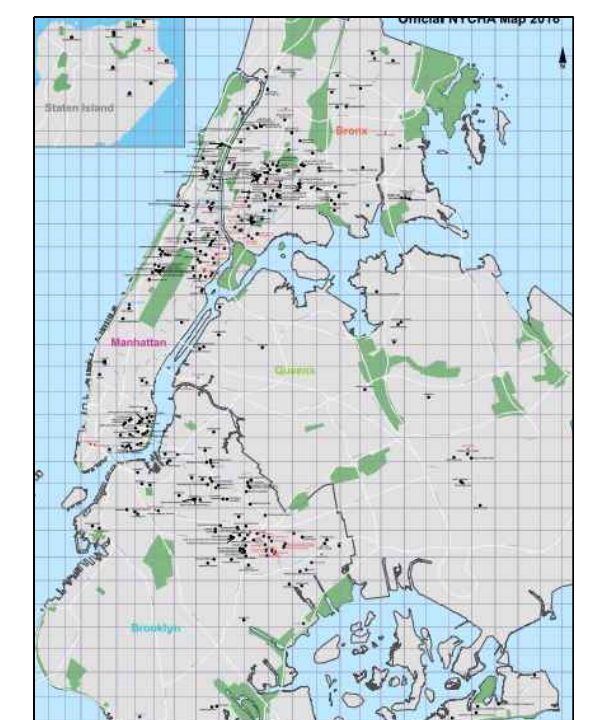
**MEM 01**  
 ROOF SYSTEM:  
 LIQUID APPLIED  
 MEMBRANE  
 SYSTEM



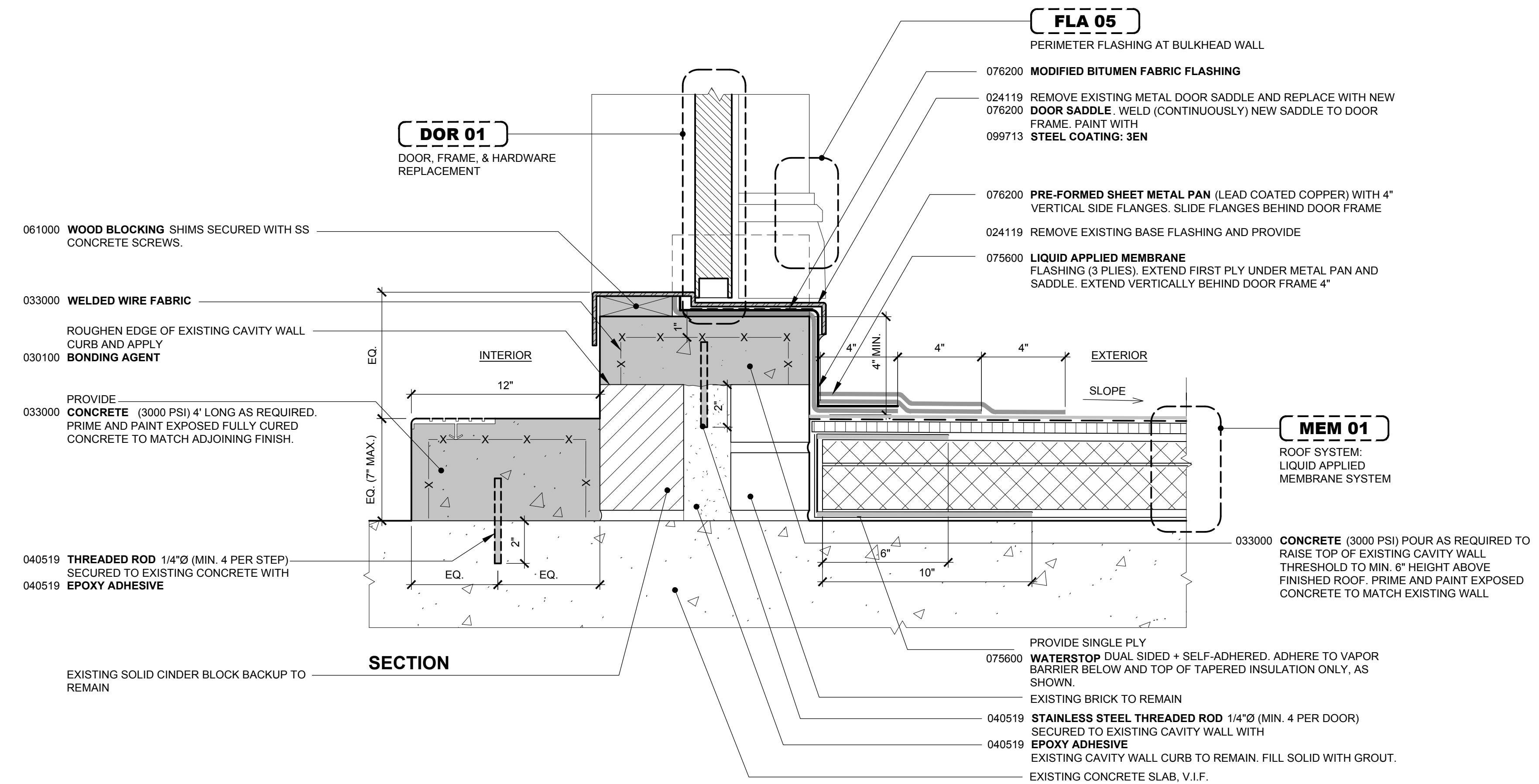
DOB Employee Stamps and Signatures

**RAL 03 RAIL POST SLEEVE REPAIR (EA)**





Key/ Location plan

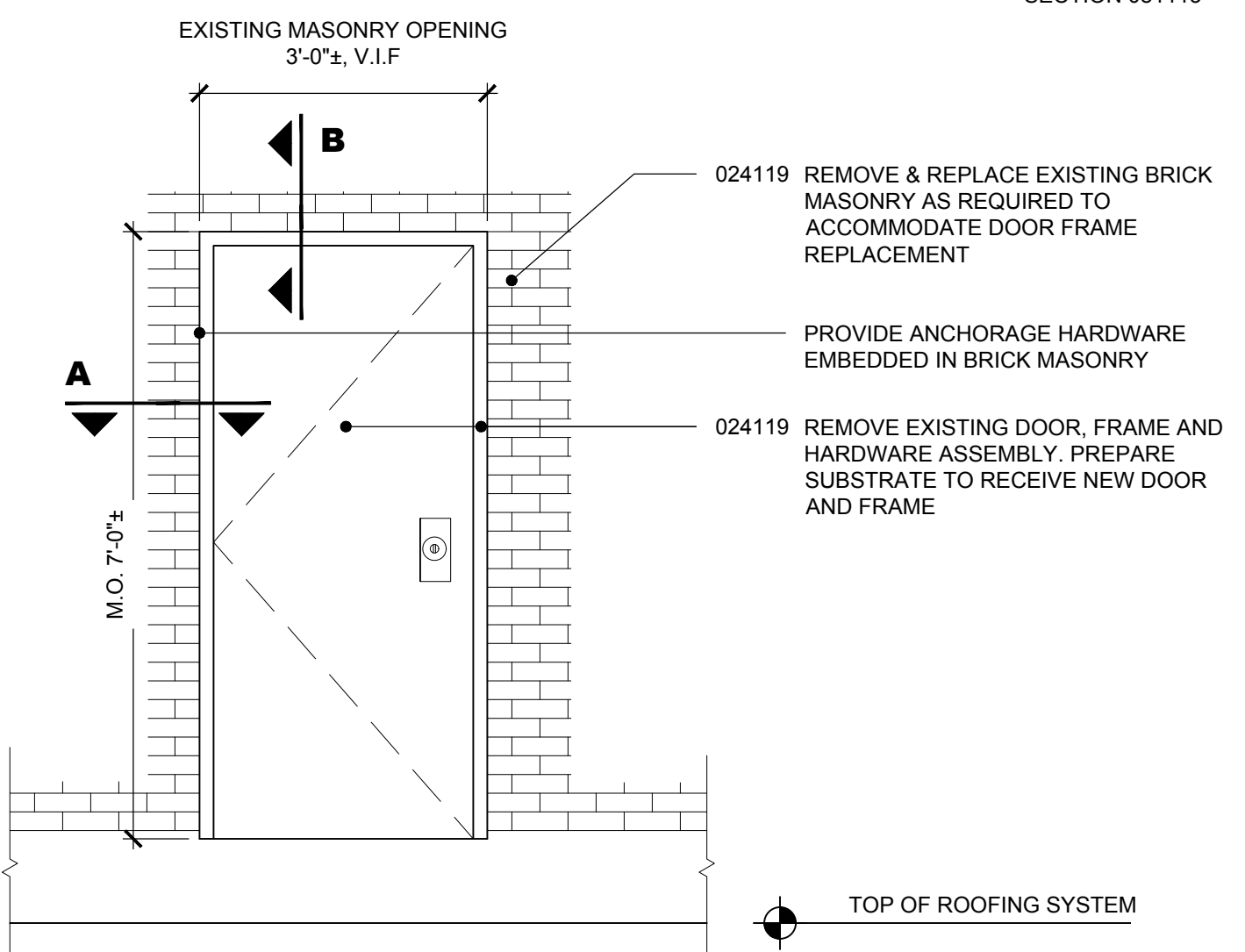


**DOR 02 RAISED BULKHEAD DOOR SADDLE AND FLASHING REPLACEMENT (EA)**

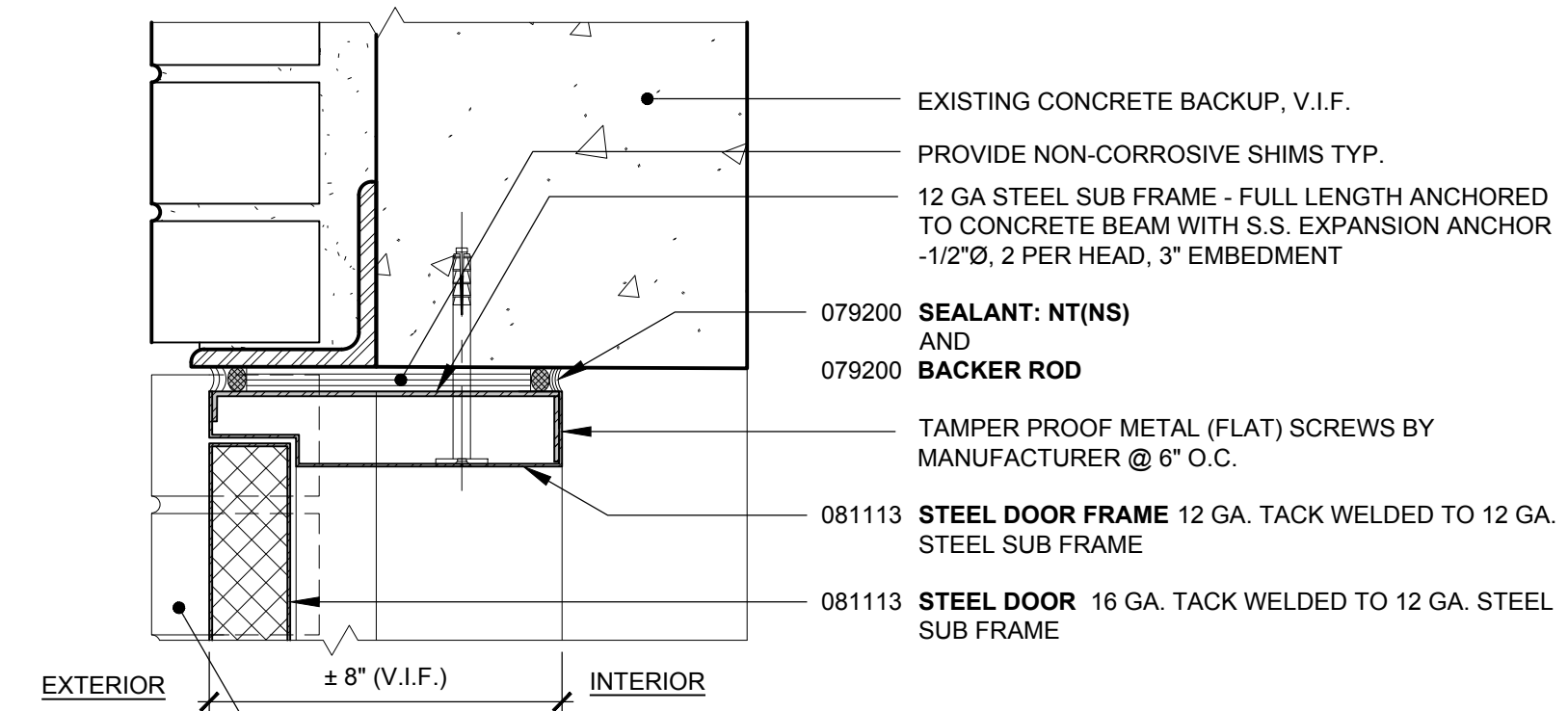
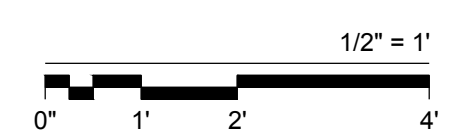
- NOTES:
- PROVIDE HOLLOW METAL BUCKS (FRAME) AND ACCESSORIES TO REPLACE EXISTING DETERIORATED / DAMAGED METAL BUCKS AT THE BULKHEADS IN LOCATIONS APPROVED BY NYCHA FIELD REPRESENTATIVE AND CM.
  - PREPARE NEW HOLLOW METAL BUCKS TO RECEIVE STRIKES AND ALL RELATED HARDWARE AS REQUIRED TO ACCOMMODATE NEW DOOR.
  - PROVIDE LABOR AND MATERIALS AS MAY BE REASONABLY REQUIRED TO COMPLETE THE WORK OF THIS DETAIL.
  - DOORS AND DOOR FRAMES SHALL BE PROVIDED BY A SINGLE MANUFACTURER.
  - COORDINATE AND PROVIDE DOOR AND FRAME SUBMITTALS AND SHOP DRAWINGS.

DOOR LOCATION	HEIGHT	WIDTH
STAIR BULKHEAD	6'-8" MIN.	V.I.F.
ELEVATOR ROOM	6'-8" MIN.	V.I.F.

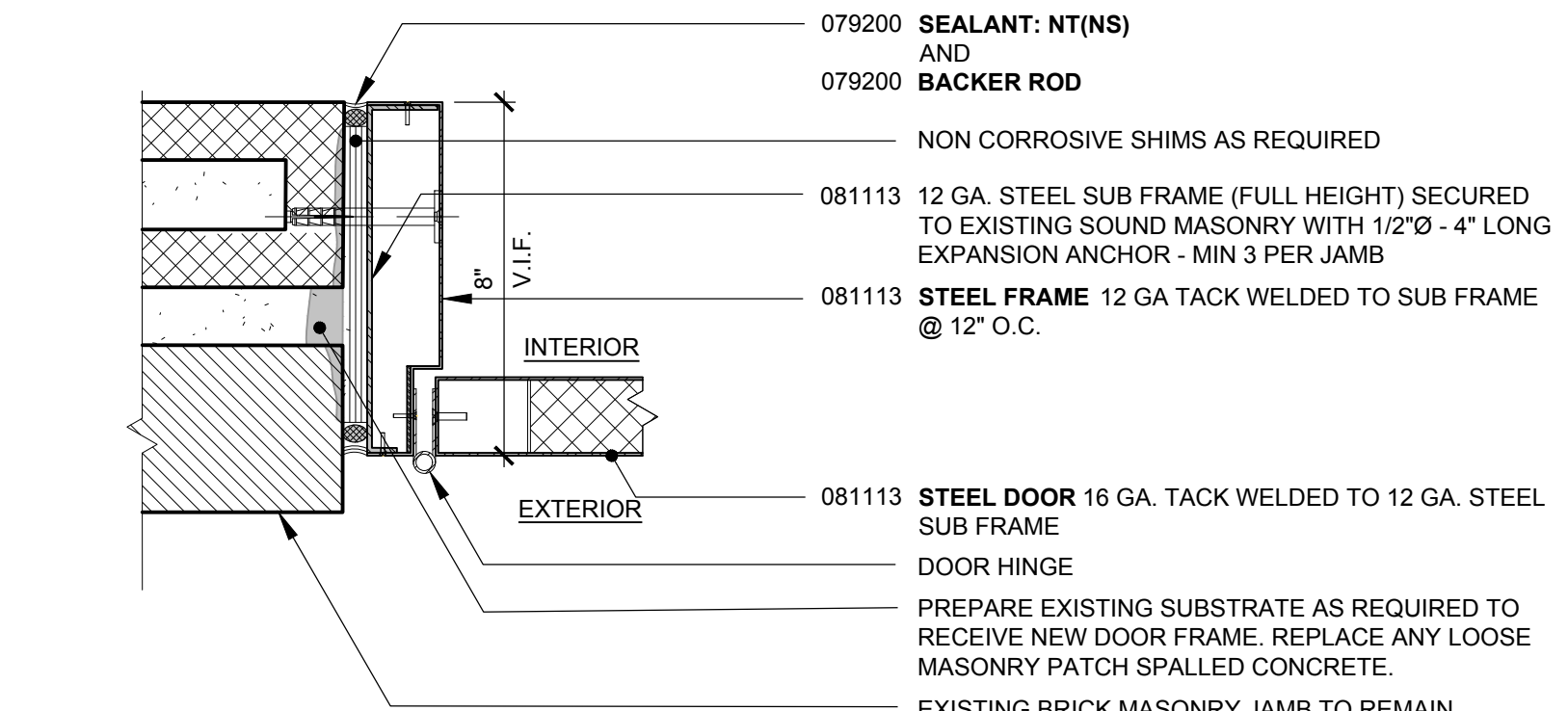
HARDWARE SCHEDULE:  
 REFER TO TECHNICAL SPECIFICATION SECTION 081113



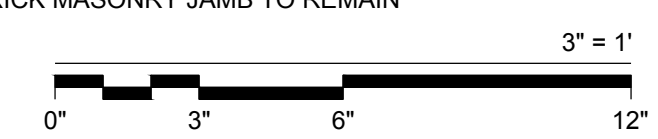
ELEVATION



SECTION B: HEAD

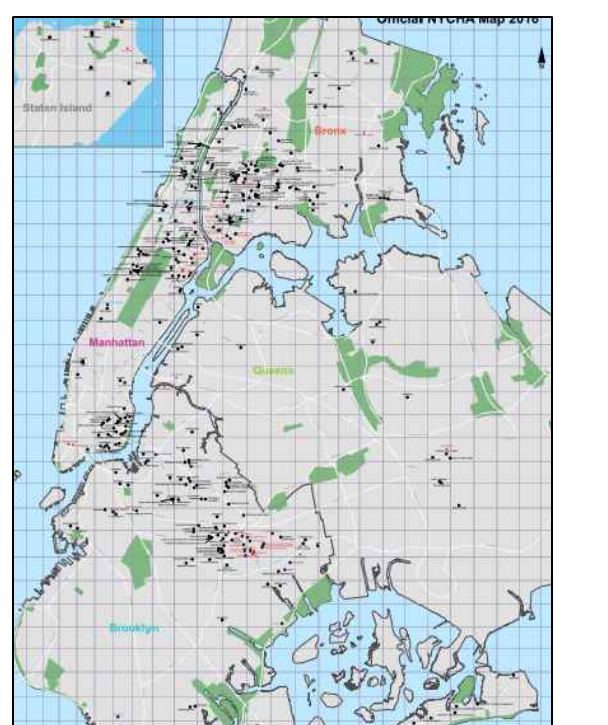


SECTION A: JAMB



**DOR 01 BULKHEAD DOOR, FRAME & HARDWARE REPLACEMENT (EA)**

DOB Employee Stamps and Signatures



Key/ Location plan

Contract Title:  
**ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

Drawing Title: Restoration Details:  
 DOR 02

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>A532.00</b> Sheet 47 of 64

DOB BSCAN STICKER

NOTE:  
 NEW DOOR HEIGHT SHALL NOT BE LESS THAN 6'-8".

EXISTING 3'-7"± WIDE X 7'-0" HIGH (V.I.F.) HOLLOW METAL DOOR. CUT BOTTOM OF DOOR AS REQUIRED TO ACCOMMODATE SADDLE AND SPOT WELD NEW METAL CHANNEL TO INSIDE BOTTOM OF DOOR TO PROTECT CORE. GAUGE AND METAL TYPE OF CHANNEL TO MATCH EXISTING. MINIMUM NEW DOOR HEIGHT IS 6'-8". REMOVE ANY RUST. PREPARE, PRIME SURFACES AND PAINT WITH STEEL COATING: 3ER

SHIM AS REQUIRED

033000 WELDED WIRE FABRIC

ROUGHEN EDGE OF EXISTING CAVITY WALL CURB AND APPLY BONDING AGENT

3/4" THICK STEEL DIAMOND PLATE THREAD SHOP WELDED TO STEEL CHANNEL. FIELD WELD (CONTINUOUSLY) STEEL CHANNEL TO EXISTING STEEL LANDING. SECURE THREAD TO STEEL ANGLE WITH SELF DRILLING SCREWS (COUNTERSUNK) AT 8" O.C.

APPLY STEEL COATING: 3EN (SLIP RESISTANT) TO PREPARED NEW STEEL AND EXISTING STEEL LANDING

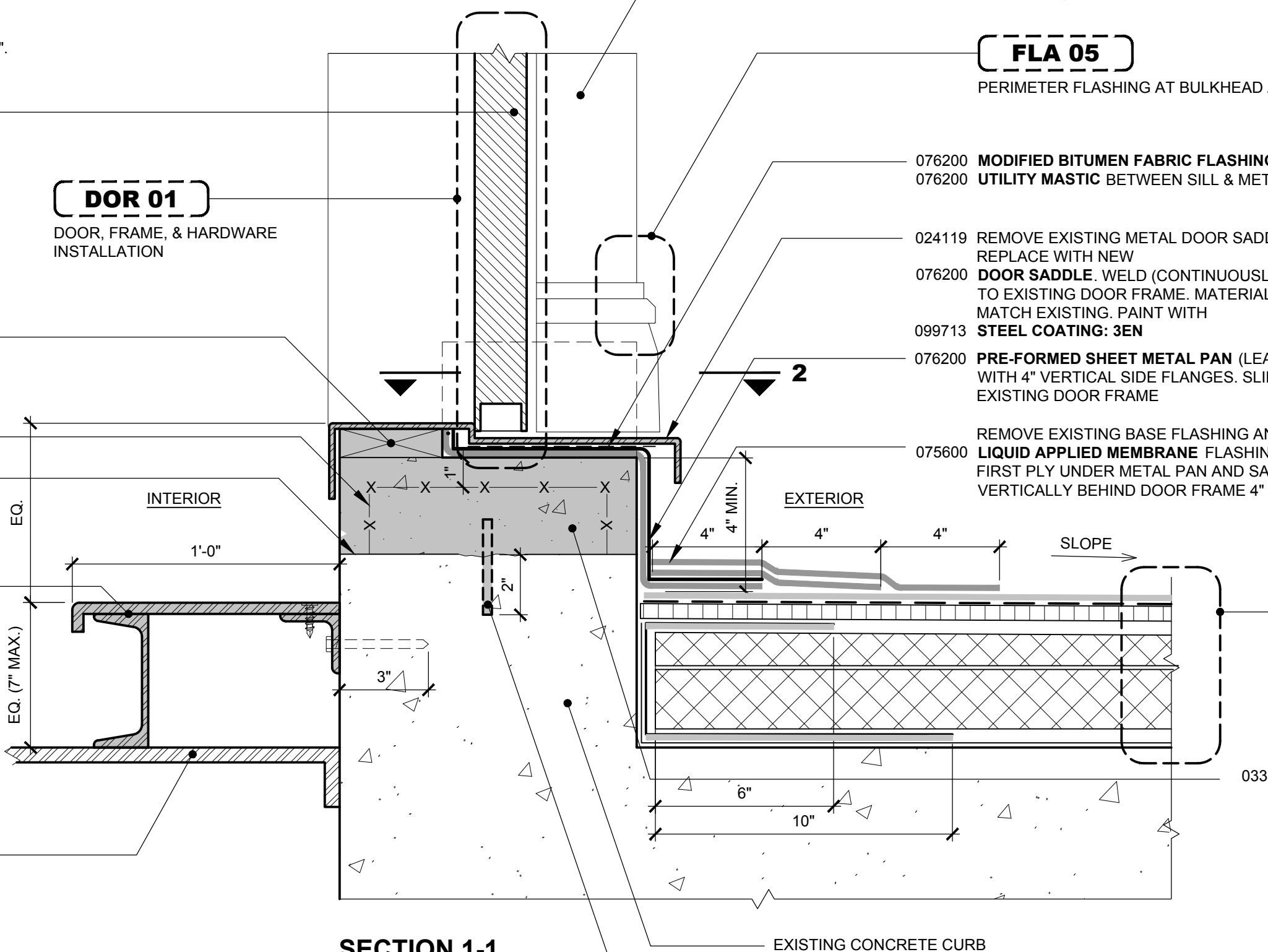
EXISTING STEEL LANDING TO REMAIN

PROVIDE NEW 2" X 2" X 1/4" THICK STEEL ANGLE. SECURE TO EXISTING CONCRETE WITH

040519 STAINLESS STEEL THREADED ROD (1/2" Ø) WITH S.S. NUT AT 10" O.C. (3" EMBEDMENT) DRILL HOLE NO GREATER THAN 1/8" LARGER THAN DIAMETER OF ANCHOR SET ROD IN

040519 EPOXY ADHESIVE

**DOR 01**  
 DOOR, FRAME, & HARDWARE INSTALLATION



EXISTING DOOR FRAME TO REMAIN. CUT BOTTOM PORTION OF FRAME OFF (1/2" ABOVE NEW CONCRETE AT NEW SILL LEVEL)

**FLA 05**  
 PERIMETER FLASHING AT BULKHEAD / BUILDING WALL

076200 MODIFIED BITUMEN FABRIC FLASHING FLASHING SET IN UTILITY MASTIC BETWEEN SILL & METAL PAN

024119 REMOVE EXISTING METAL DOOR SADDLE AND REPLACE WITH NEW  
 076200 DOOR SADDLE. WELD (CONTINUOUSLY) NEW SADDLE TO EXISTING DOOR FRAME. MATERIAL AND FINISH TO MATCH EXISTING. PAINT WITH  
 099713 STEEL COATING: 3EN

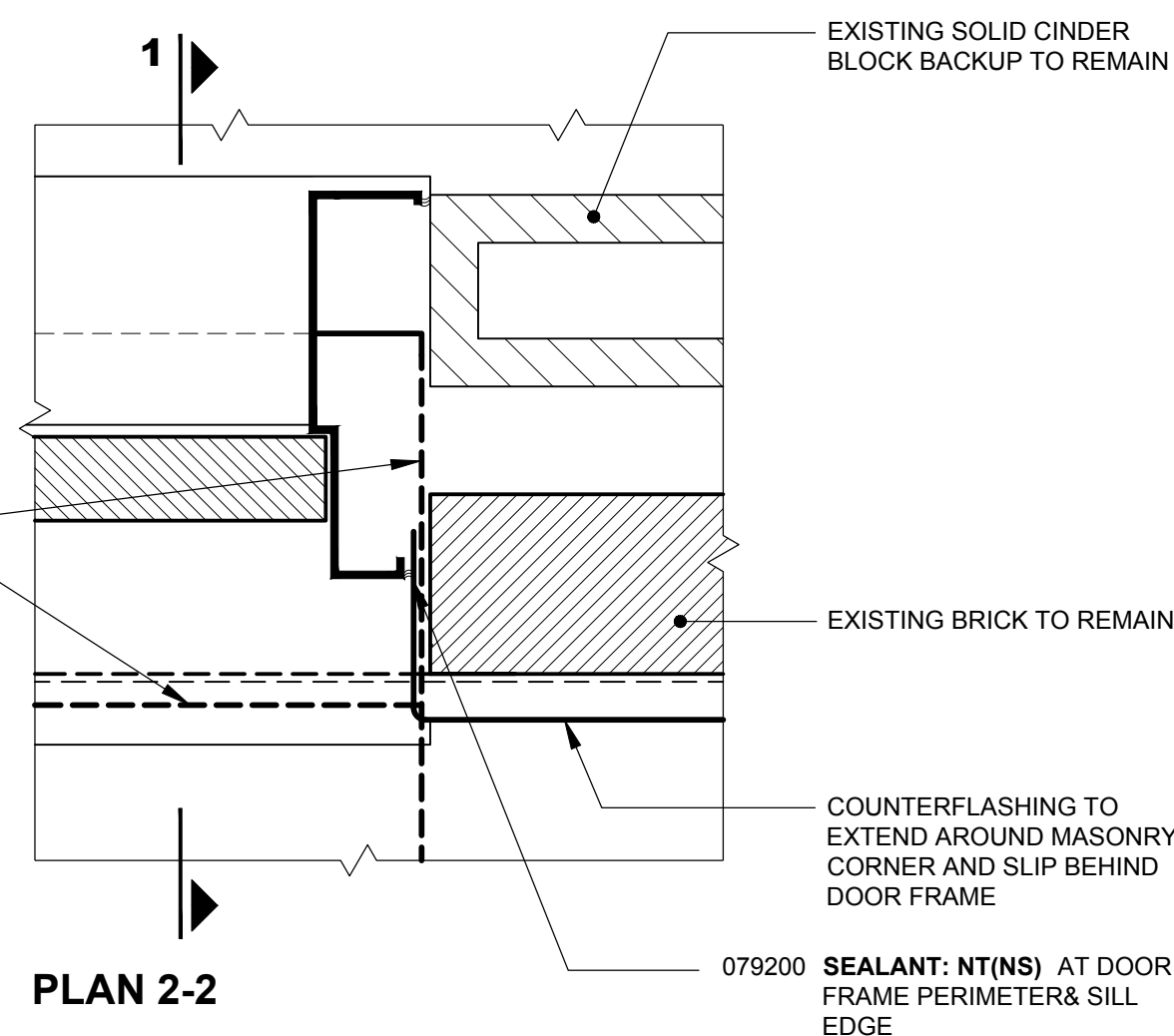
076200 PRE-FORMED SHEET METAL PAN (LEAD COATED COPPER) WITH 4" VERTICAL SIDE FLANGES. SLIDE FLANGES BEHIND EXISTING DOOR FRAME

REMOVE EXISTING BASE FLASHING AND PROVIDE LIQUID APPLIED MEMBRANE FLASHING (3 PLIES). EXTEND FIRST PLY UNDER METAL PAN AND SADDLE. EXTEND VERTICALLY BEHIND DOOR FRAME 4"

**MEM 01**  
 ROOF SYSTEM: LIQUID APPLIED MEMBRANE SYSTEM

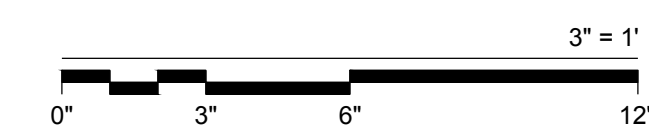
033000 CONCRETE (3000 PSI) POUR AS REQUIRED TO RAISE TOP OF EXISTING CAVITY WALL THRESHOLD TO MIN. 6" HEIGHT ABOVE FINISHED ROOF. PRIME AND PAINT EXPOSED CONCRETE TO MATCH EXISTING WALL

040519 STAINLESS STEEL THREADED ROD 1/4"Ø (MIN. 4 PER DOOR) SECURED TO EXISTING CAVITY WALL WITH  
 040519 EPOXY ADHESIVE

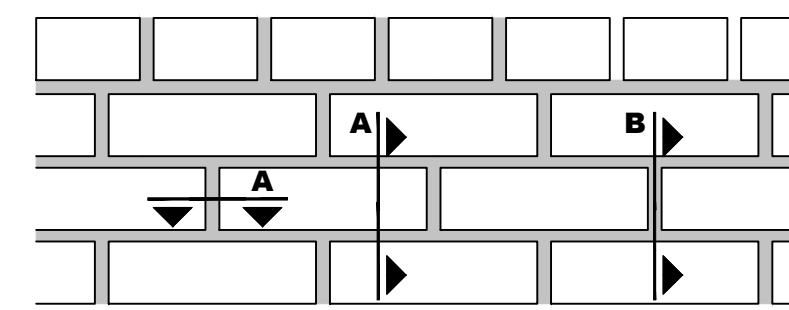


- NOTES:
- REMOVE EXISTING BASE FLASHING (ASSUMED ASBESTOS CONTAINING MATERIAL)
  - EXISTING DOOR PAINT IS ASSUMED LEAD CONTAINING. REMOVE FOLLOWING PROCEDURES INDICATED IN LEAD BASED PAINT SPECIFICATION.
  - REMOVE SECURITY GATE (AS REQUIRED) TO ALLOW FOR DOOR SADDLE AND DOOR INSTALLATION. REINSTALL AFTER NEW DOOR SADDLE IS IN PLACE. ADJUST BOTTOM OF SECURITY GATE AS REQUIRED AT DOORS WITH SECURITY GATE.

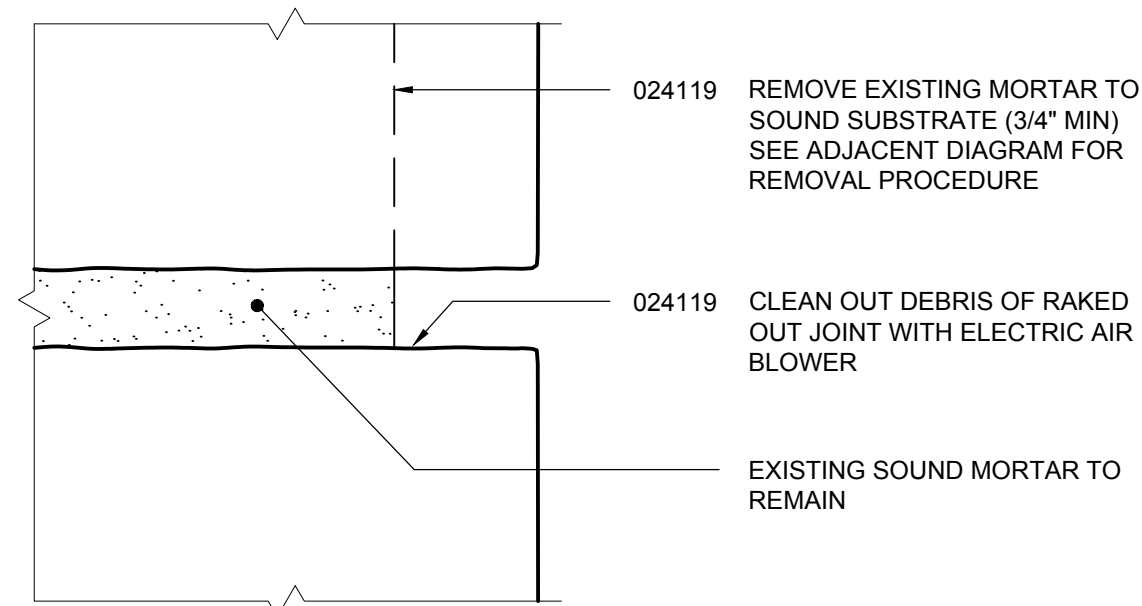
- LIQUID APPLIED MEMBRANE NOTES:
- PREPARE AND APPLY SUBSTRATE PRIMER TO ALL SURFACES IN CONTACT WITH RESIN. PREPARE LEVEL AND PATCH SUBSTRATE AS REQUIRED WITH
  - PATCHING COMPOUND APPROVED BY MANUFACTURER PRIOR TO APPLICATION OF PRIMER AND MEMBRANE FLASHING ON VERTICAL SURFACES.
  - PROVIDE SURFACING AT ALL EXPOSED SECTIONS OF LIQUID APPLIED MEMBRANE FLASHING. SURFACING COLOR TO BE APPROVED BY OWNER/ARCHITECT.



**DOR 03 RAISED BULKHEAD DOOR SADDLE AND FLASHING WITH METAL LANDING REPLACEMENT (EA)**

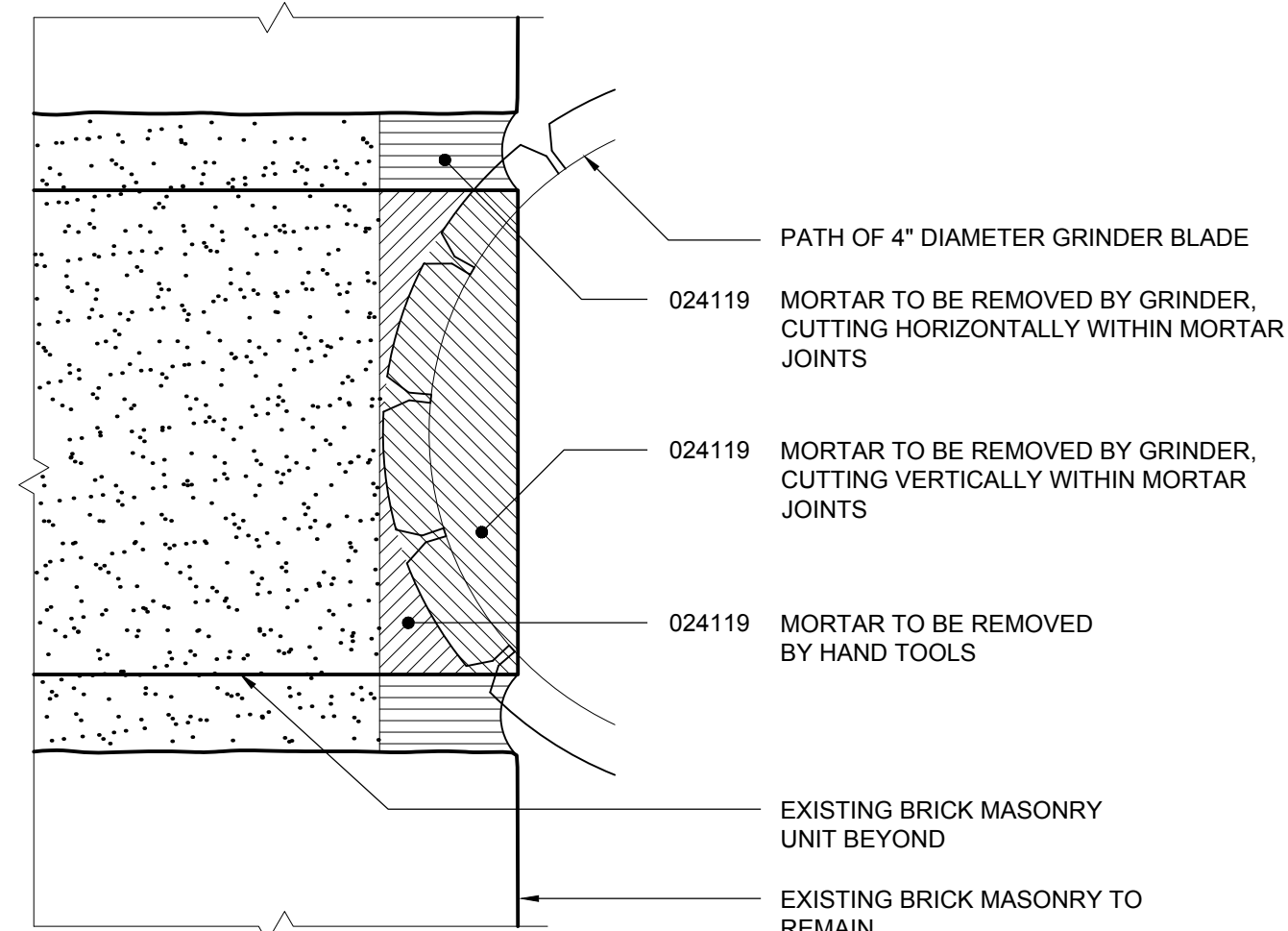


**REPAIR KEY (WALL ELEVATION)**

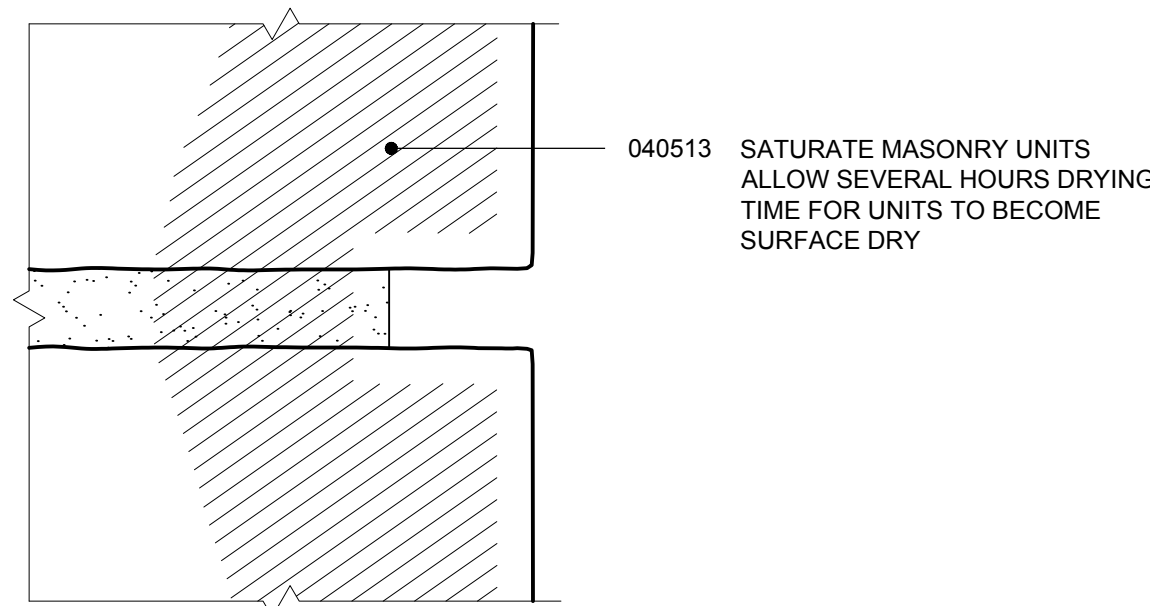


**SECTION A**

**STEP 1 :**  
 MORTAR REMOVAL, CIRCULAR GRINDER MORTAR REMOVAL METHOD

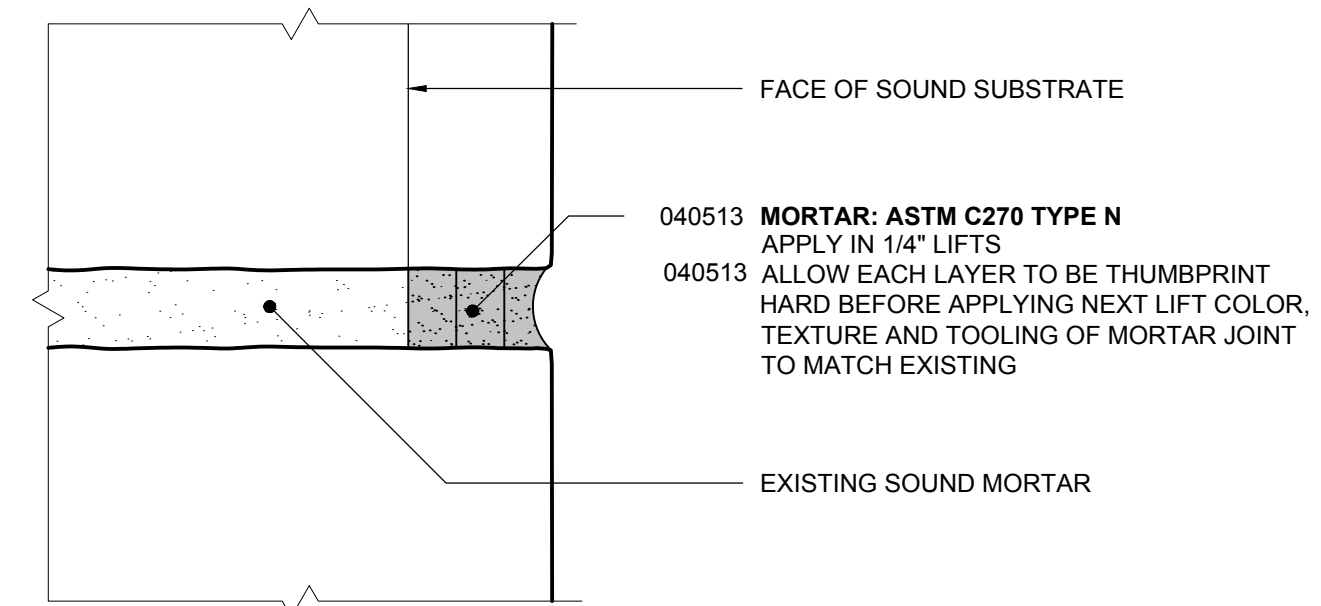


**SECTION B**



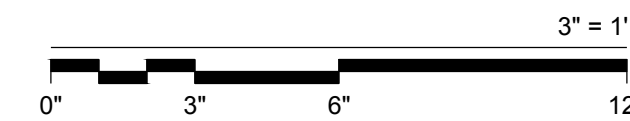
**SECTION A**

**STEP 2 :**  
 PRE-WETTING OF MASONRY UNITS



**SECTION A**

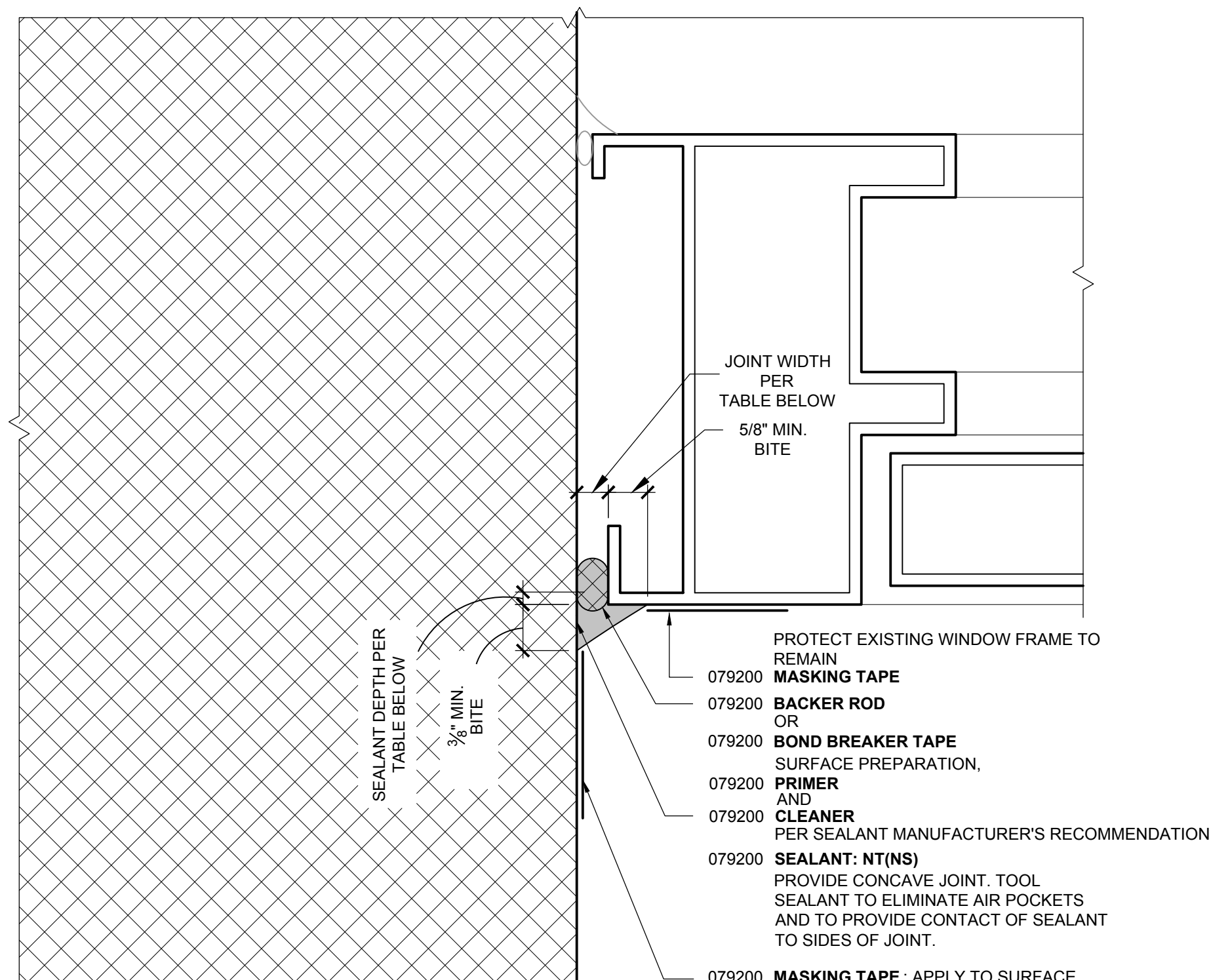
**STEP 3 :**  
 APPLICATION OF MORTAR



Date: Revision:

Date: Submissions:

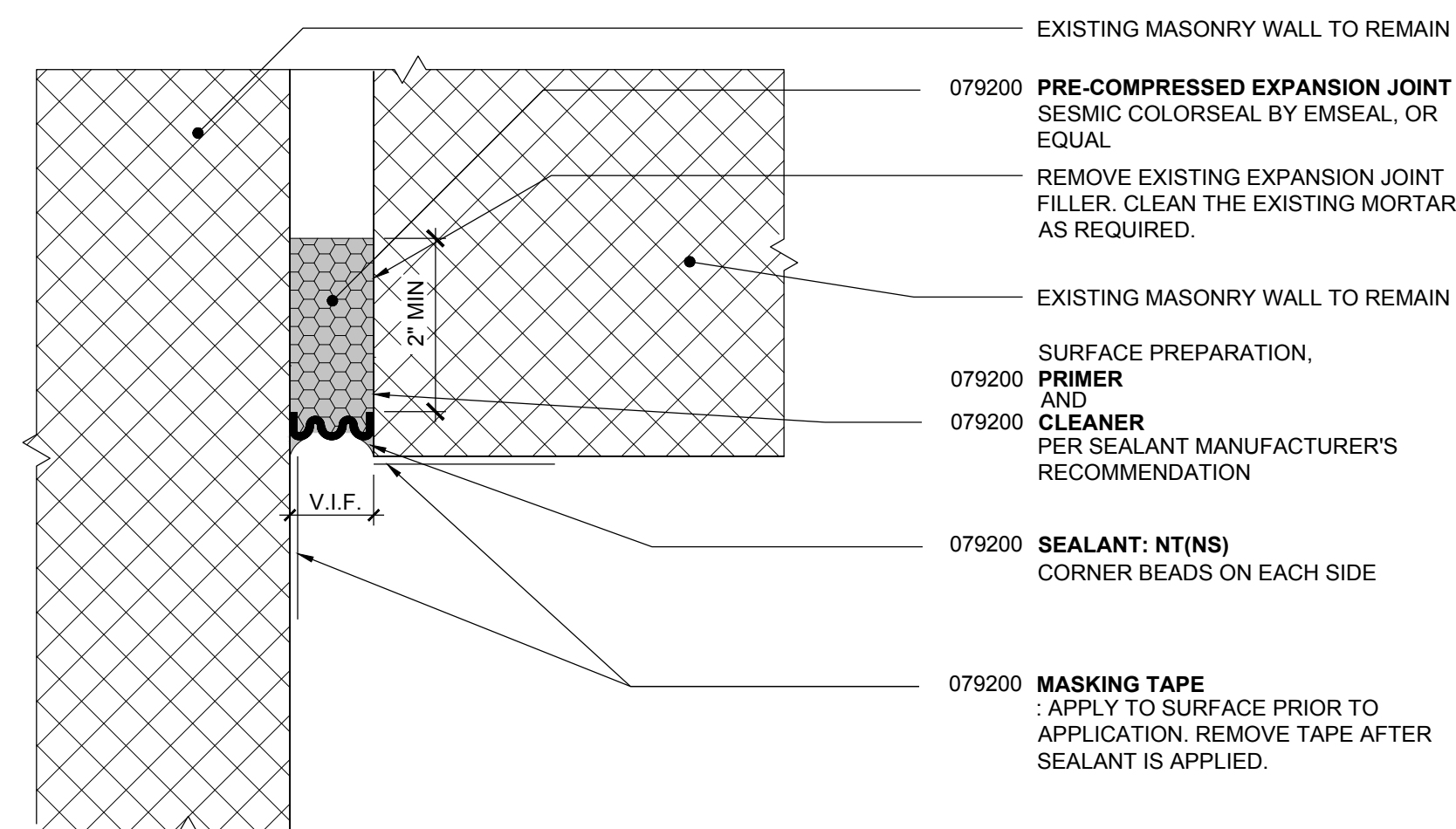
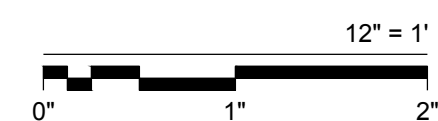
**PNT 01 BRICK RE-POINTING (SF)**



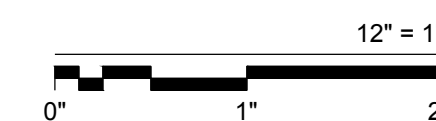
**PLAN**

SEALANT DEPTH AND BACKER ROD DIAMETER SHALL BE BASED ON THE FOLLOWING TABLE :

JOINT WIDTH	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/4"	1 1/2"
SEALANT DEPTH	1/4"	1/4"	1/4"	1/4" - 3/8"	3/8" - 1/2"	3/8" - 1/2"	3/8" - 1/2"	1/2"	1/2"
BACKER ROD DIAMETER	3/8"	1/2"	5/8"	3/4"	1"	1 1/4"	1 1/4"	1 1/2"	2"



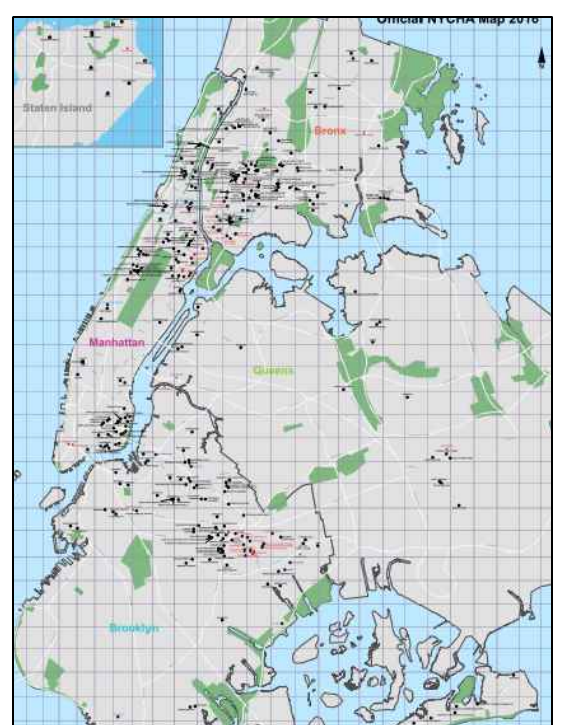
**PLAN**



DOB Employee Stamps and Signatures

**NEW YORK CITY HOUSING AUTHORITY**  
**DESIGN DEPARTMENT**  
 90 Church Street 10th floor, New York, NY 10007  
 Tel 212 306-3000 Fax (call)

Development: VARIOUS  
 Bldg. Addresses:  
 Building No: Oracle No:  
 Borough of: CITYWIDE



Key/ Location plan

Zoning Map: Zone:  
 Block No.: Lot No.:  
 Development No.: VARIOUS E.D.P No.:

Contract Title:  
**ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

Drawing Title: Restoration Details:  
 JNT 01, JNT 02, PNT 01

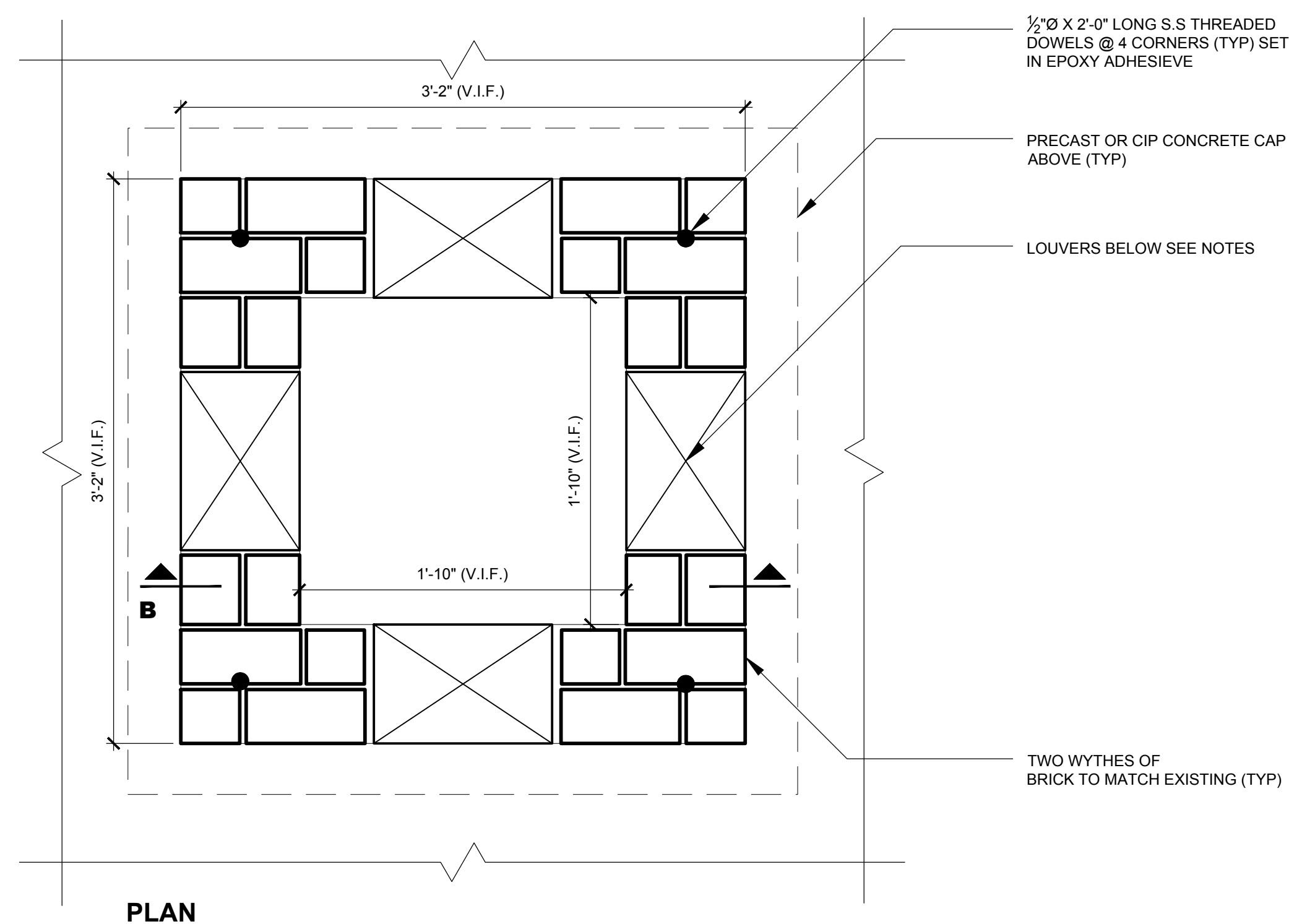
Seal / Signature: Issue Date: 12.04.2018  
 Scale: AS NOTED  
 Drawn By: AO / YZ / VP  
 Checked By: NS / VS  
 Drawing No.:  
**A533.00**  
 Sheet 48 of 64

**JNT 01 JOINT SEALANT AT WINDOW / LOUWER PERIMETER (LF)**

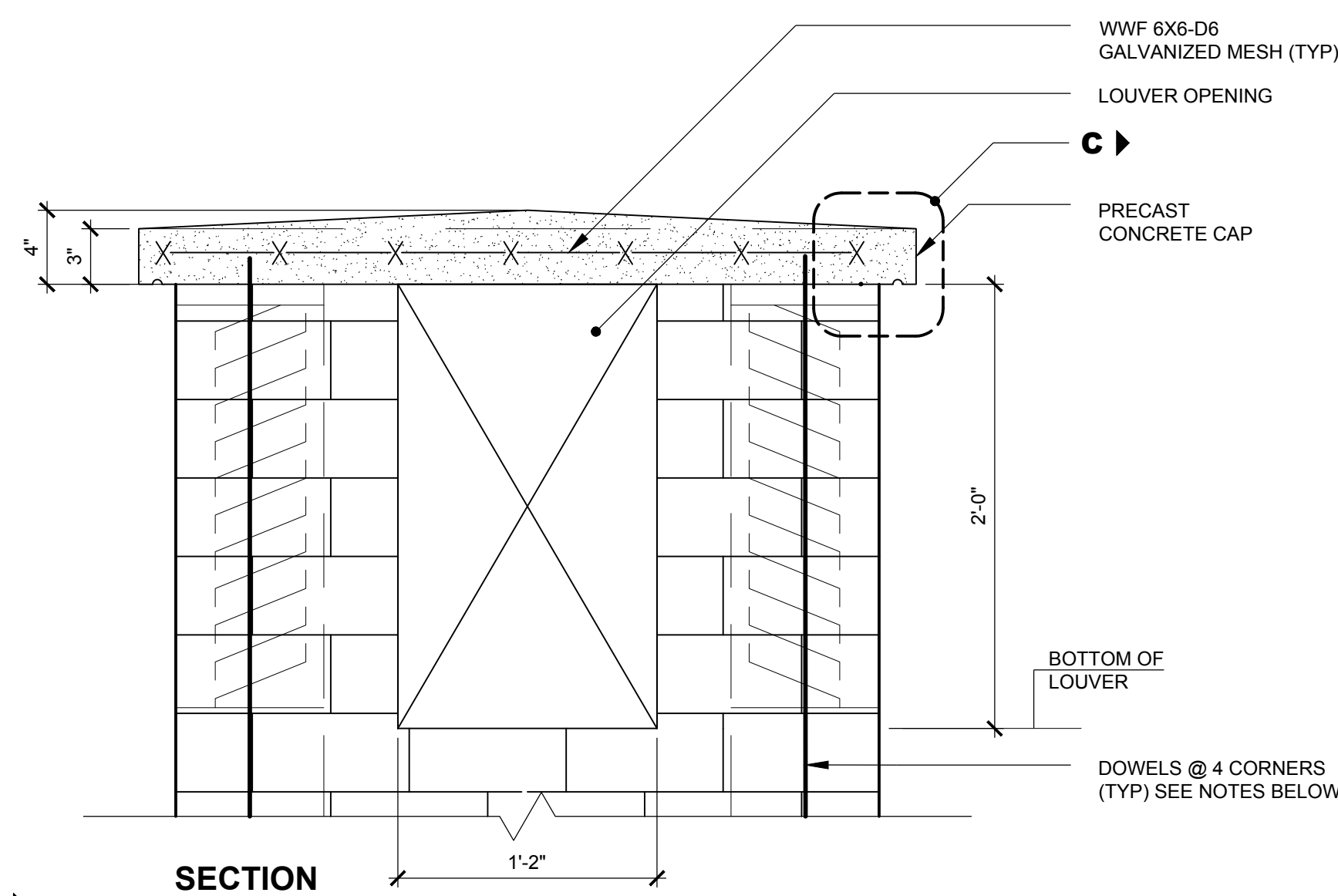
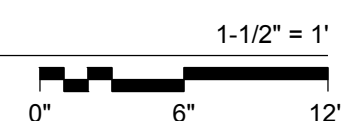
**JNT 02 EXPANSION JOINT (LF)**



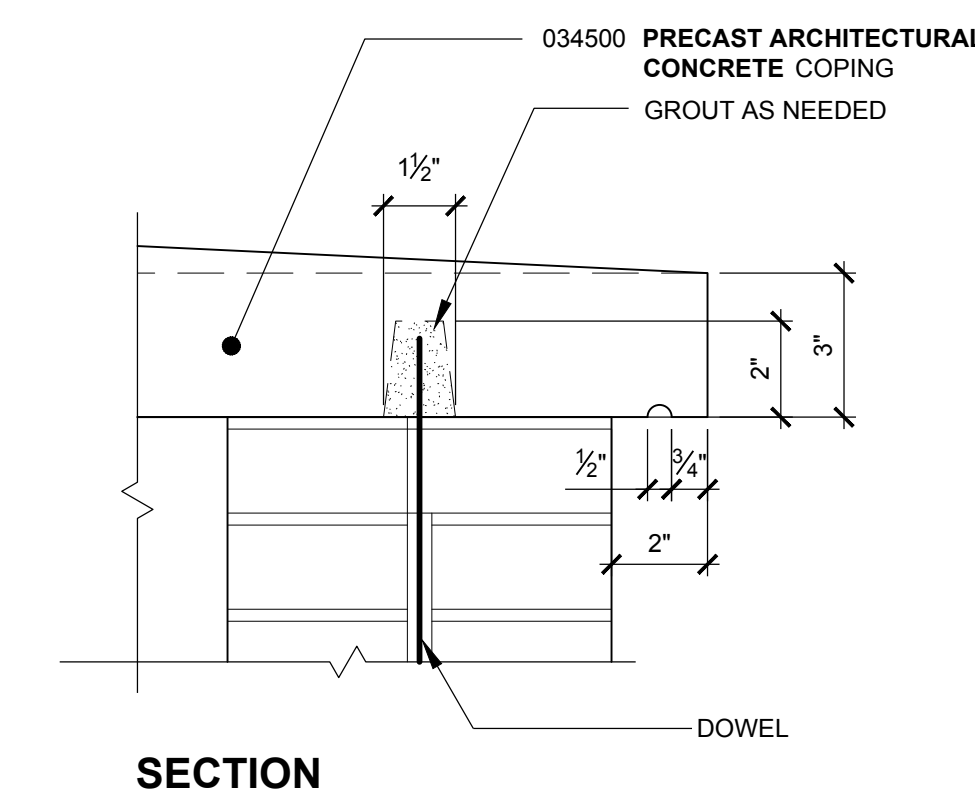
Key/Location plan



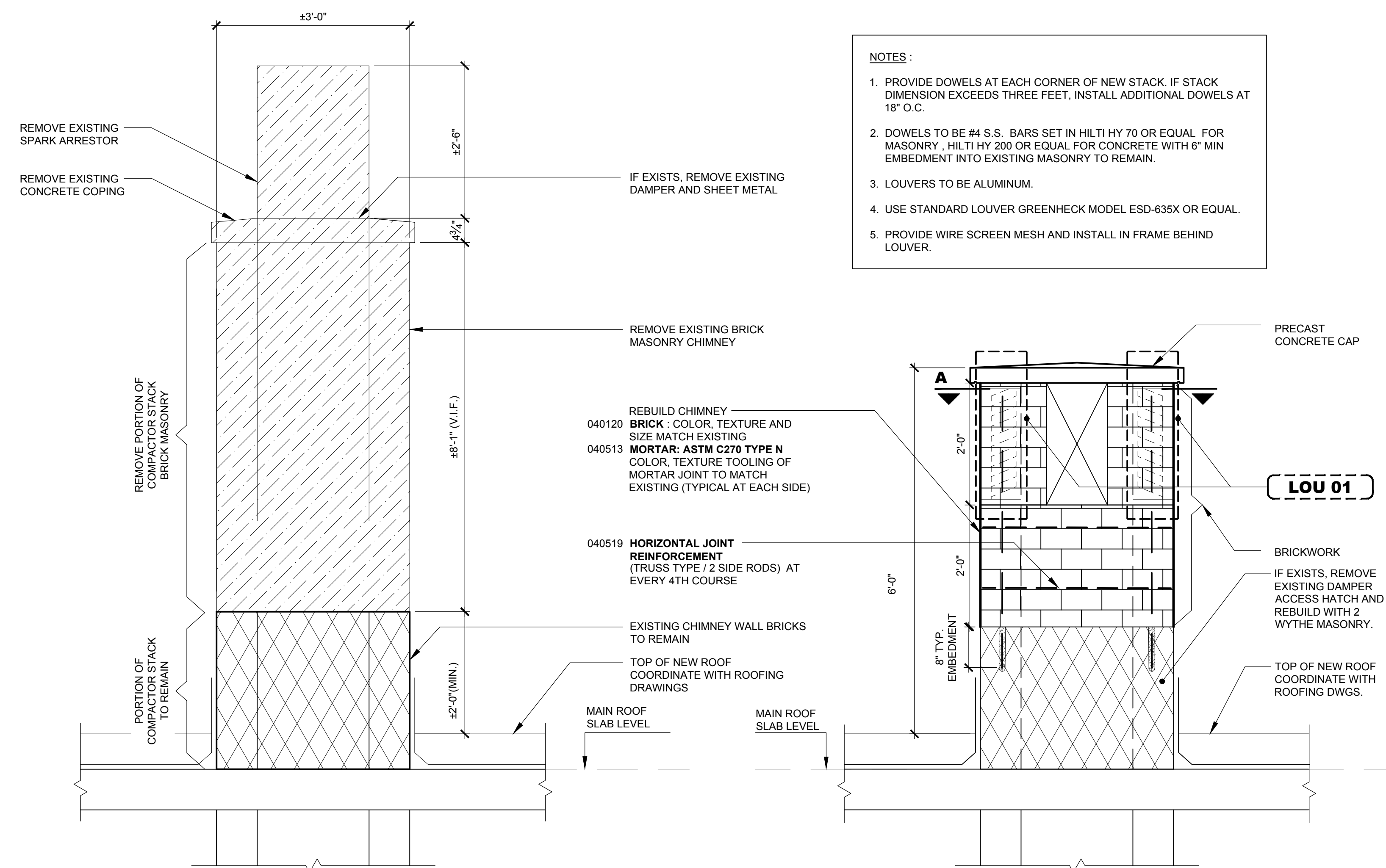
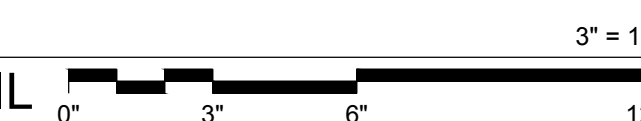
**A**  
 PLAN BELOW PRECAST CONCRETE CAP



**B**  
 BRICKWORK AND PRECAST CAP SECTION



**C**  
 PRECAST CAP DETAIL



COMPACTOR STACK ELEVATION: DEMOLITION

COMPACTOR STACK ELEVATION: PROPOSED

- NOTES:**
1. PROVIDE DOWELS AT EACH CORNER OF NEW STACK. IF STACK DIMENSION EXCEEDS THREE FEET, INSTALL ADDITIONAL DOWELS AT 18" O.C.
  2. DOWELS TO BE #4 S.S. BARS SET IN HILTI HY 70 OR EQUAL. FOR MASONRY. HILTI HY 200 OR EQUAL FOR CONCRETE WITH 6" MIN EMBEDMENT INTO EXISTING MASONRY TO REMAIN.
  3. LOUVERS TO BE ALUMINUM.
  4. USE STANDARD LOUVER GREENHECK MODEL ESD-635X OR EQUAL.
  5. PROVIDE WIRE SCREEN MESH AND INSTALL IN FRAME BEHIND LOUVER.

**LEGEND:**

- MASONRY TO BE REMOVED
- MASONRY TO REMAIN
- NEW BRICKWORK

**ABBREVIATIONS:**

- CIP - CAST IN PLACE
- S.S. - STAINLESS STEEL

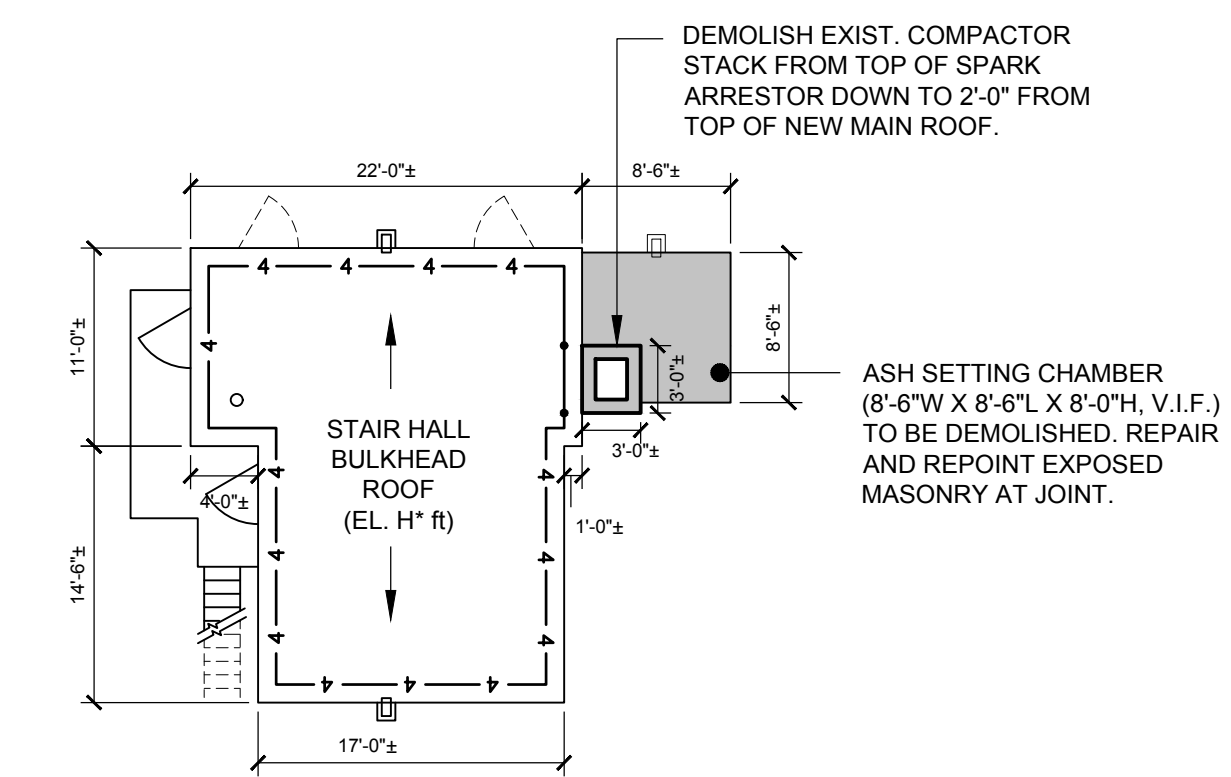


DOB Employee Stamps and Signatures

**CHM 01 HEIGHT REDUCTION OF STAND-ALONE COMPACTOR STACK (EA)**

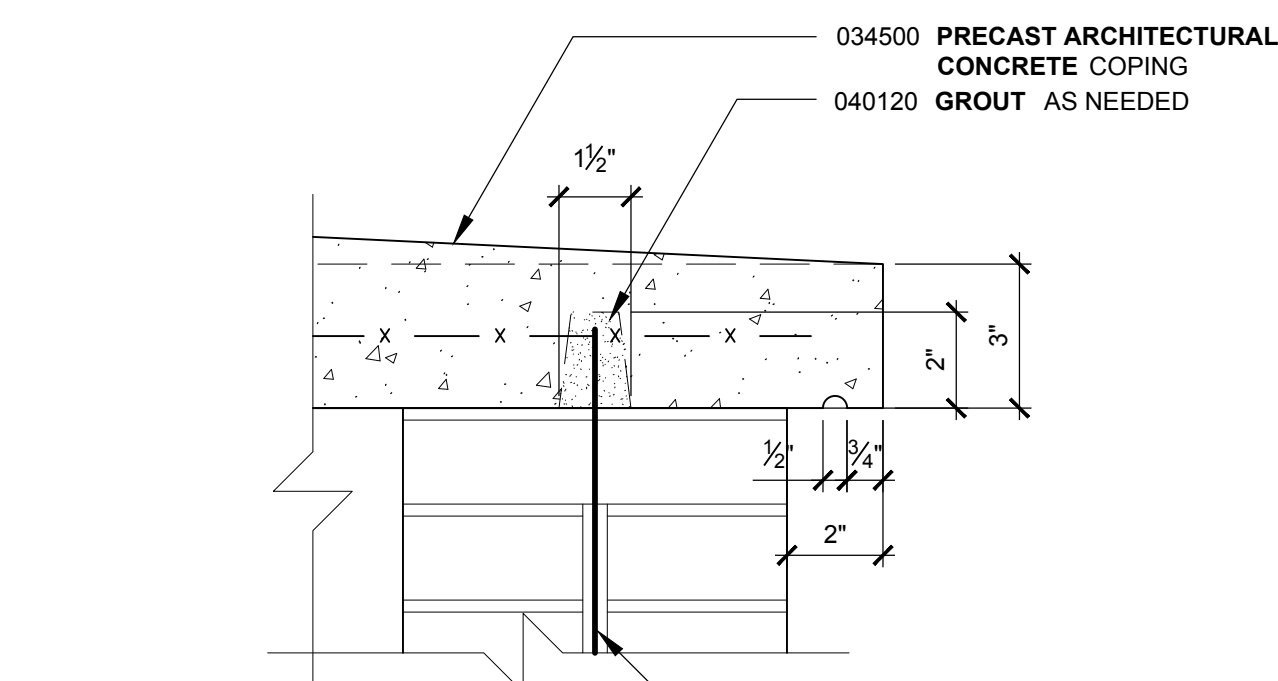


Key/ Location plan



**TYP. BULKHEAD PLAN WITH ATTACHED ASH SETTING CHAMBER**  
 SCALE: 3/32" = 1'-0"

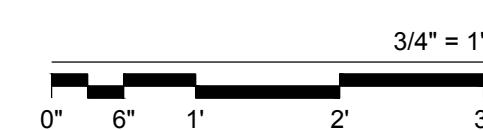
- NOTES:**
1. PROVIDE DOWELS AT EACH CORNER OF NEW STACK. IF STACK DIMENSION EXCEEDS THREE FEET, INSTALL ADDITIONAL DOWELS AT 18" O.C.
  2. DOWELS TO BE #4 S.S. BARS SET IN HILTI HY 70 OR EQUAL FOR MASONRY, HILTI HY 200 OR EQUAL FOR CONCRETE WITH 6" MIN. EMBEDMENT INTO EXISTING MASONRY TO REMAIN.
  3. LOUVERS TO BE ALUMINUM.
  4. USE STANDARD LOUVER GREENHECK MODEL ESD-635X OR EQUAL.
  5. PROVIDE WIRE SCREEN MESH AND INSTALL IN FRAME BEHIND LOUVER.



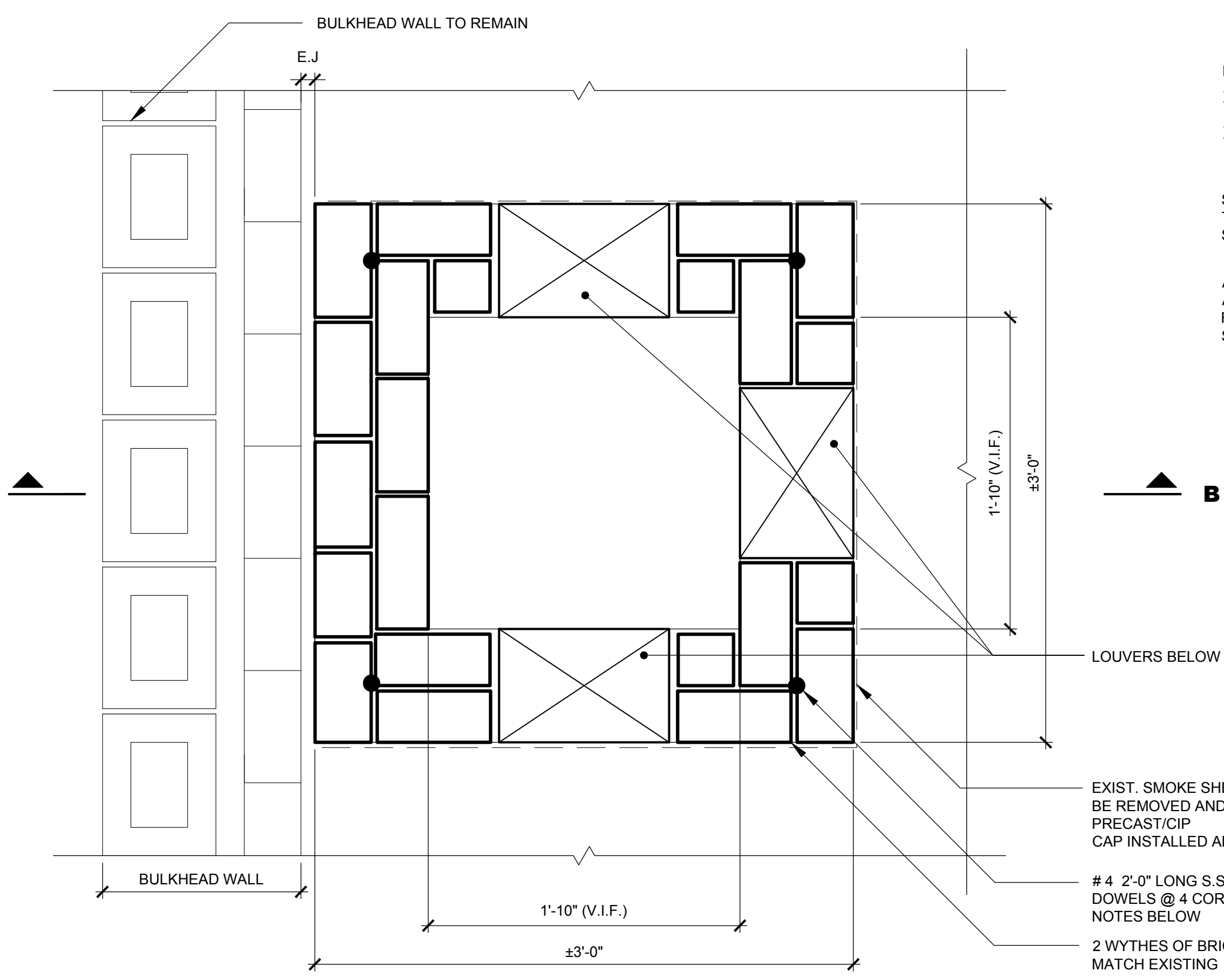
**PRECAST CAP DETAIL**  
 SCALE: 3" = 1'

- LEGEND:**
- MASONRY TO BE REMOVED
  - MASONRY TO BE RETAINED
  - NEW BRICKWORK

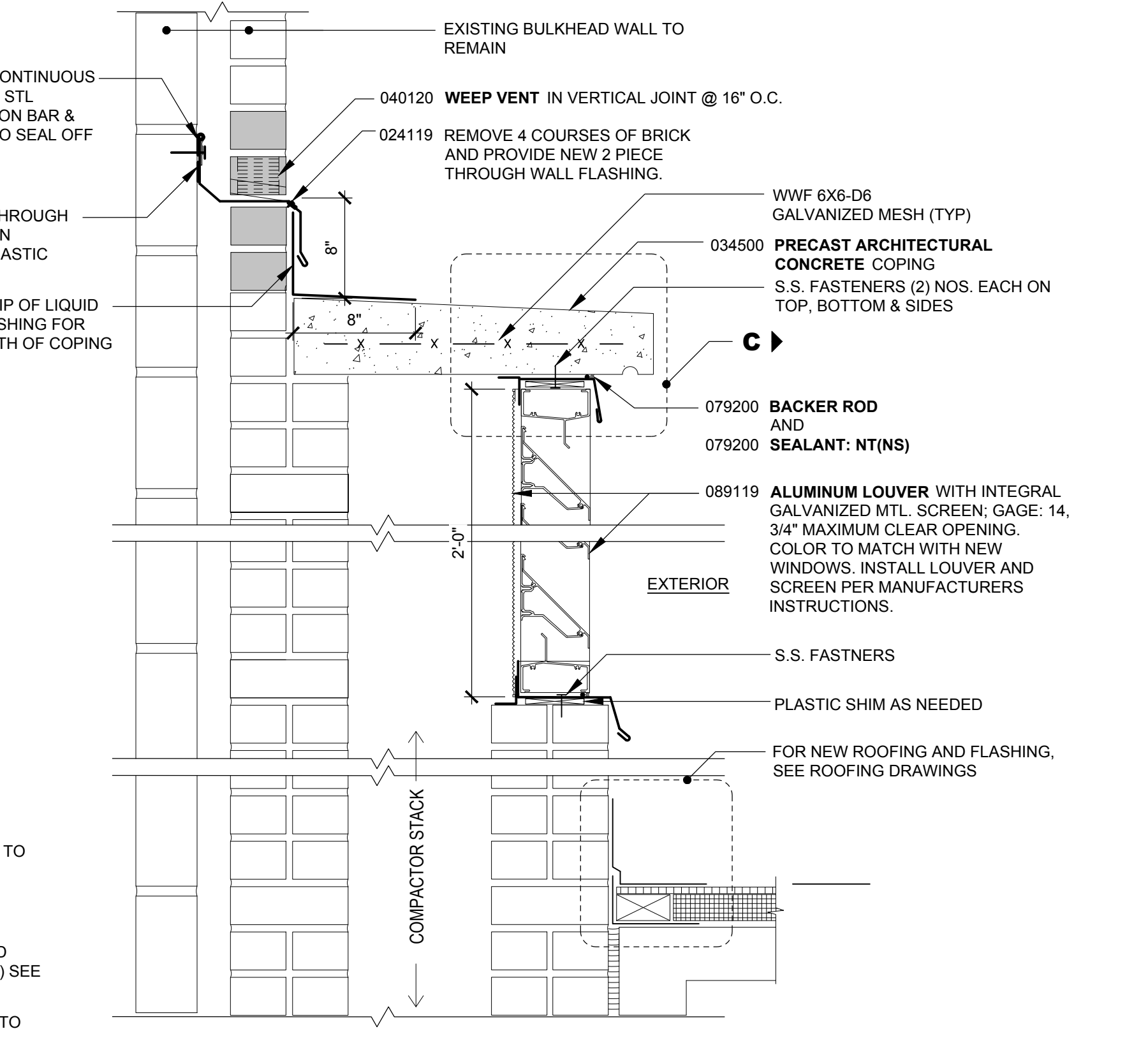
- ABBREVIATIONS:**
- CIP - CAST IN PLACE
  - E.J. - EXPANSION JOINT
  - S.S. - STAINLESS STEEL



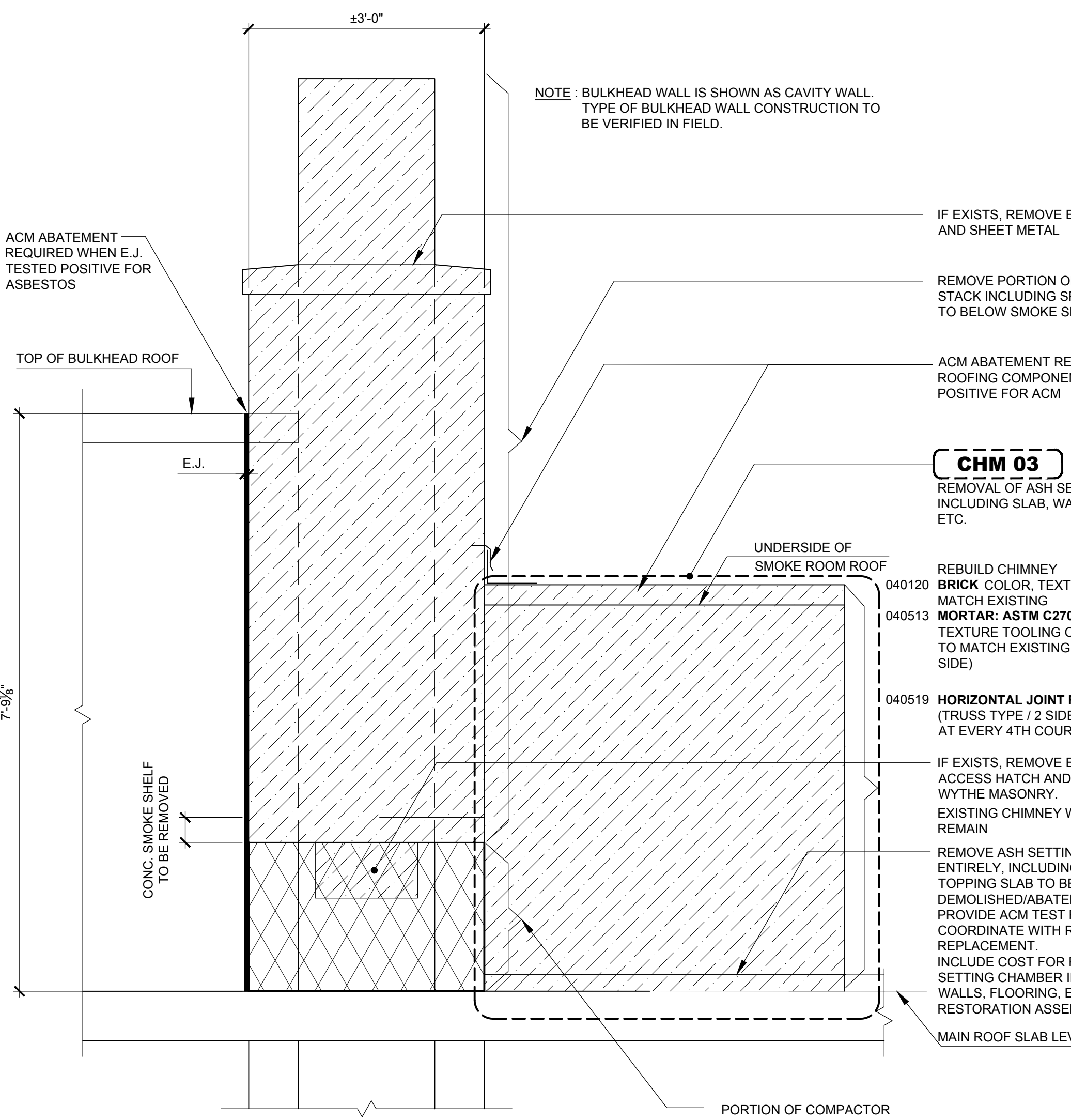
DOB Employee Stamps and Signatures



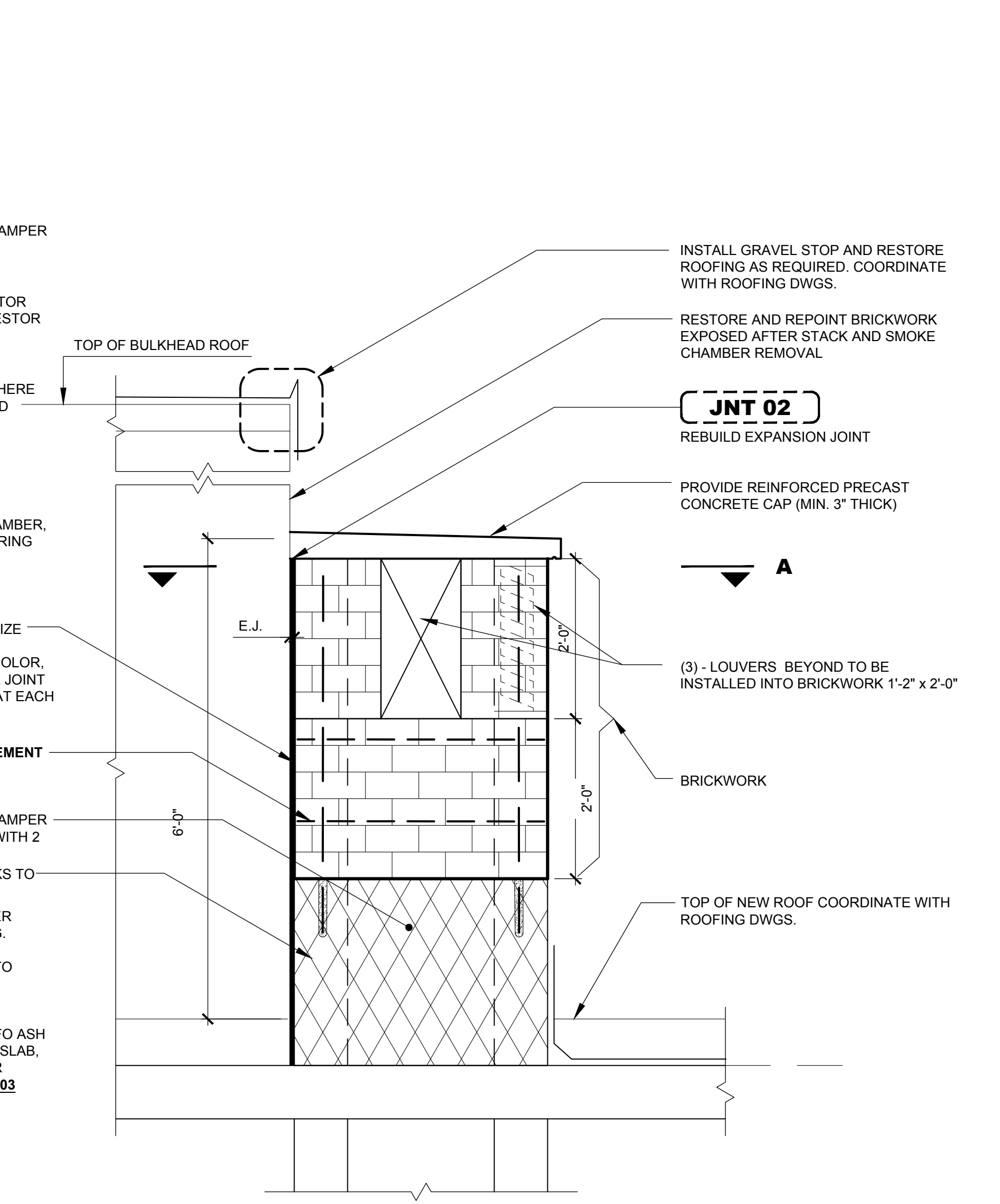
**PLAN BELOW PRECAST CONCRETE CAP**  
 SCALE: 1-1/2" = 1'



**SECTION @ COMPACTOR STACK & LOUVER**  
 SCALE: 1-1/2" = 1'

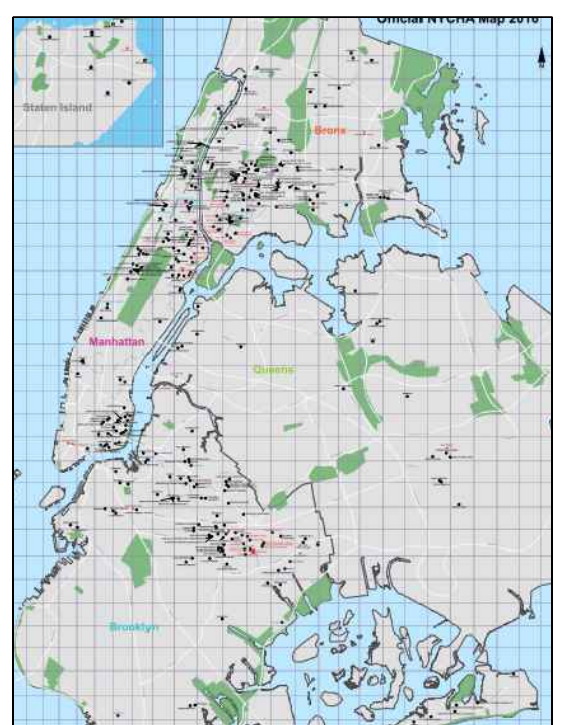


**COMPACTOR STACK ELEVATION: DEMOLITION**



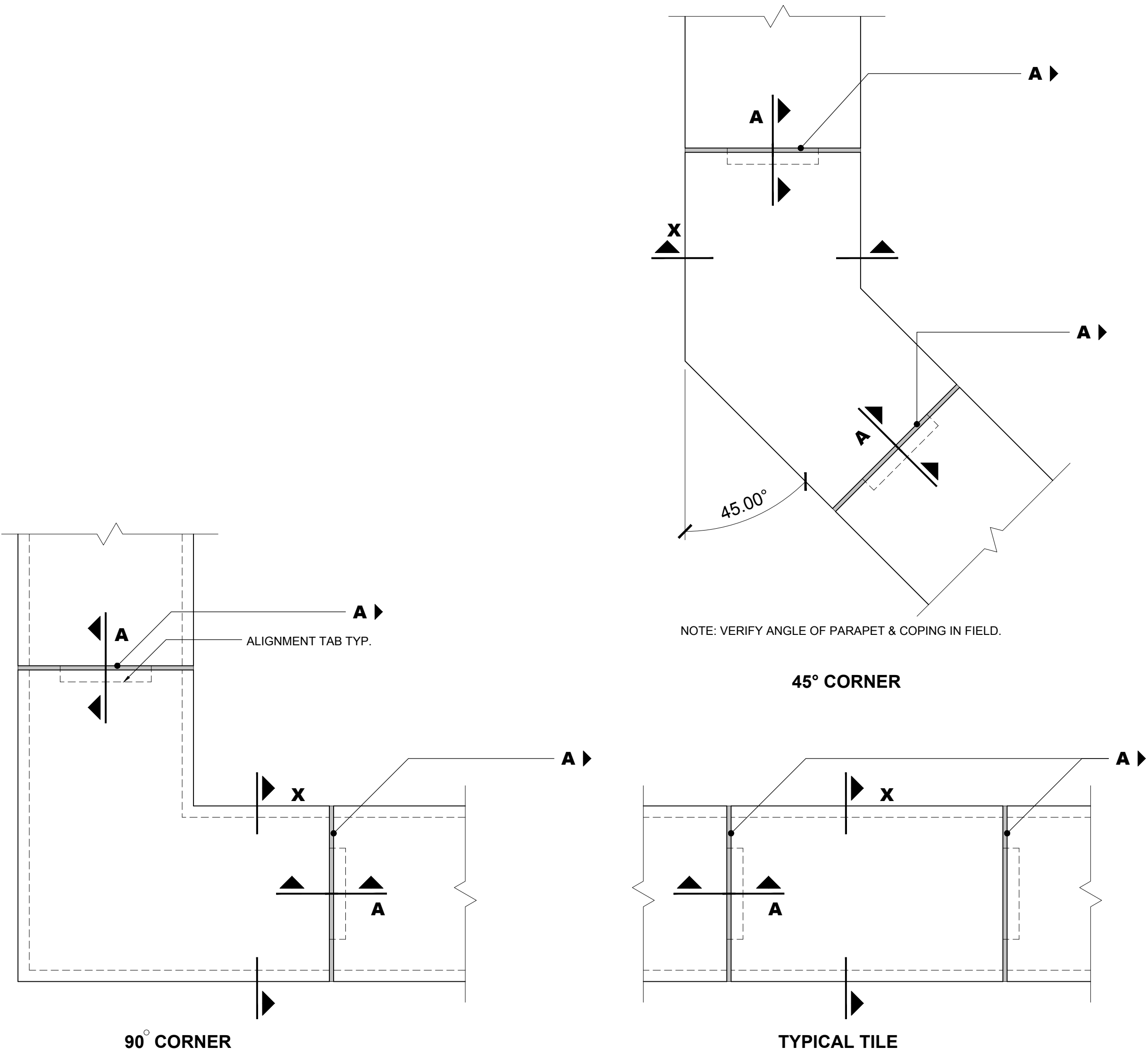
**COMPACTOR STACK ELEVATION: PROPOSED**

**CHM 02 HEIGHT REDUCTION OF COMPACTOR STACK ADJACENT TO BULKHEAD AND REMOVAL OF ASH SETTING CHAMBER (EA)**



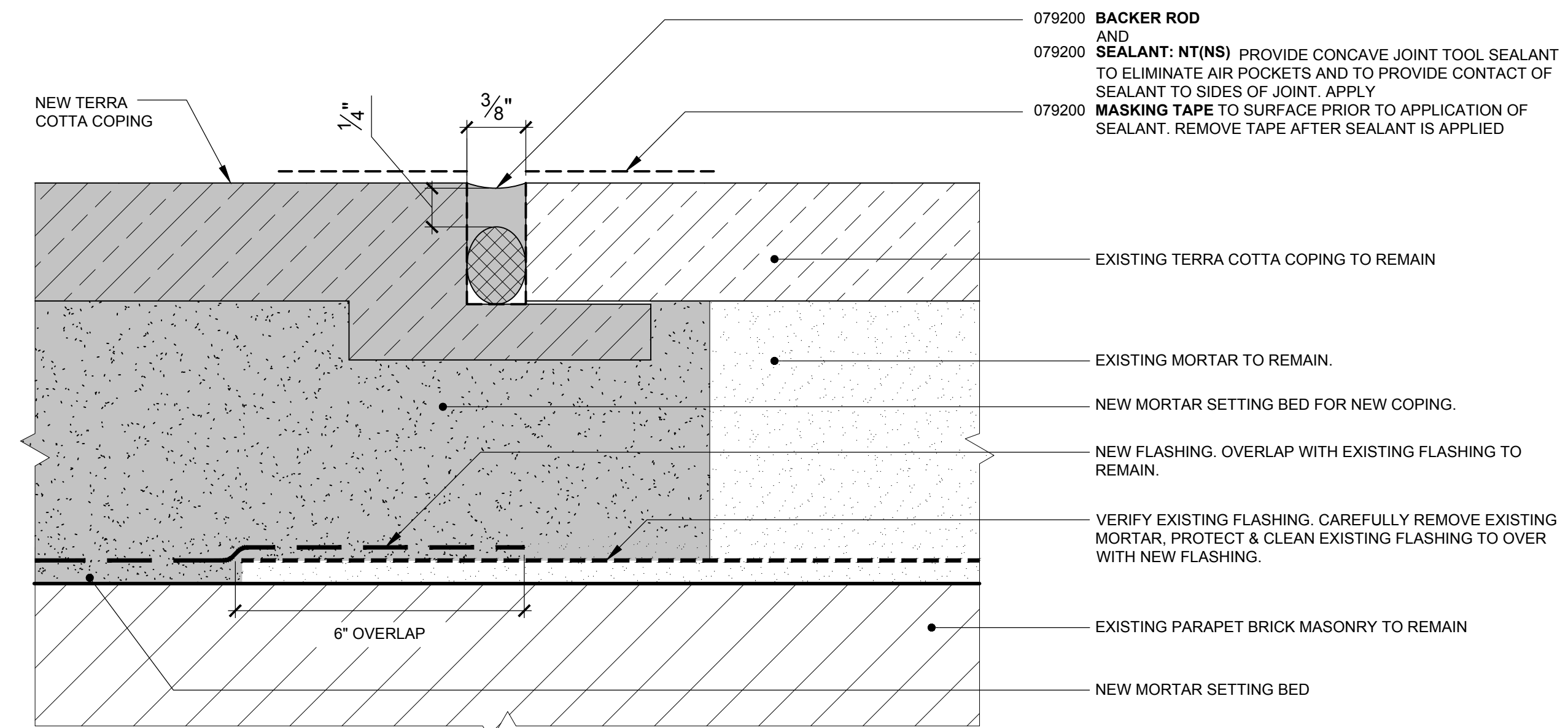
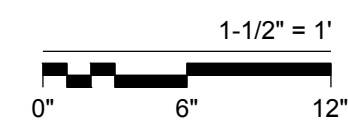
Key/ Location plan

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>A536.00</b> Sheet 51 of 64



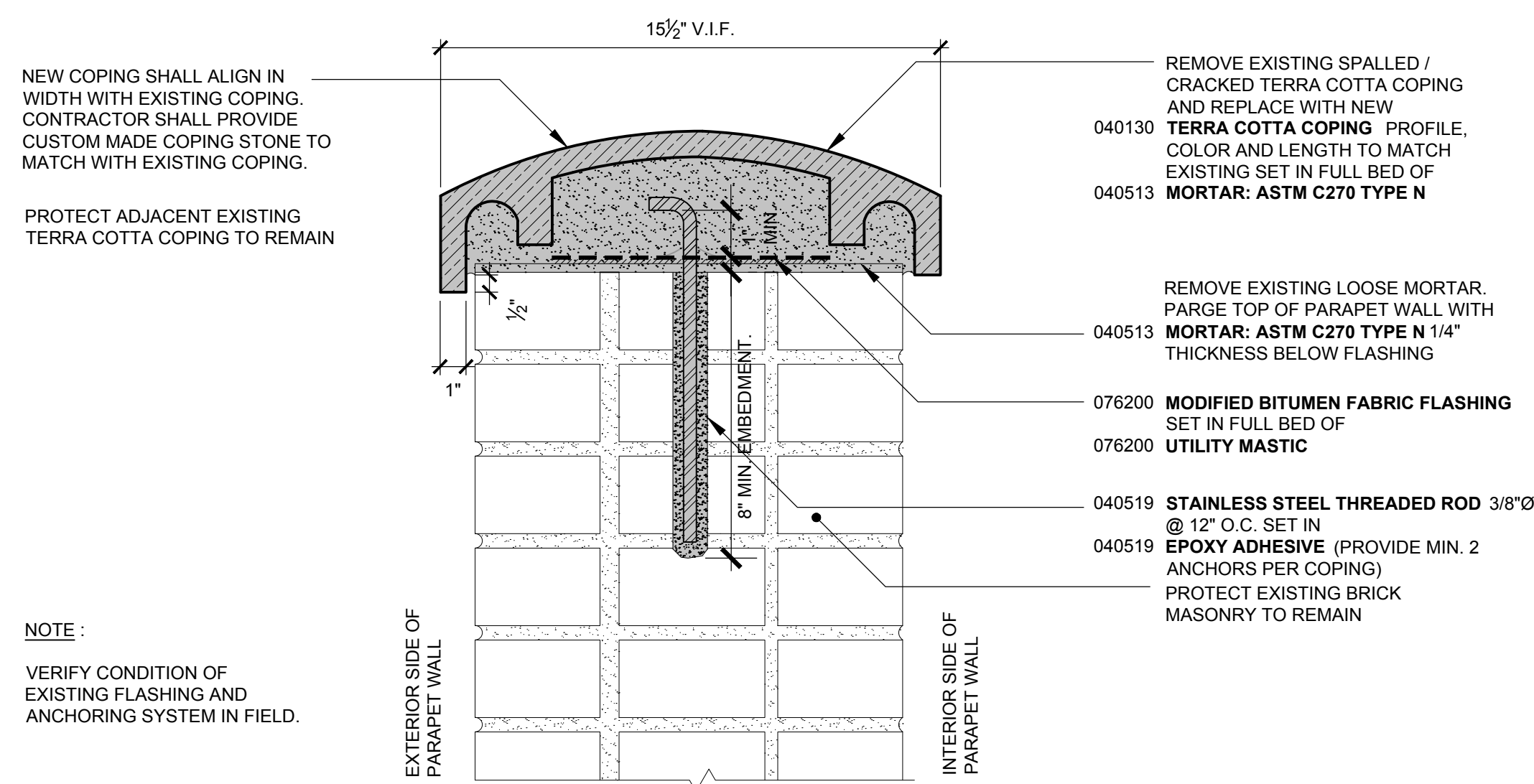
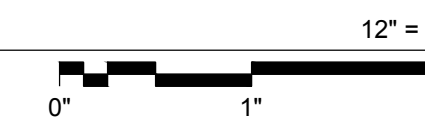
**COPING STONE LAYOUTS**

NOTE: CONTRACTOR TO VERIFY EXTENTS AND EXACT COUNT OF EACH TYPE OF VARIATION PER BUILDING.

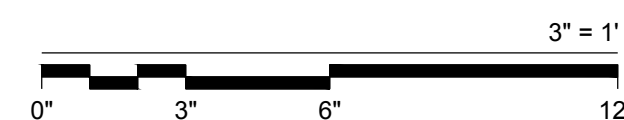


**SECTION**

**A**  
**JOINT SEALANT**



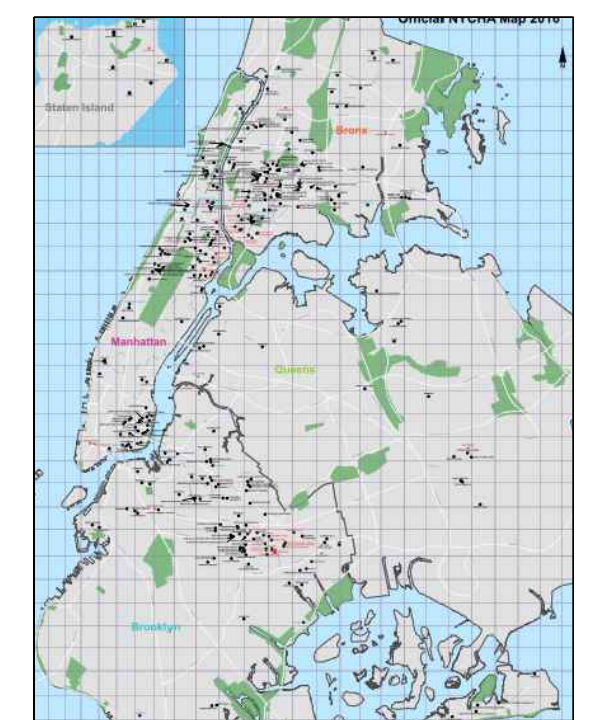
**SECTION**



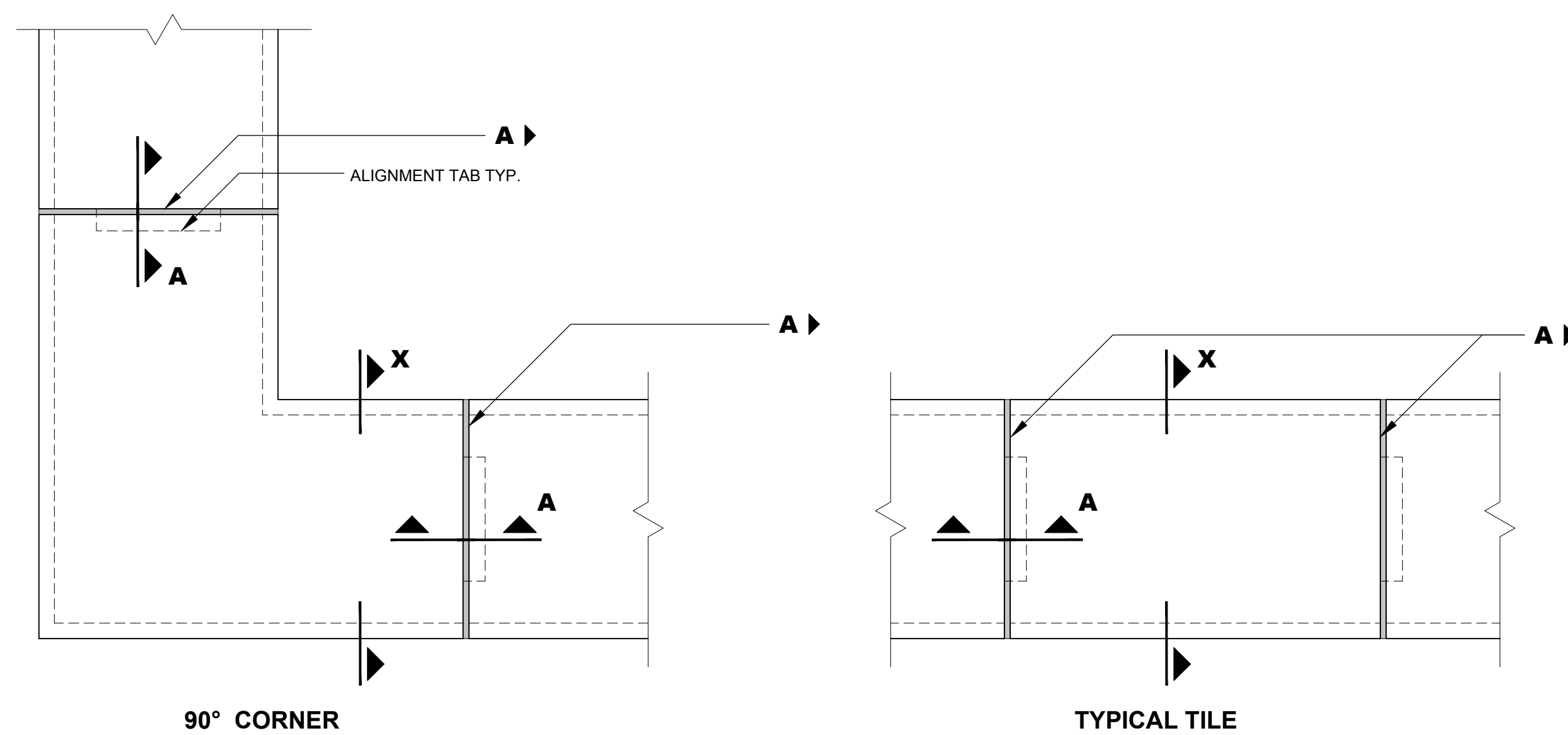
NOTE:  
 VERIFY CONDITION OF EXISTING FLASHING AND ANCHORING SYSTEM IN FIELD.

DOB Employee Stamps and Signatures

**COP 01 TERRA COTTA COPING REPLACEMENT AT BRICK PARAPET (3 WYTHE) (LF)**

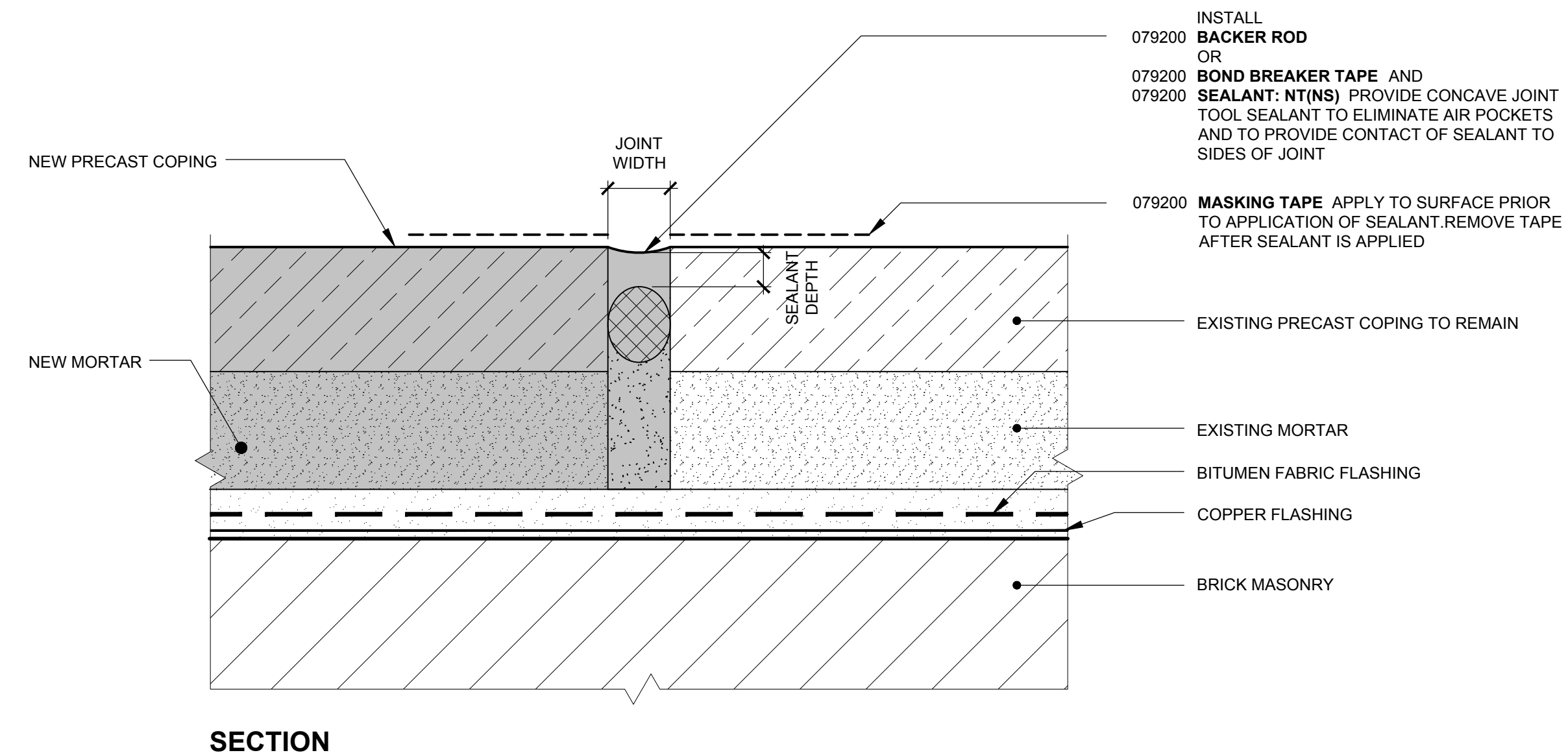
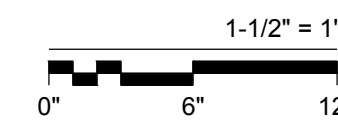


Key/ Location plan



**COPING STONE LAYOUTS**

NOTE: CONTRACTOR TO VERIFY EXTENTS AND EXACT COUNT OF EACH TYPE OF VARIATIONS PER BUILDING.

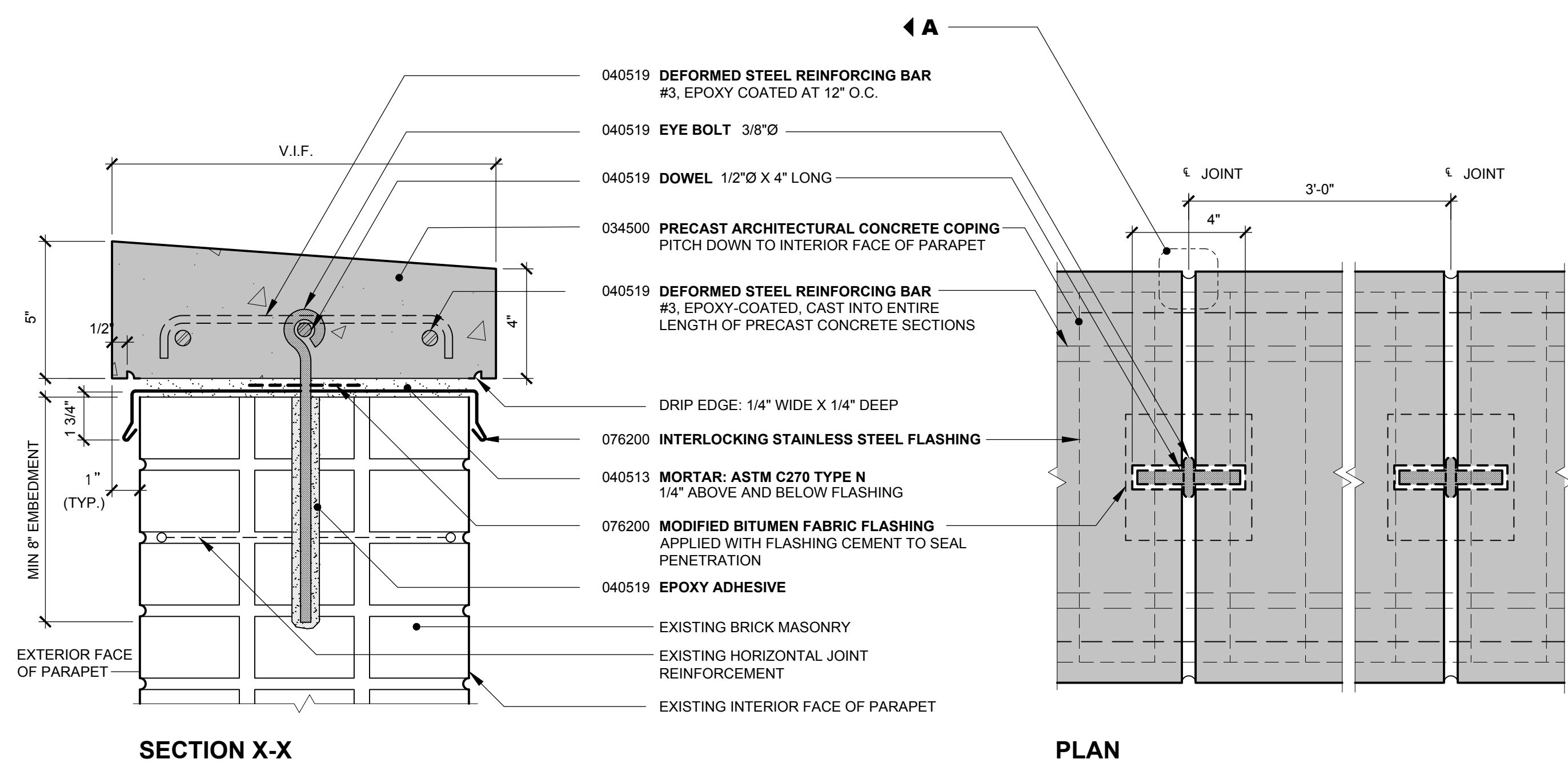


**SECTION**

SEALANT DEPTH AND BACKER ROD DIAMETER SHALL BE BASED ON THE FOLLOWING TABLE:

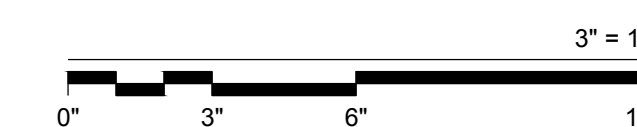
JOINT WIDTH	1/4"	3/8"	1/2"	5/8"	3/4"
SEALANT DEPTH	1/4"	1/4"	1/4"	1/4" - 3/8"	3/8" - 1/2"
BACKER ROD DIAMETER	3/8"	1/2"	5/8"	3/4"	1"

**COPING SEALANT JOINT**



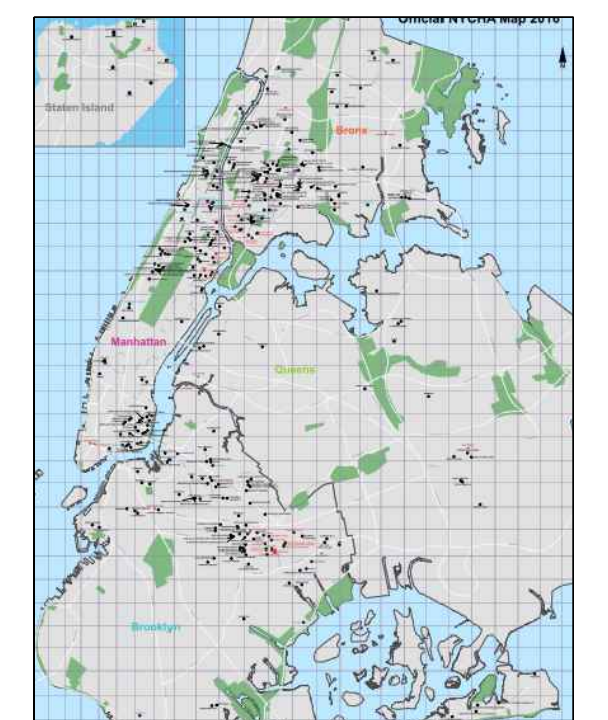
**SECTION X-X**

**PLAN**



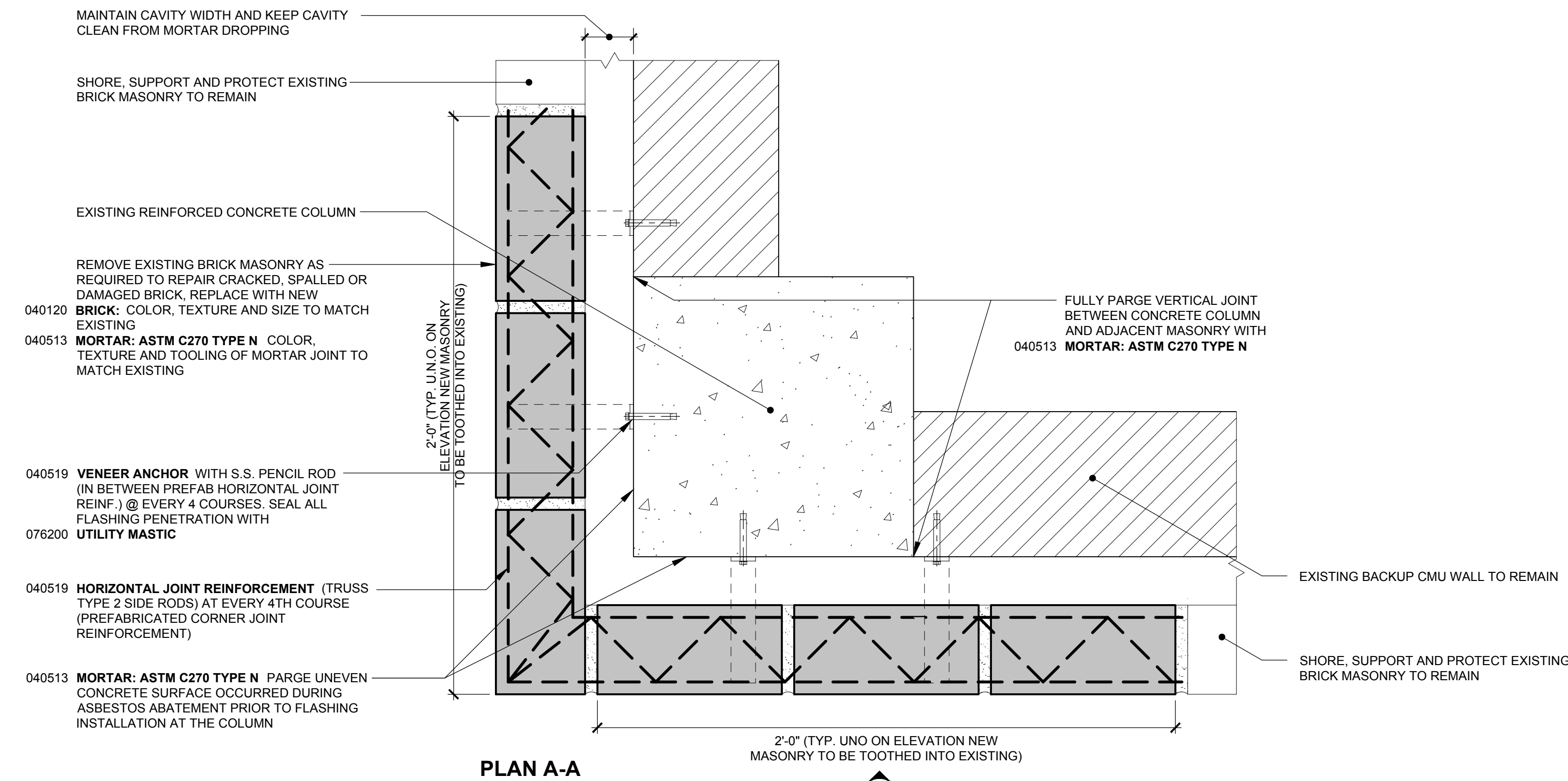
DOB Employee Stamps and Signatures

**COP 02 PRECAST CONCRETE COPING REPLACEMENT AT BRICK PARAPET (3 WYTHE) (LF)**

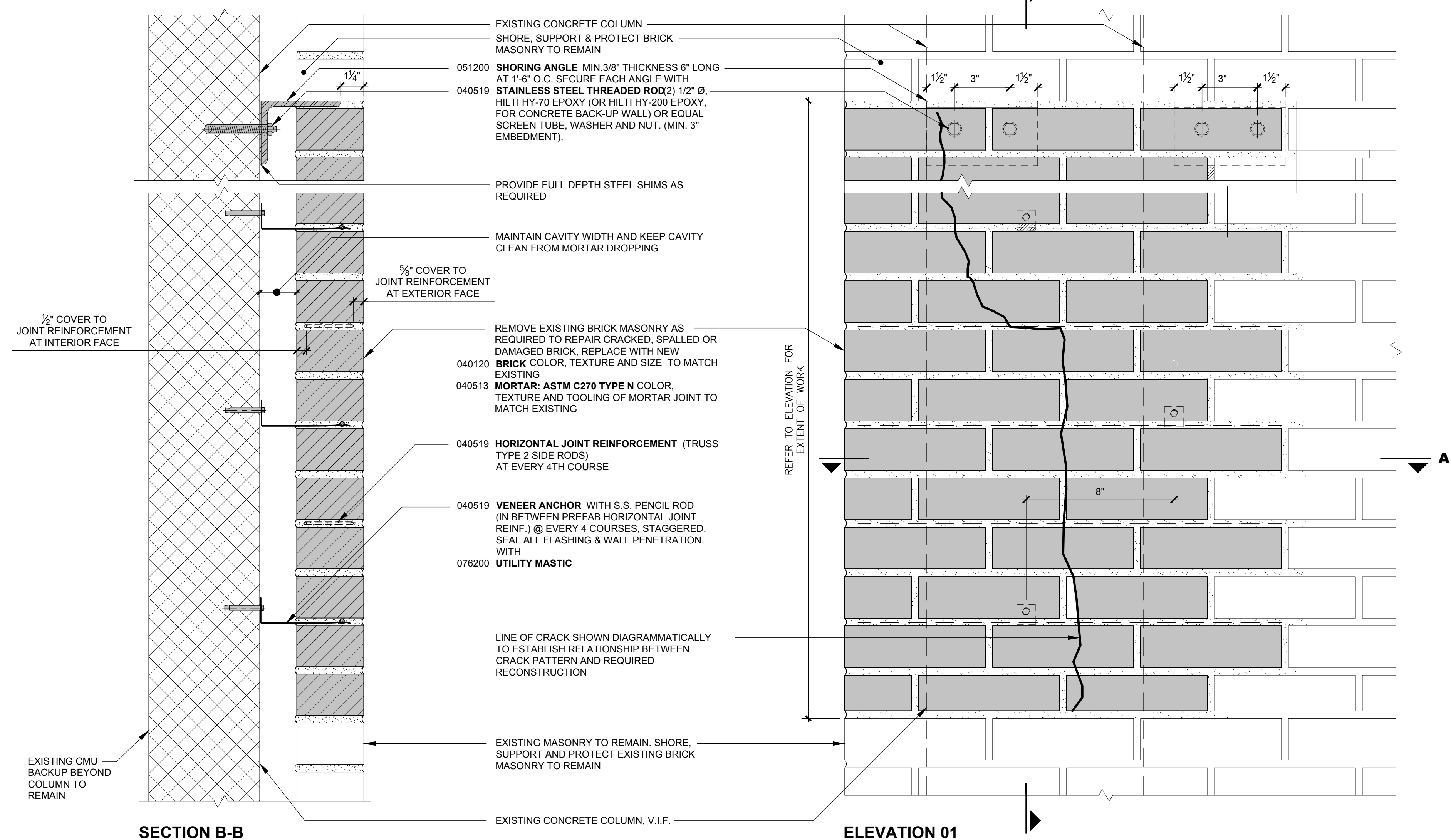


Key/ Location plan

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>A538.00</b>
	Sheet 53 of 64

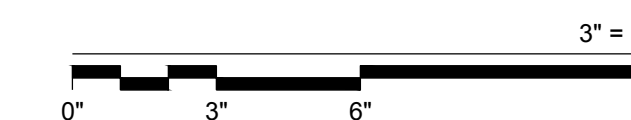


PLAN A-A



SECTION B-B

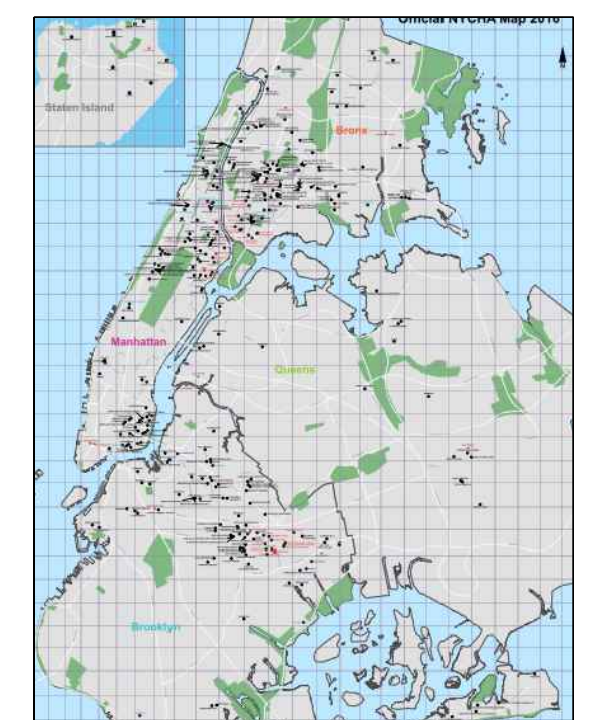
ELEVATION 01



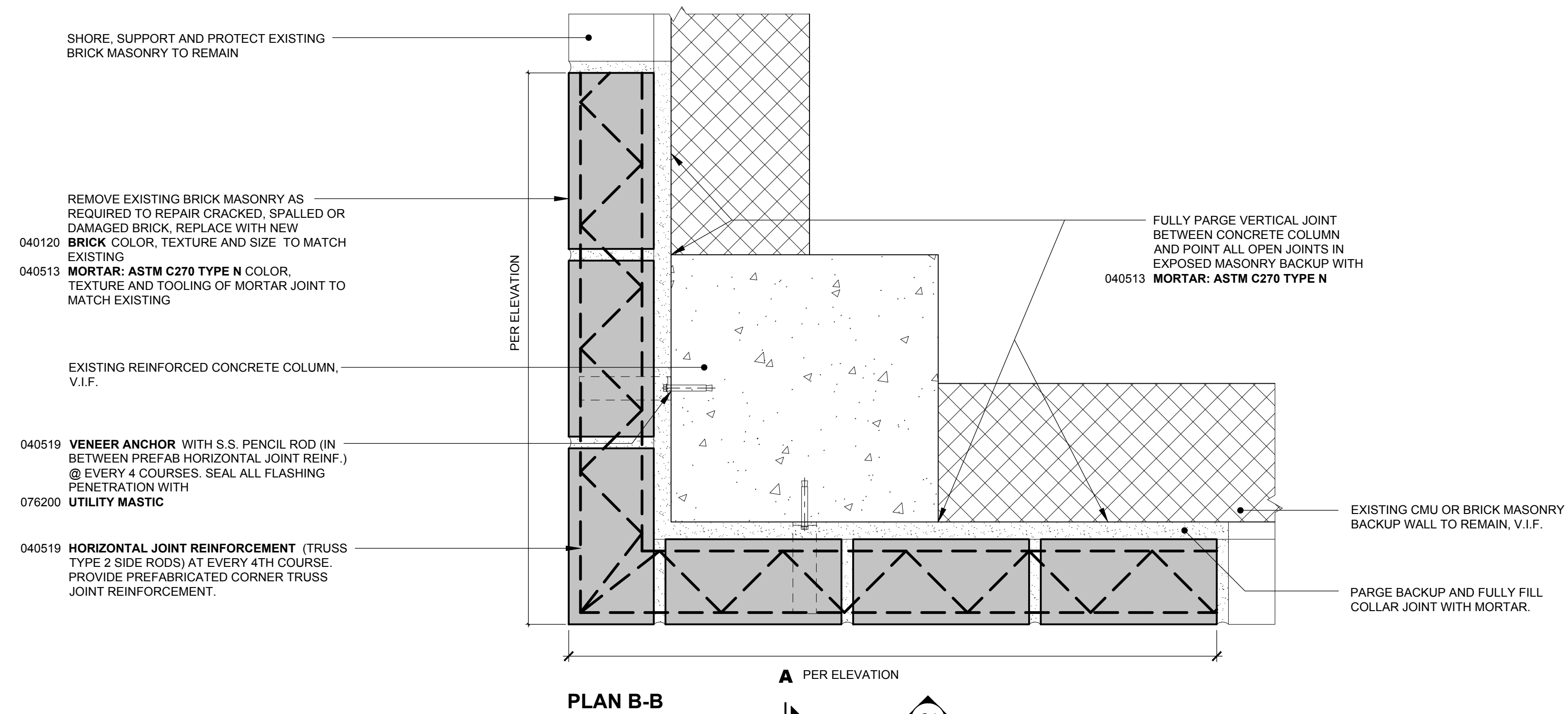
DOB Employee Stamps and Signatures

**COR 01 CORNER RESTORATION: BRICK CAVITY WALL (SF)**

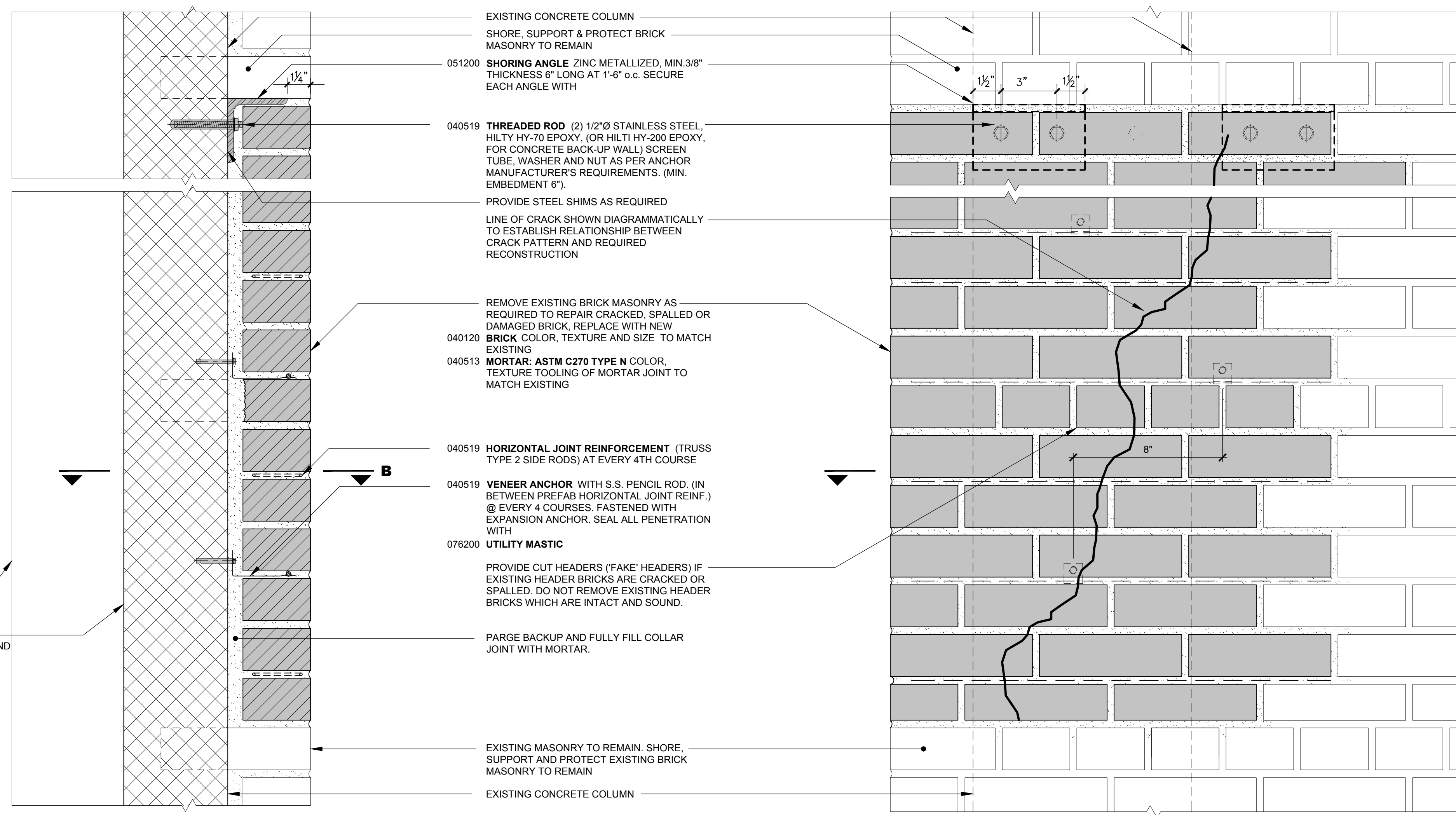




Key/ Location plan

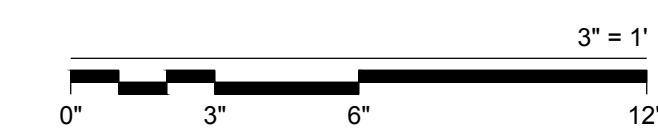


PLAN B-B



SECTION A-A

ELEVATION 01



DOB Employee Stamps and Signatures

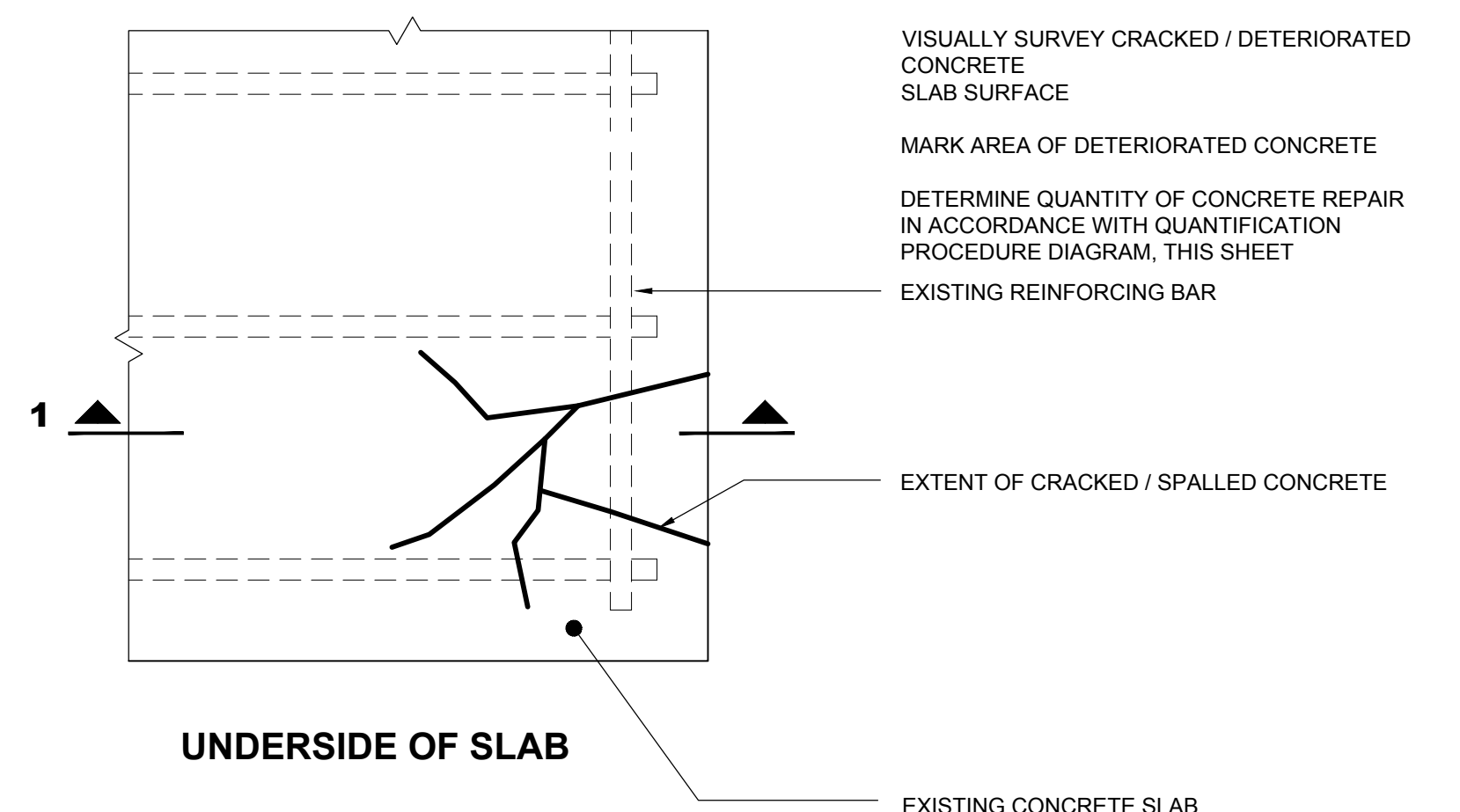
**COR 02 CORNER RESTORATION: BRICK SOLID WALL (SF)**



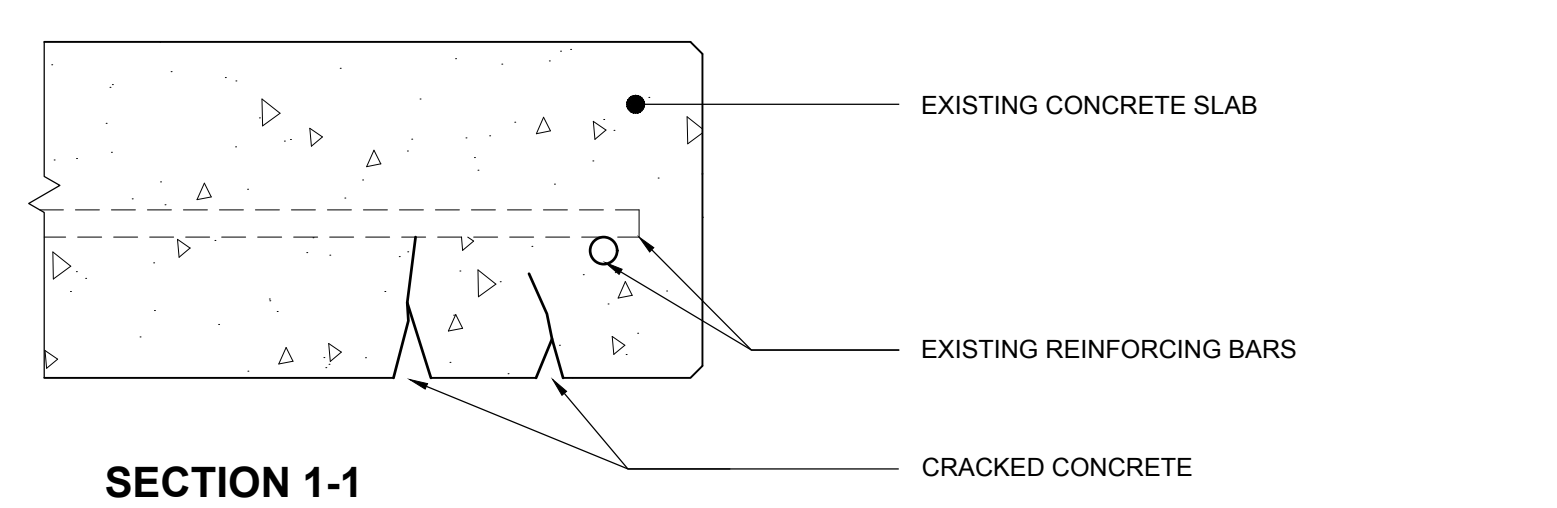
Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>A540.00</b>

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**STEP 1 : IDENTIFICATION OF DETERIORATED CONCRETE**

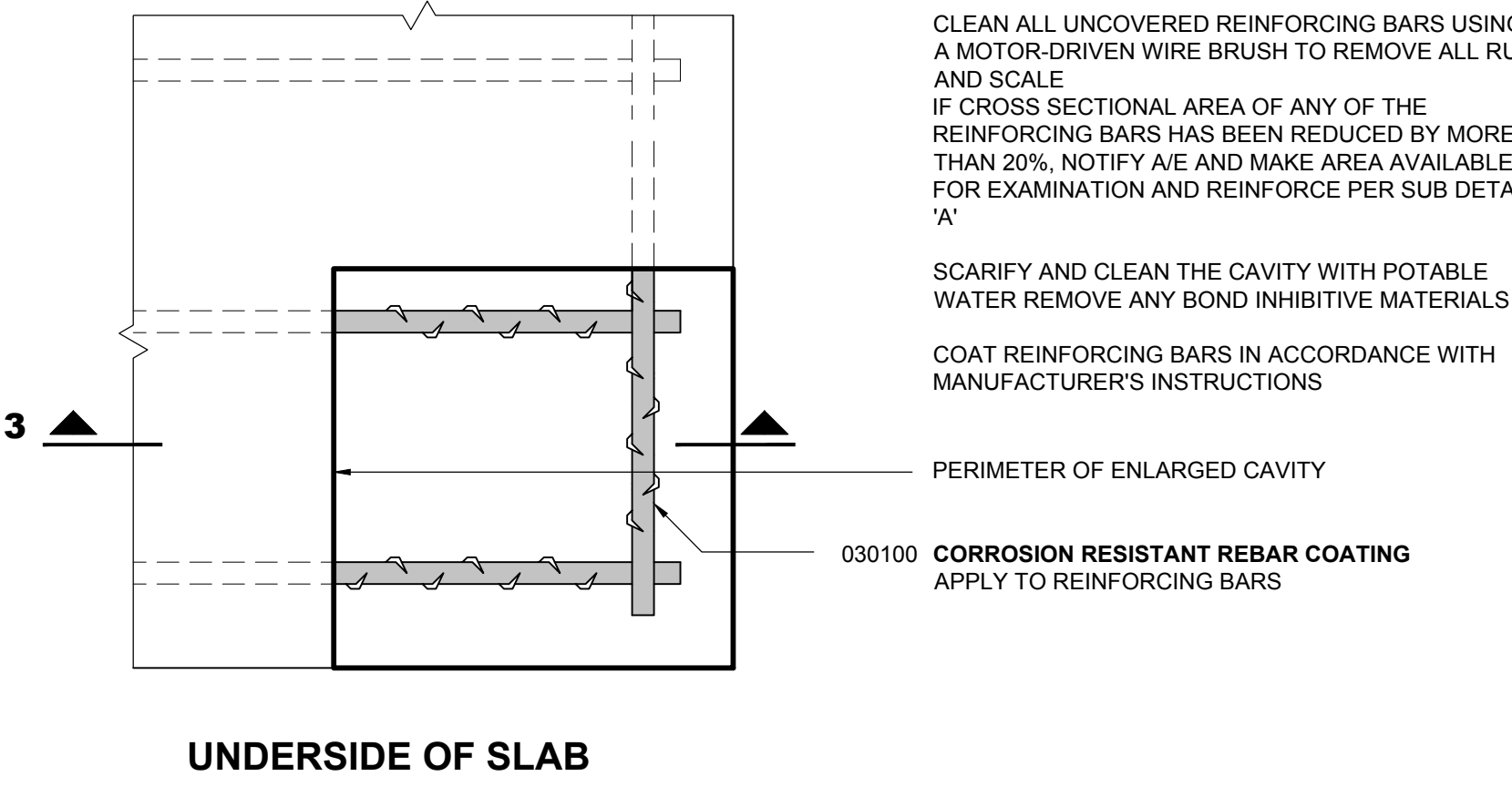


UNDERSIDE OF SLAB

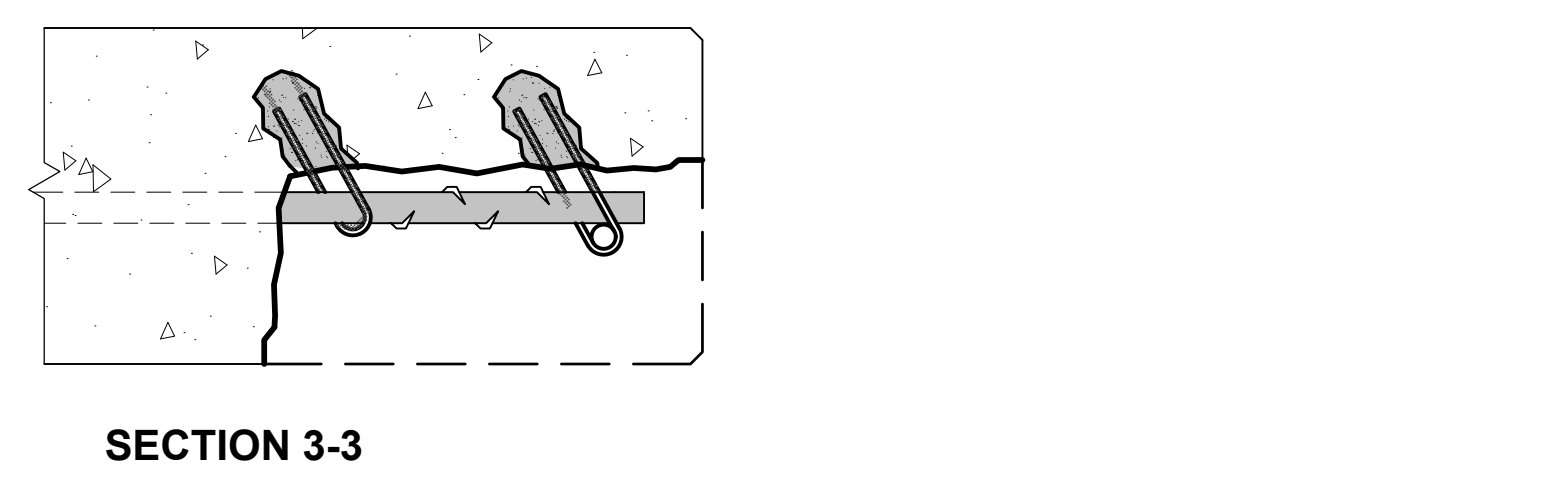


SECTION 1-1

**STEP 3 : SURFACE PREPARATION**

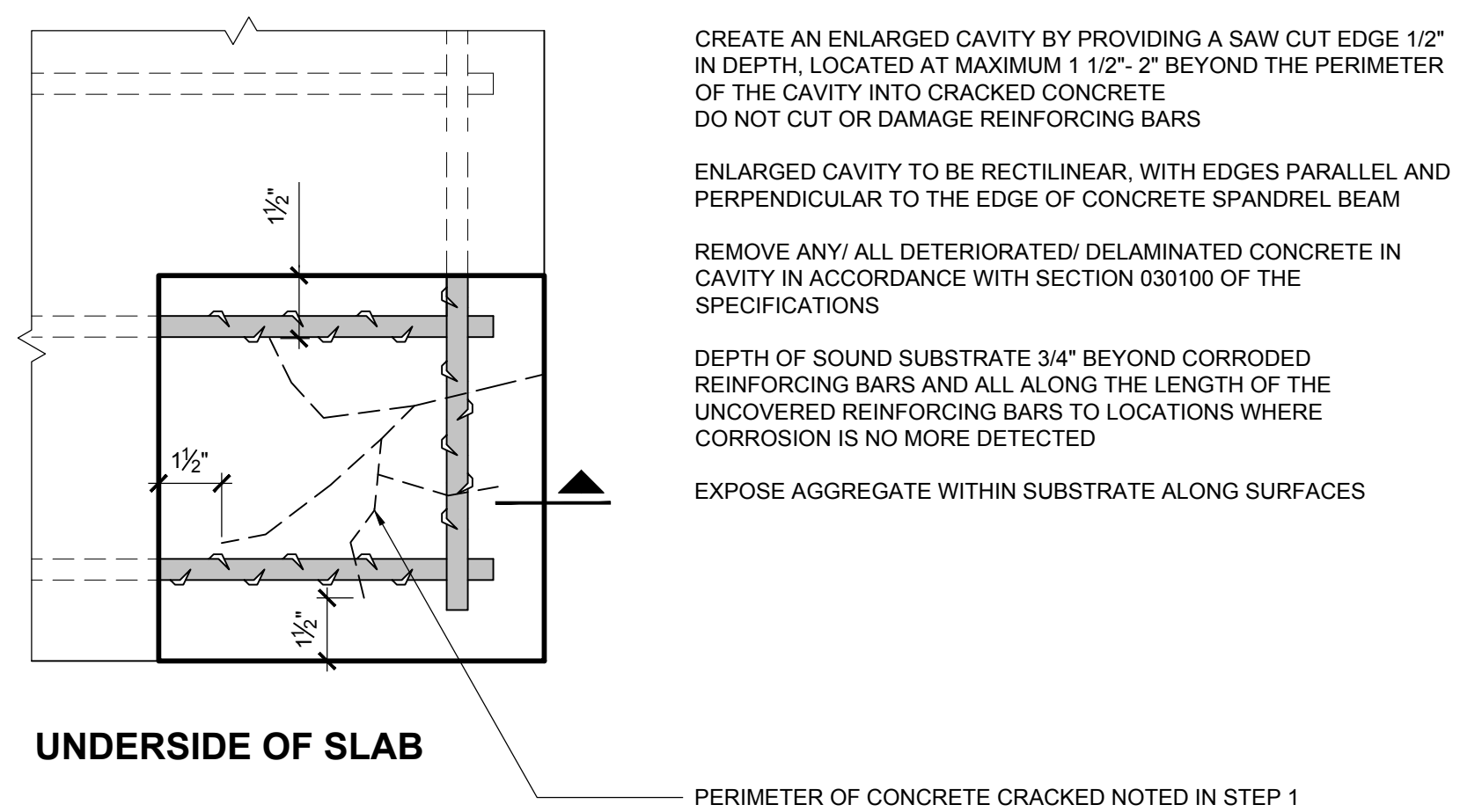


UNDERSIDE OF SLAB

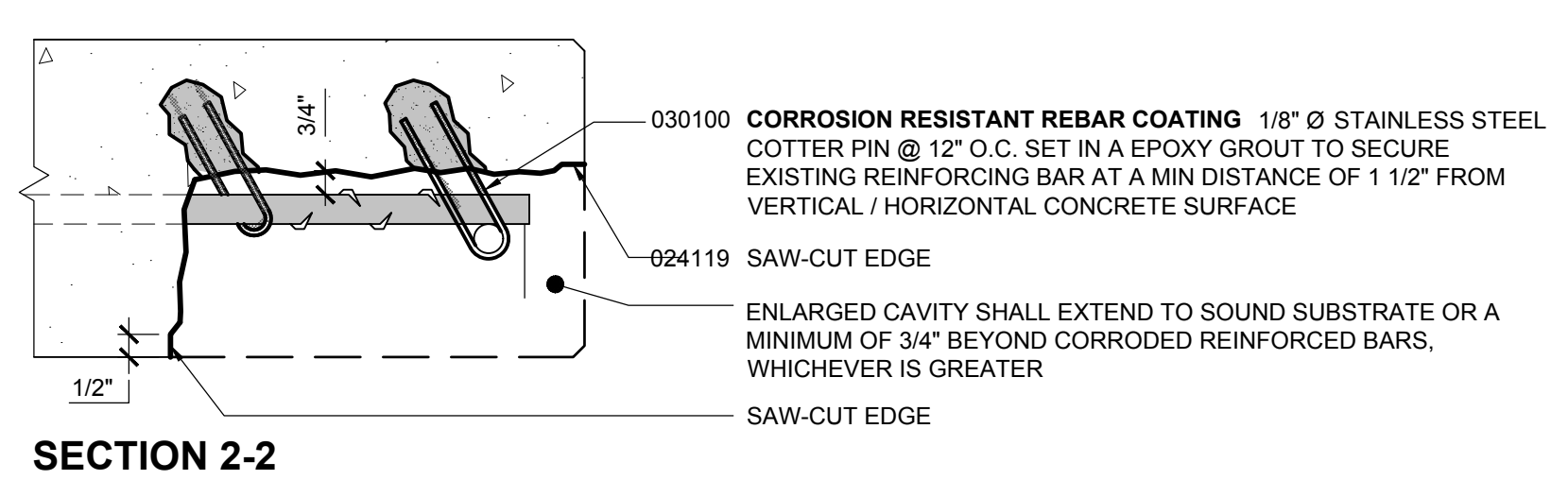


SECTION 3-3

**STEP 2 : CUTTING AND REMOVAL OF CONCRETE**

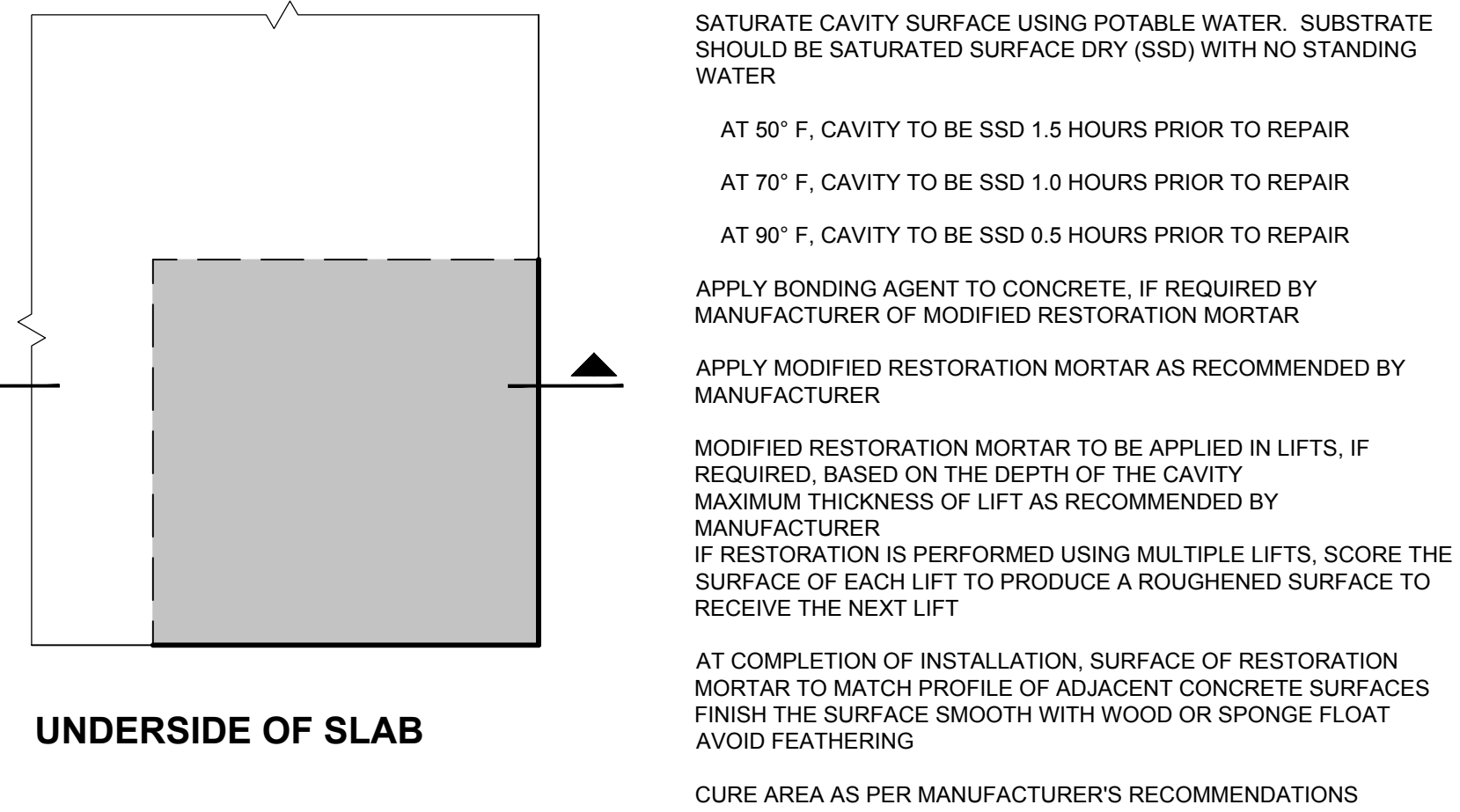


UNDERSIDE OF SLAB

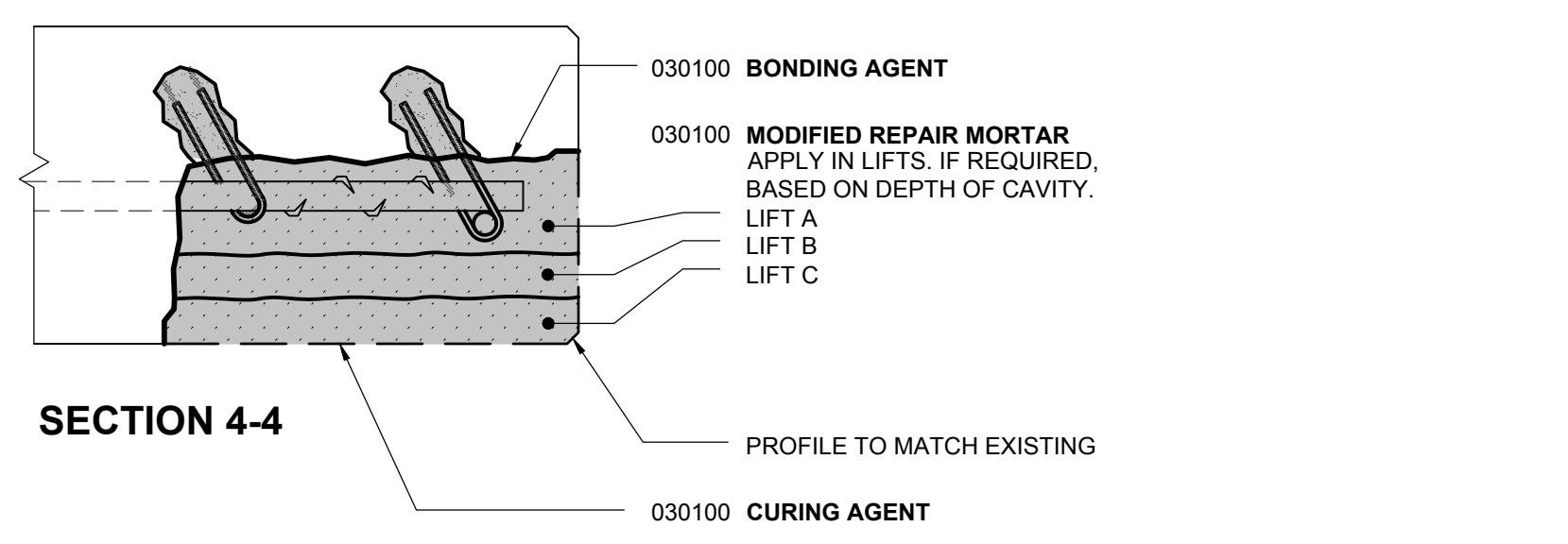


SECTION 2-2

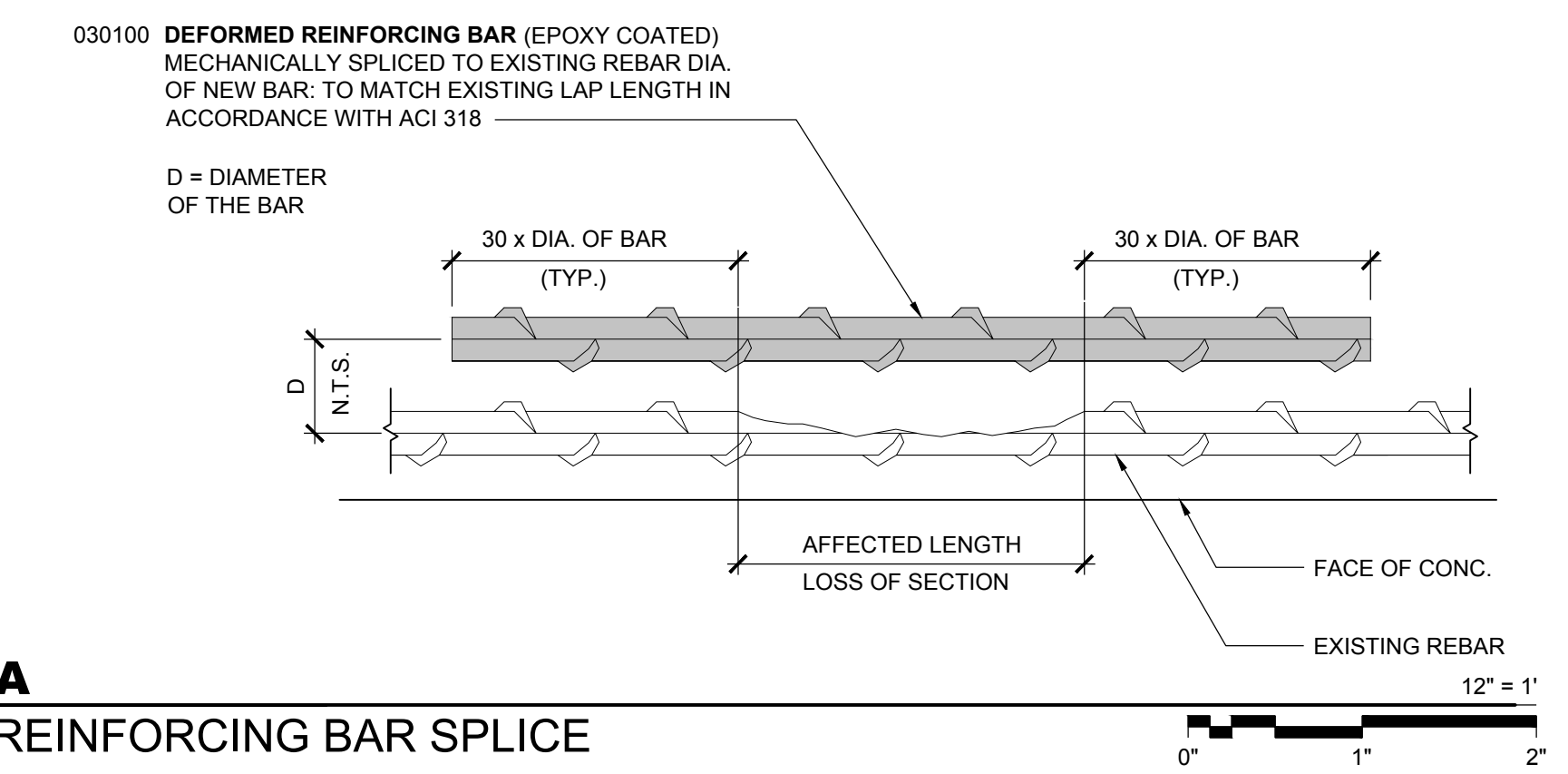
**STEP 4 : MODIFIED RESTORATION MORTAR INSTALLATION**



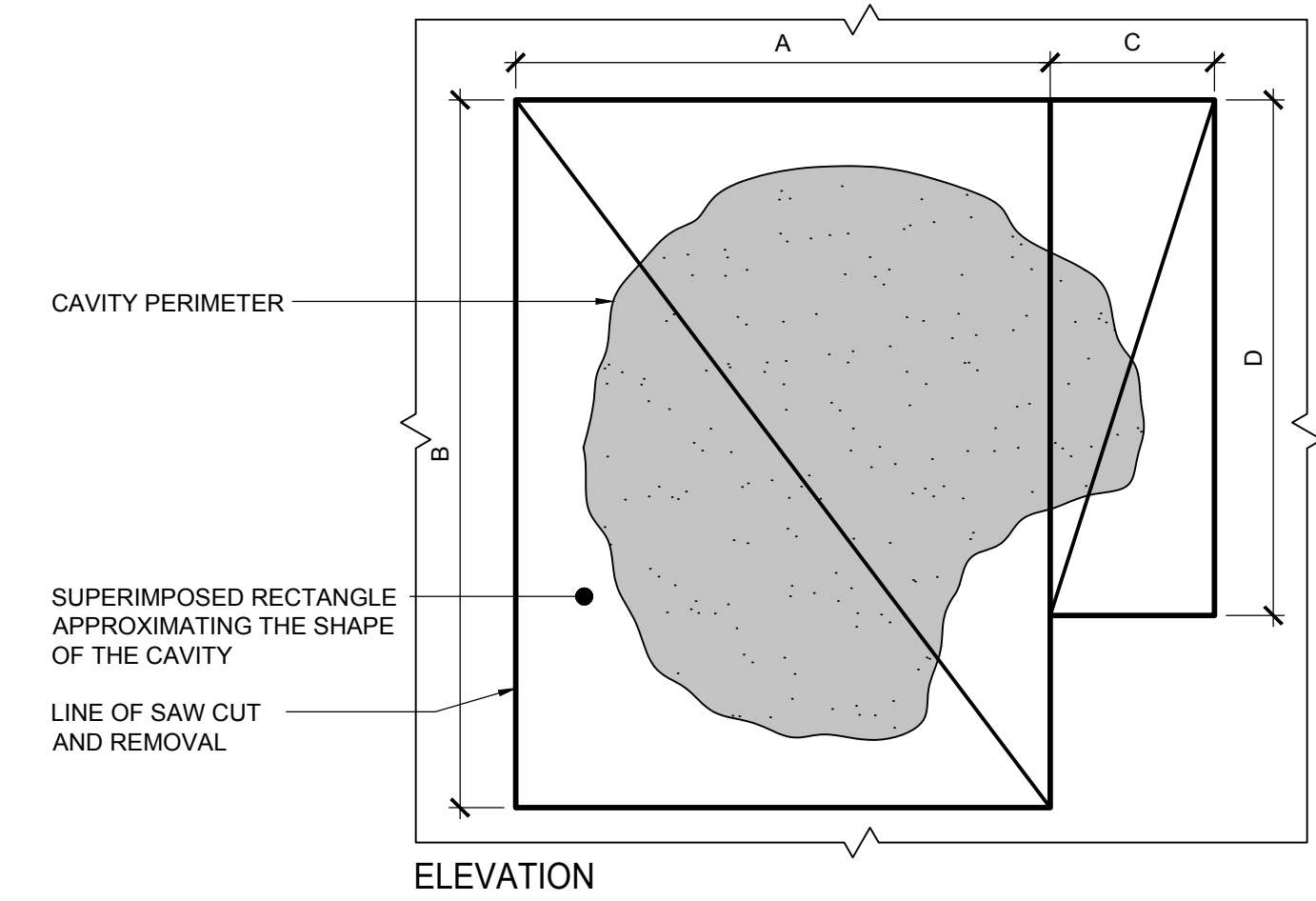
UNDERSIDE OF SLAB



SECTION 4-4



REINFORCING BAR SPLICE



THE QUANTITY OF CONCRETE REPAIR (IN SQUARE FEET) IS EQUAL TO: (A\* X B\*) + (C\* X D\*)

**QUANTIFICATION PROCEDURE**

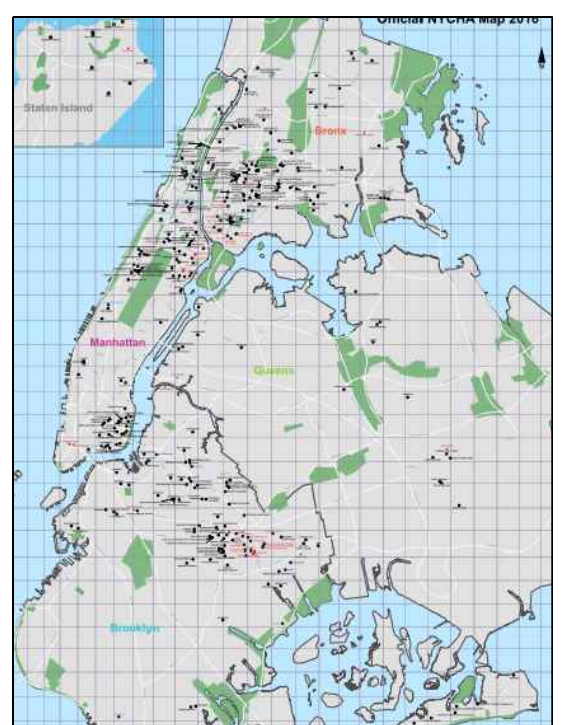
AT EACH CAVITY LOCATION, THE QUANTITY OF CONCRETE RESTORATION EQUALS THE SUM OF THE AREAS OF THE SUPERIMPOSED RECTANGLES THAT APPROXIMATE THE SHAPE OF THE CAVITY

THE UNIT OF MEASURE FOR THE QUANTIFICATION OF CONCRETE RESTORATION IS THE SQUARE FEET (SQ FT)

THE UNIT PRICE SHALL BE BASED ON A MAXIMUM DEPTH OF REPAIR OF 3"

FOR SPALLS THAT OCCUR ACROSS MORE THAN ONE FACE OF CONCRETE SURFACE, THE TOTAL AREA OF THE SPALL IS EQUAL TO THE SUM OF THE AREAS OF THE SPALLS ON EACH INDIVIDUAL FACE

DOB Employee Stamps and Signatures

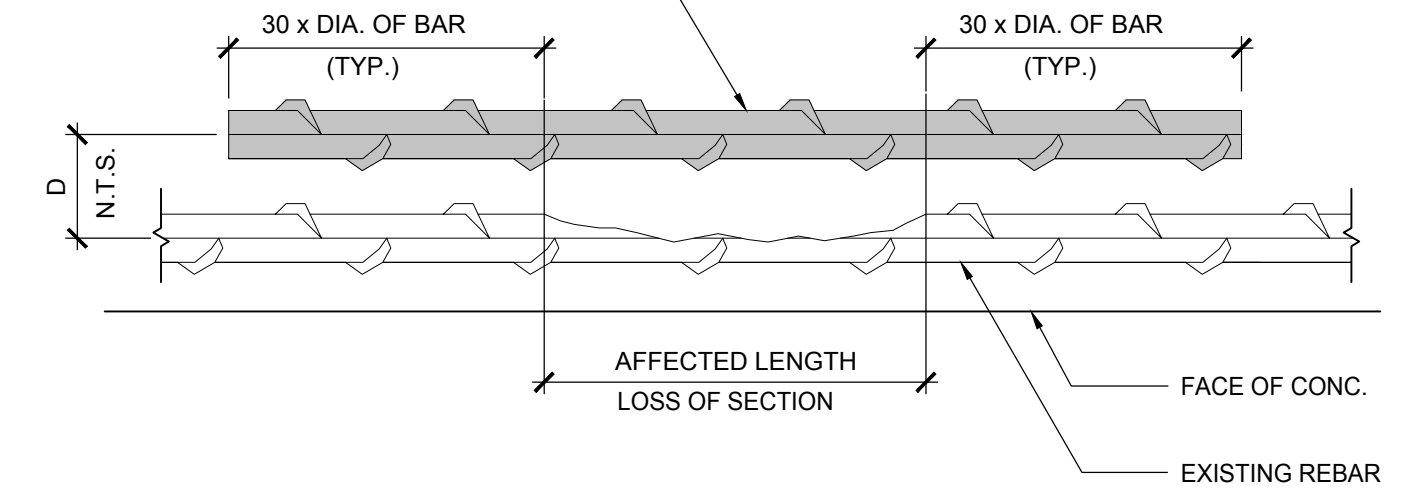


Key/ Location plan

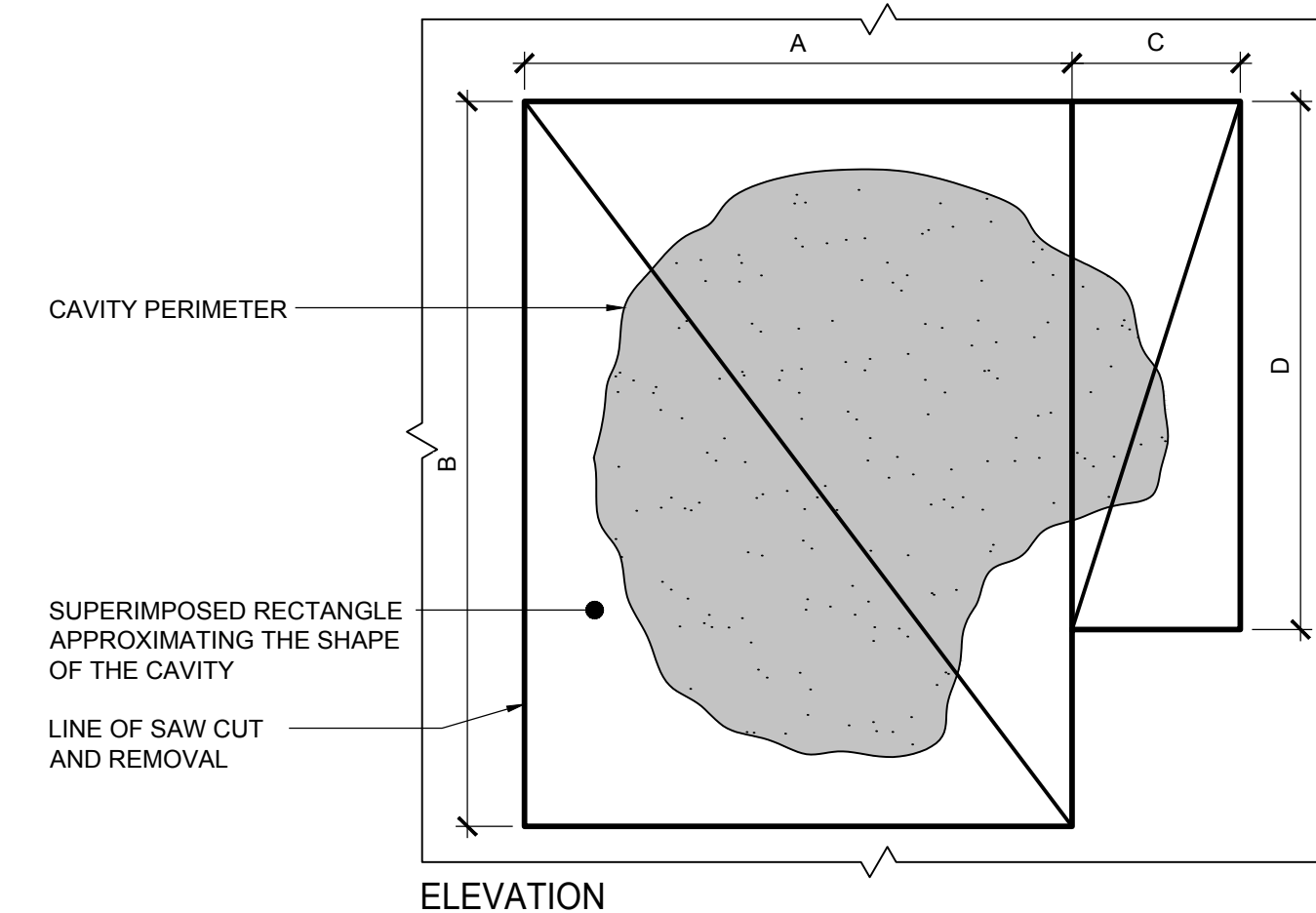
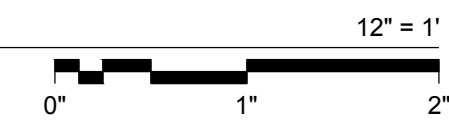
Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>A541.00</b>
Sheet 56 of 64	

040519 DEFORMED REINFORCING BAR (EPOXY COATED)  
 MECHANICALLY SPLICED TO EXISTING REBAR DIA.  
 OF NEW BAR TO MATCH EXISTING LAP LENGTH IN  
 ACCORDANCE WITH ACI 318

D = DIAMETER  
 OF THE BAR



**A**  
**REINFORCING BAR SPLICE**



THE QUANTITY OF CONCRETE REPAIR (IN SQUARE FEET) IS EQUAL TO: (A" X B") + (C" X D")

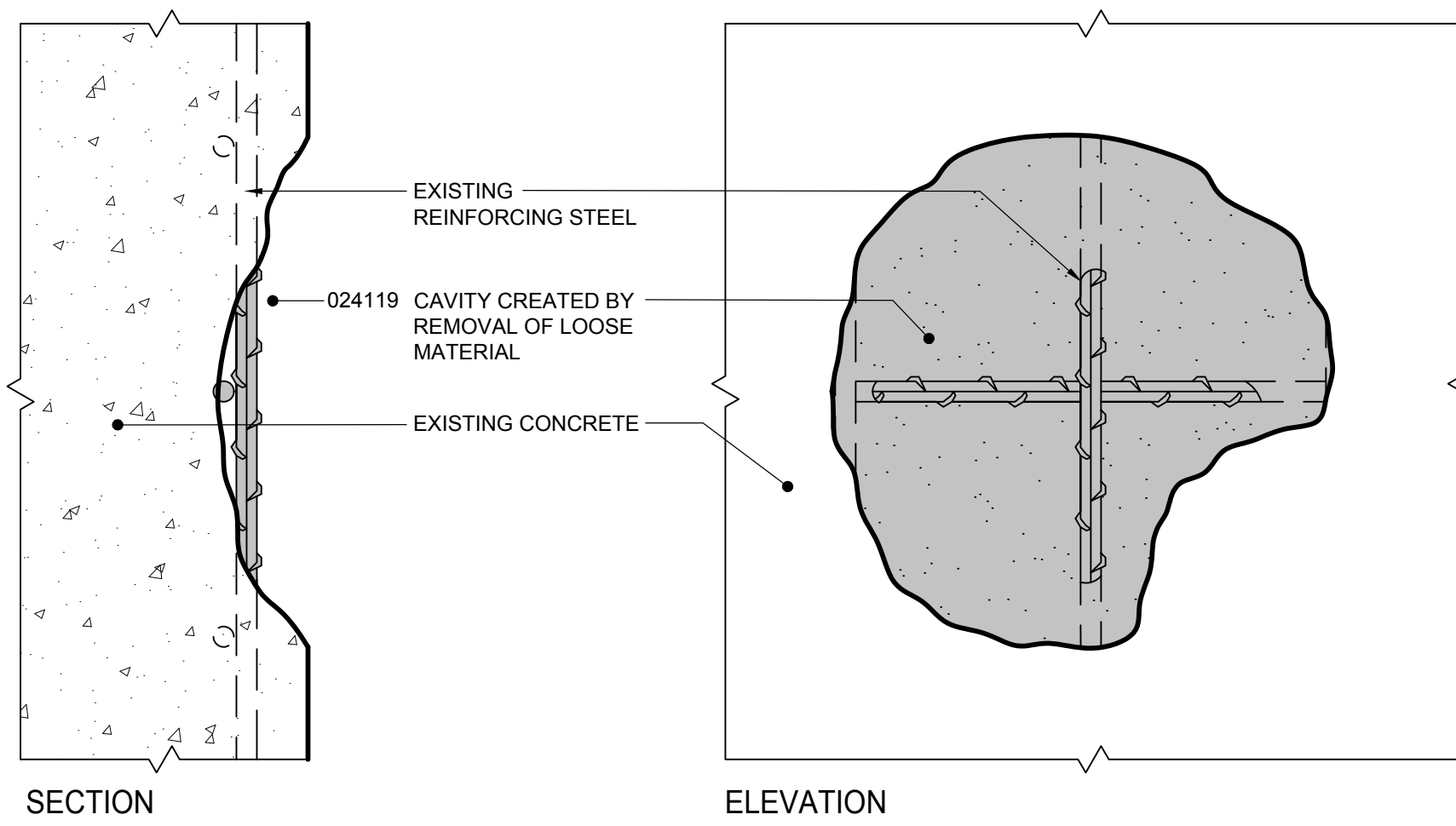
**QUANTIFICATION PROCEDURE**

AT EACH CAVITY LOCATION, THE QUANTITY OF CONCRETE RESTORATION EQUALS THE SUM OF THE AREAS OF THE SUPERIMPOSED RECTANGLES THAT APPROXIMATE THE SHAPE OF THE CAVITY

THE UNIT OF MEASURE FOR THE QUANTIFICATION OF CONCRETE RESTORATION IS THE SQUARE FEET (SQ FT)

THE UNIT PRICE SHALL BE BASED ON A MAXIMUM DEPTH OF REPAIR OF 3"

FOR SPALLS THAT OCCUR ACROSS MORE THAN ONE FACE OF CONCRETE SURFACE, THE TOTAL AREA OF THE SPALL IS EQUAL TO THE SUM OF THE AREAS OF THE SPALLS ON EACH INDIVIDUAL FACE



**STEP 1: IDENTIFICATION OF DETERIORATED CONCRETE**

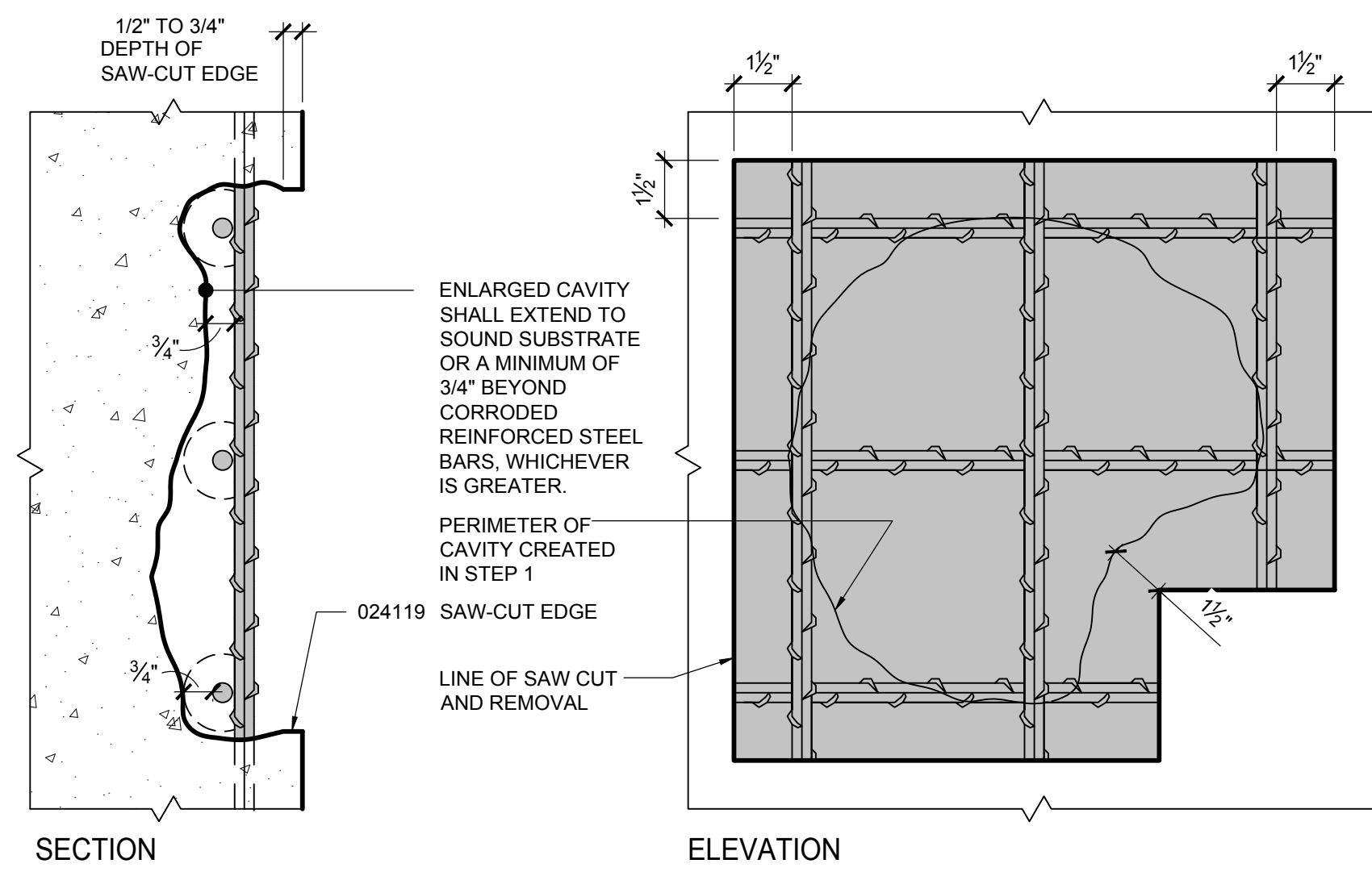
VISUALLY SURVEY ALL CONCRETE SURFACES.

SOUND SURFACES WITH 3 LB. DEAD BLOW HAMMER AT LOCATIONS APPROXIMATELY 2'-3" O.C. TO IDENTIFY EXTENT OF DETERIORATED/ DELAMINATED CONCRETE TO BE REMOVED.

MARK AREA OF DETERIORATED/ DELAMINATED CONCRETE

DETERMINE QUANTITY OF CONCRETE REPAIR IN ACCORDANCE WITH QUANTIFICATION PROCEDURE DIAGRAM, THIS SHEET.

PROVIDE ADEQUATE SHORING TO WINDOW WALL WHEN REPAIRING CONCRETE SPANDREL BELOW.



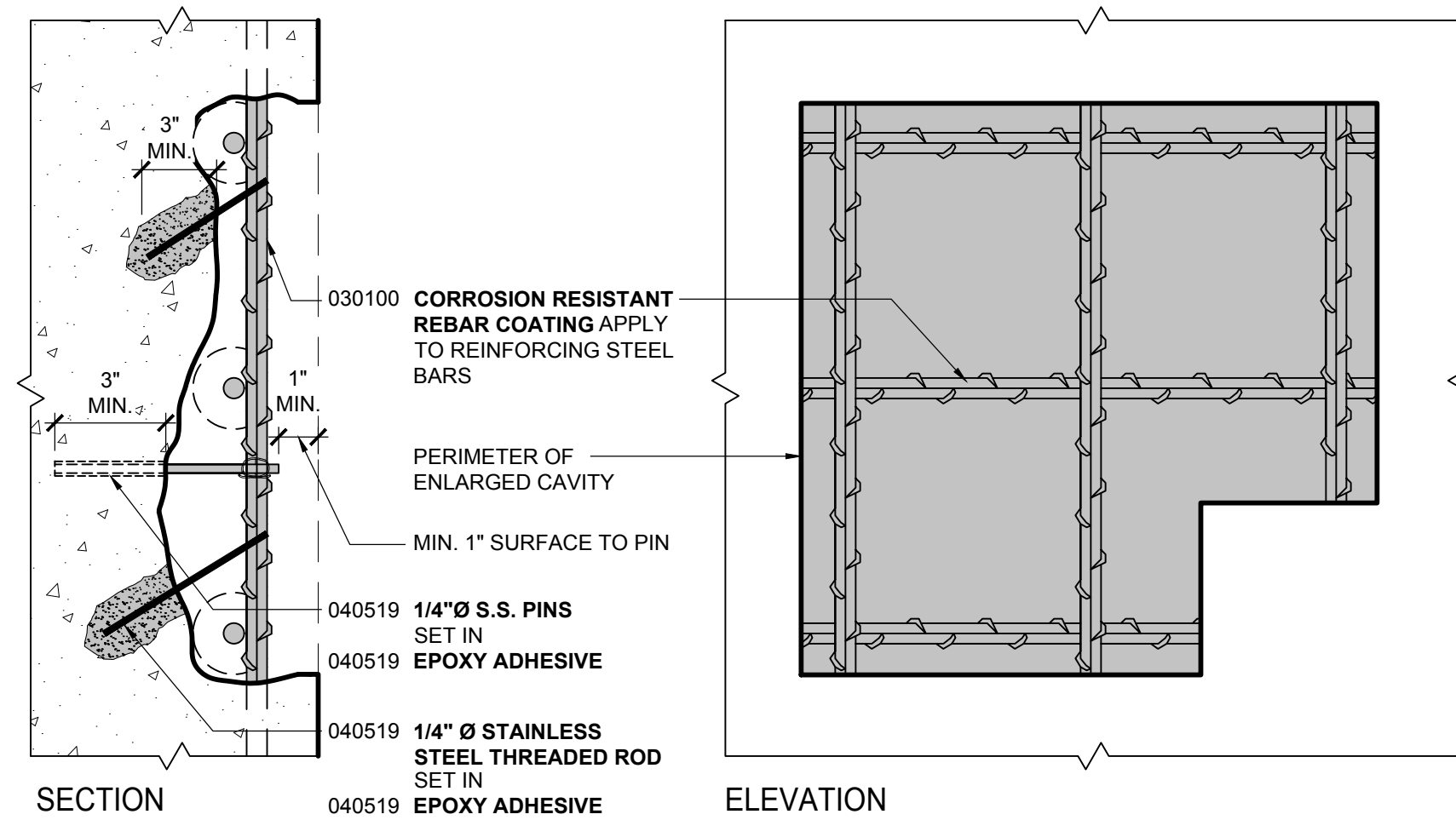
**STEP 2: CUTTING AND REMOVAL OF CONCRETE**

CREATE AN ENLARGED CAVITY BY PROVIDING A SAW CUT EDGE 1/2" - 3/4" IN DEPTH, LOCATED A MINIMUM OF 1 1/2" BEYOND THE PERIMETER OF THE CAVITY INTO SOUND CONCRETE. DO NOT CUT OR DAMAGE UNCOVERED REINFORCING BARS.

PROVIDE A RECTILINEAR CAVITY, WITH EDGES PARALLEL TO EDGES OF EXISTING ADJACENT STRUCTURE.

REMOVE ANY/ ALL DETERIORATED CONCRETE IN CAVITY, IN ACCORDANCE WITH SECTION 024119 OF THE SPECIFICATIONS, UNTIL A SOUND SURFACE IS UNCOVERED.

EXTEND THE DEPTH OF SOUND SUBSTRATE MIN. 3/4" BEYOND CORRODED REINFORCING BAR ALL ALONG THE LENGTH OF THE BAR TO WHERE STEEL CORROSION IS NOT DETECTED.



**STEP 3: SURFACE PREPARATION**

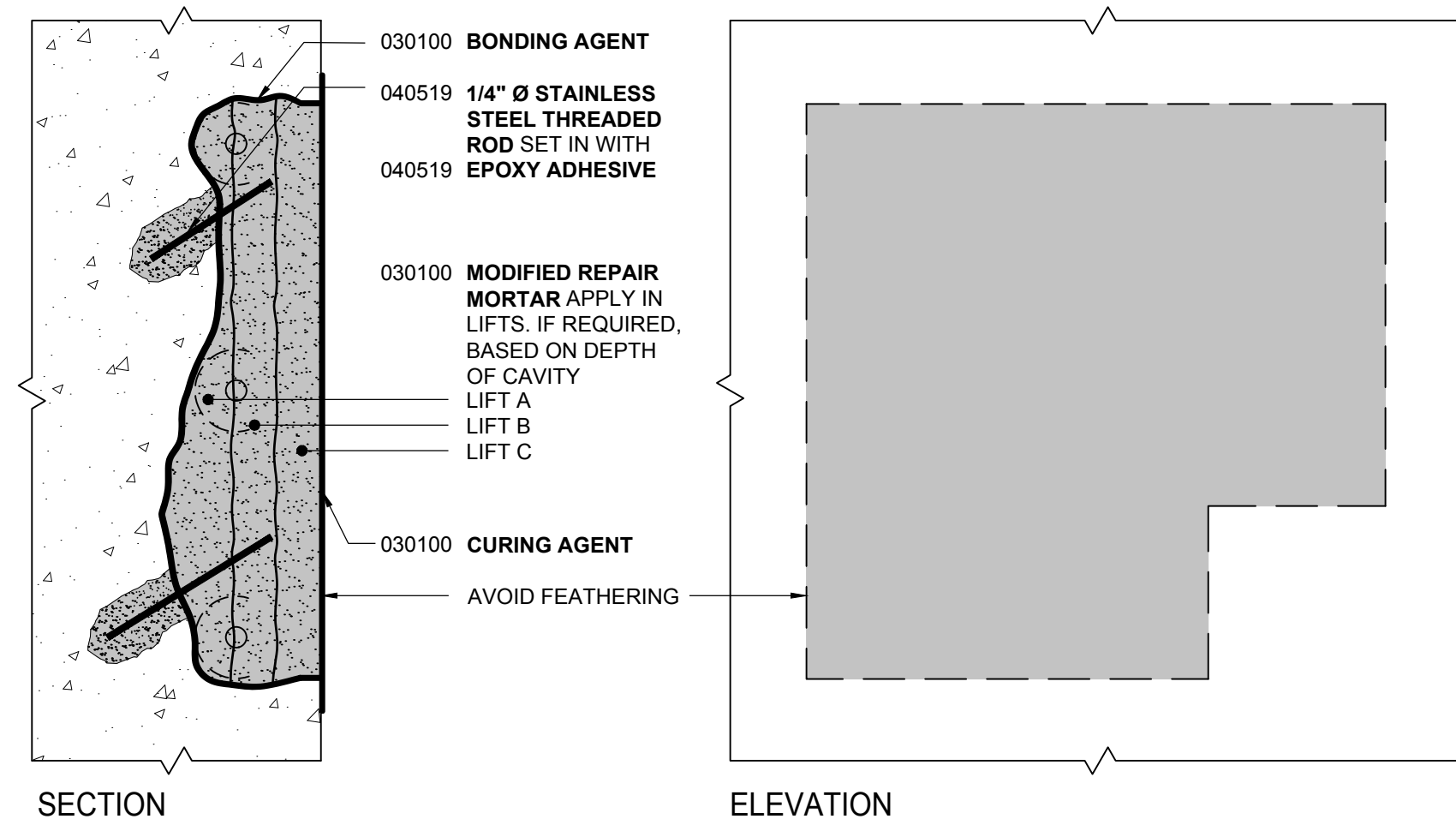
CLEAN STEEL REINFORCING BAR USING A MOTOR-DRIVEN WIRE BRUSH TO REMOVE ALL RUST AND SCALE. IF CROSS SECTIONAL AREA AFTER CLEANING OF ANY STEEL REINFORCING BAR HAS BEEN REDUCED BY MORE THAN 20%, NOTIFY THE A/E AND MAKE AREA AVAILABLE FOR EXAMINATION. REINFORCE PER SUB-DETAIL 'A'

PREPARE ANY/ALL EXPOSED STEEL ANGLE & COAT WITH 099713 STEEL COATING: 3ER.

MECHANICALLY REMOVE THIN LAYERS OF SURFACE CONCRETE USING SUCH EQUIPMENT AS GRINDER, AND SCARIFIER. CLEAN THE CAVITY WITH POTABLE WATER. REMOVE ANY BOND INHIBITIVE MATERIALS.

COAT REINFORCING BARS WITH A CORROSION RESISTANT COATING IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

REMOVE ALL LOOSE MATERIAL AND FILL BETWEEN CONCRETE AND MASONRY AND SEAL CAVITY WITH BACKER ROD & SEALANT.



**STEP 4: MODIFIED REPAIR MORTAR INSTALLATION**

SATURATE CAVITY SURFACE USING POTABLE WATER. SUBSTRATE SHOULD BE SATURATED SURFACE DRY (SSD) WITH NO STANDING WATER.

AT 50° F, CAVITY TO BE SSD 1.5 HOURS PRIOR TO RESTORATION  
 AT 70° F, CAVITY TO BE SSD 1.0 HOURS PRIOR TO RESTORATION  
 AT 90° F, CAVITY TO BE SSD 0.5 HOURS PRIOR TO RESTORATION

APPLY BONDING AGENT TO CONCRETE, IF REQUIRED BY MANUFACTURER OF MODIFIED REPAIR MORTAR.

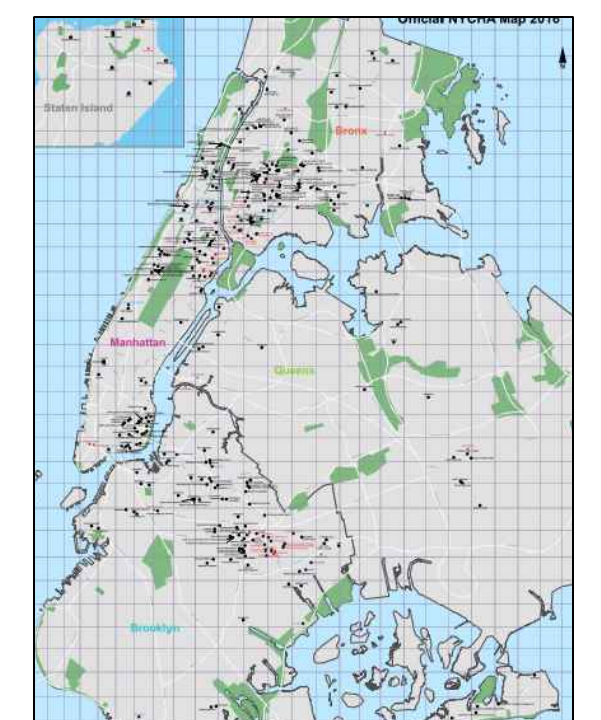
APPLY MODIFIED REPAIR MORTAR AS RECOMMENDED BY MANUFACTURER, COLOR AND TEXTURE TO MATCH EXISTING CONCRETE SURFACE. CONTRACTOR TO PROVIDE A MOCK-UP FOR ARCHITECT/ENGINEER AND OWNER TO APPROVE PRIOR TO COMPLETING REPAIRS.

MODIFIED REPAIR MORTAR TO BE APPLIED IN LIFTS, IF REQUIRED, BASED ON THE DEPTH OF THE CAVITY. MAXIMUM THICKNESS OF LIFT AS RECOMMENDED BY MANUFACTURER. IF RESTORATION IS PERFORMED USING MULTIPLE LIFTS, SCORE THE SURFACE OF EACH LIFT TO PRODUCE A ROUGHENED SURFACE TO RECEIVE THE NEXT LIFT.

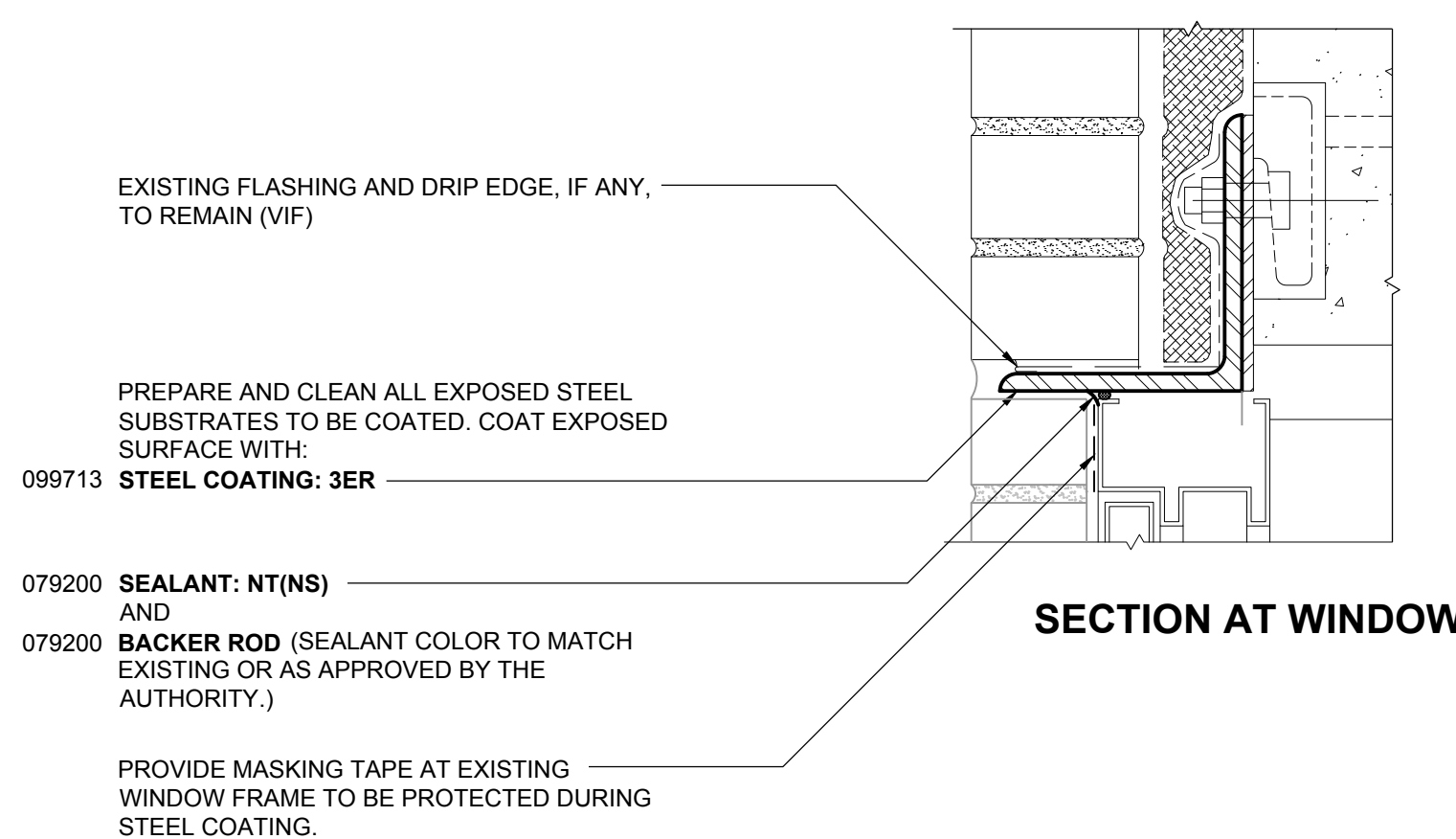
AT COMPLETION OF INSTALLATION, SURFACE OF REPAIR MORTAR TO MATCH PROFILE OF ADJACENT CONCRETE SURFACES. FINISH THE SURFACE SMOOTH WITH WOOD OR SPONGE FLOAT. AVOID FEATHERING WITH ADJACENT CONCRETE TO REMAIN.

CURE AS PER MANUFACTURER'S RECOMMENDATIONS.

DOB Employee Stamps and Signatures

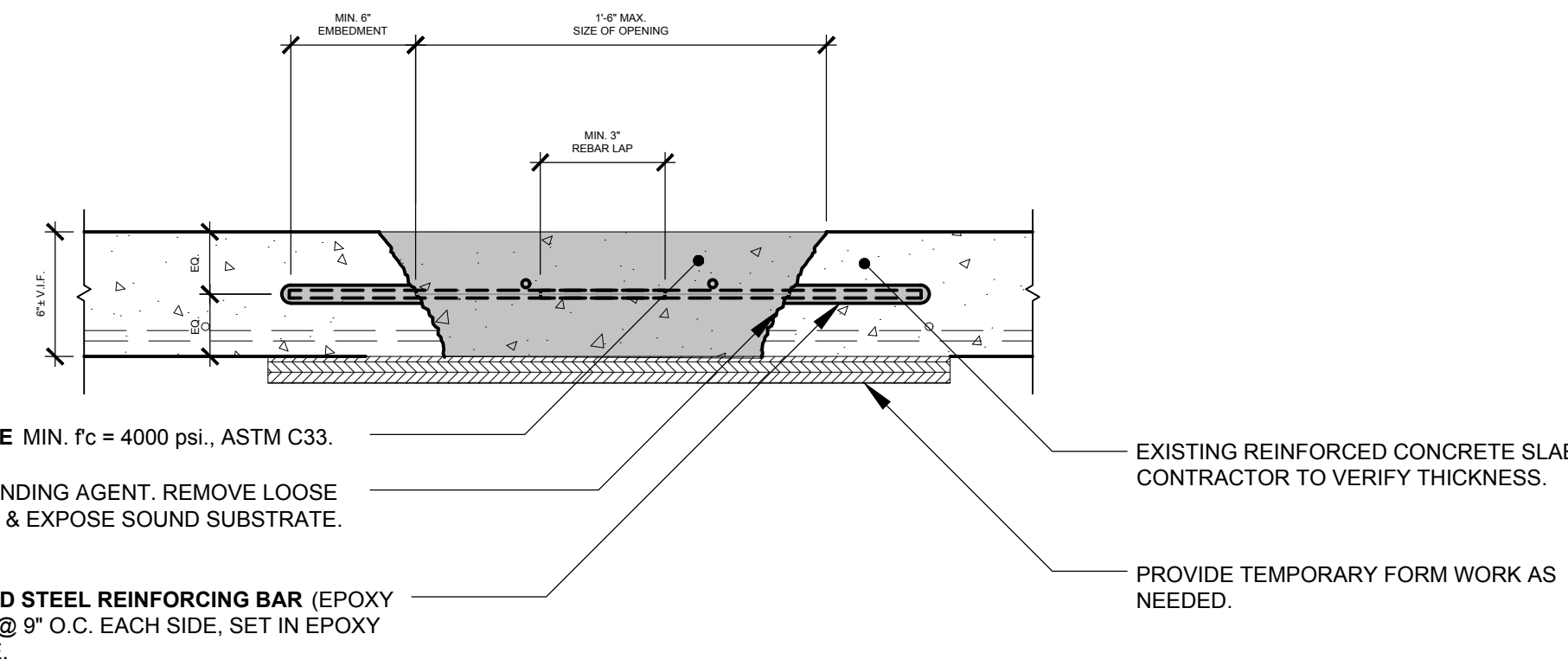


Key/ Location plan



**SECTION AT WINDOW**

NTS

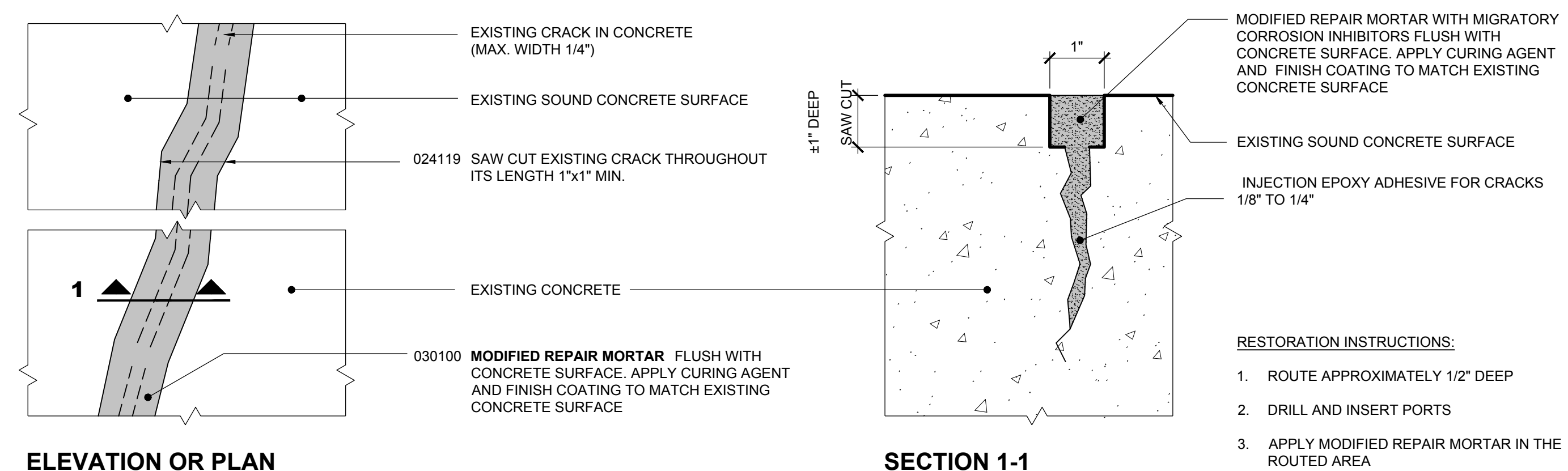


**NOTE:**  
 COORDINATE ACCESS TO SPACE BELOW SLAB WITH AUTHORITY IN ADVANCE. THIS DETAIL APPLIES TO EXISTING SLAB OPENINGS NOT TO EXCEED 1'-0" X 1'-0" IN SIZE. VERIFY EXISTING CONDITIONS IN FIELD AND PROVIDE SHOP DRAWINGS PRIOR TO INSTALLATION. DO NOT USE IT FOR LARGER OPENINGS, NOTIFY AUTHORITY IN WRITING.



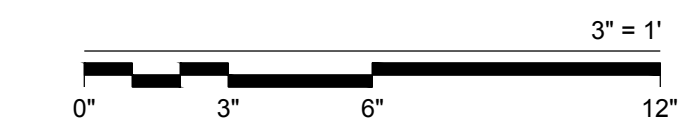
**COA 01 STEEL COATING OF EXPOSED SHELF ANGLE / LINTEL (LF)**

**CON 04 CONCRETE SLAB OPENING REPAIR: FULL DEPTH (SF)**



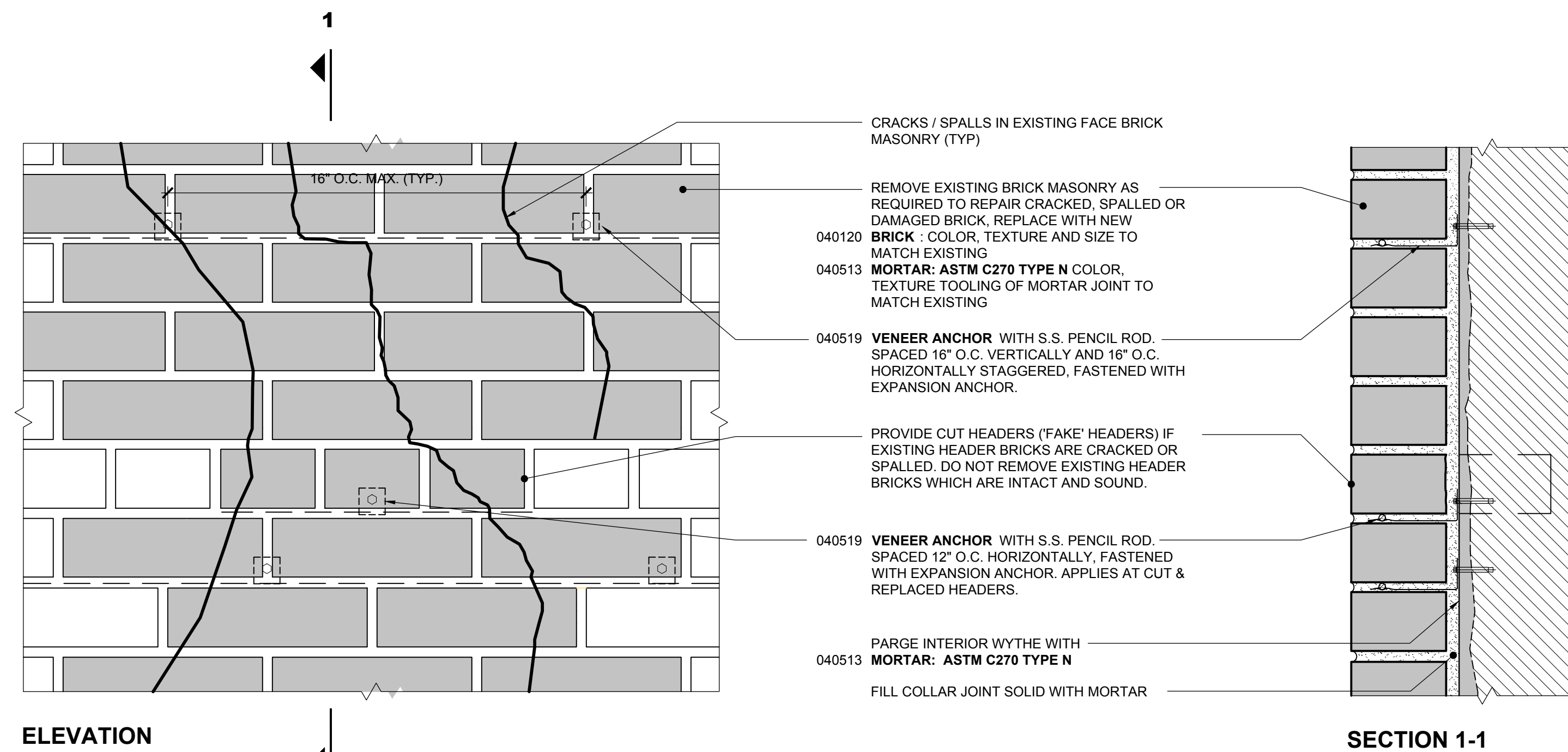
**ELEVATION OR PLAN**

**SECTION 1-1**

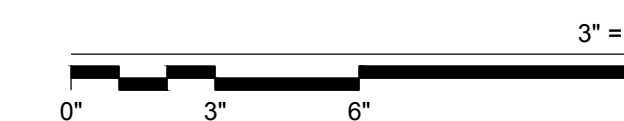


DOB Employee Stamps and Signatures

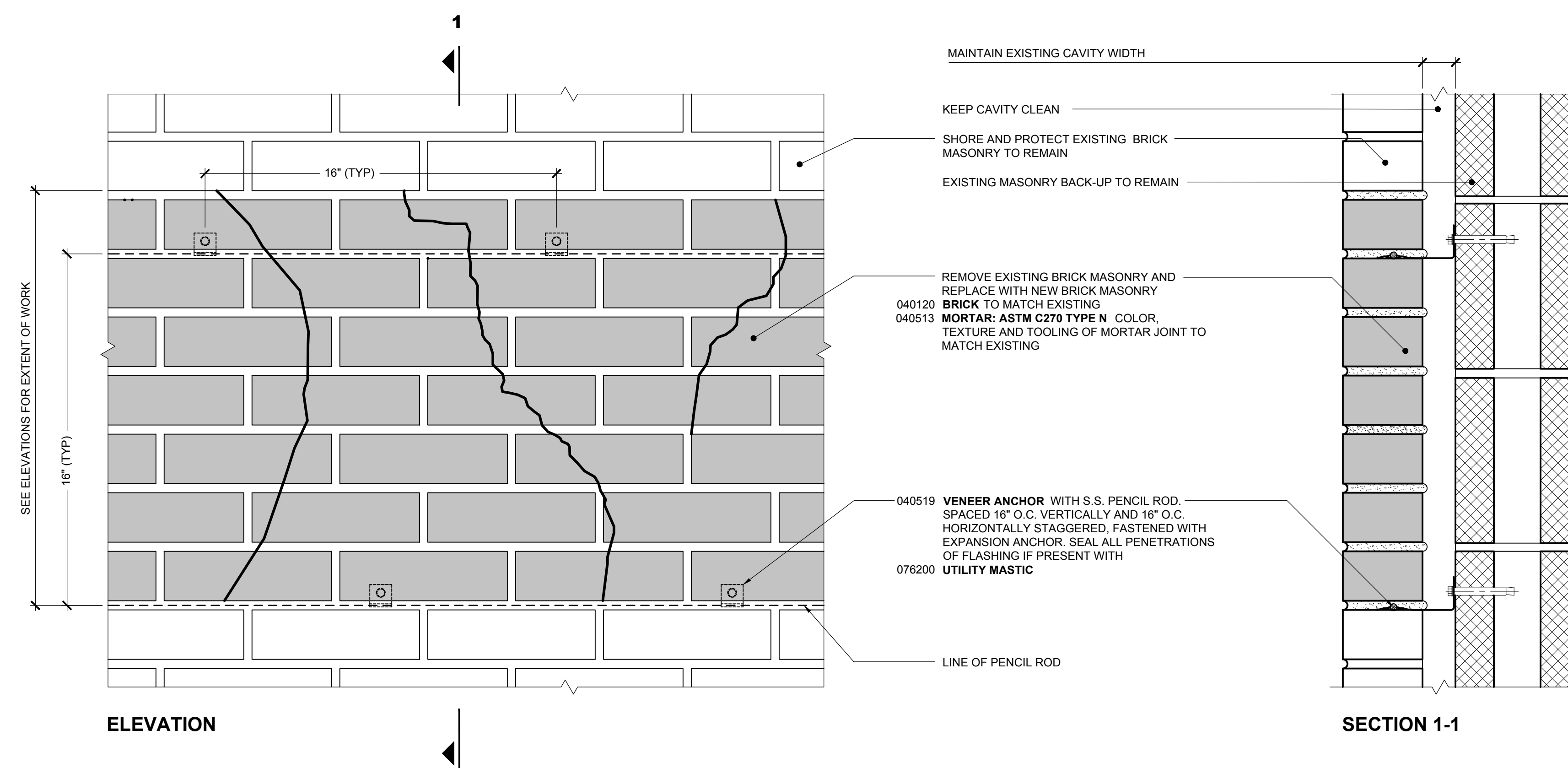
**CON 03 CONCRETE CRACK: RESTORATION (LF)**



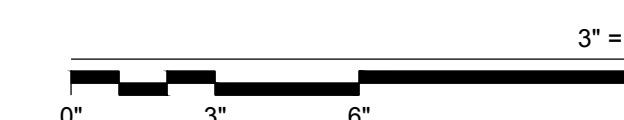
- NOTES:**
- CONTRACTOR SHALL SURVEY THE WALL AREA WHERE BRICK REPLACEMENT IS NEEDED IN PRESENCE OF NYCHA REPRESENTATIVE AND CONSTRUCTION MANAGER (CM).
  - PROVIDE SHOP DRAWINGS SHOWING TEMPORARY SHORING AND SUPPORT OF EXISTING MASONRY TO REMAIN, FOR REVIEW AND APPROVAL PRIOR TO MASONRY REMOVAL.
  - PROVIDE TEMPORARY SHORING AND SUPPORT AT EXISTING MASONRY TO REMAIN PRIOR TO REMOVAL AS PER APPROVED SHOP DRAWINGS.



**MAS 01 CRACKED / SPALLED BRICK MASONRY REPLACEMENT AT SOLID WALL (SF)**



- NOTES:**
- CONTRACTOR SHALL SURVEY THE WALL AREA WHERE BRICK REPLACEMENT IS NEEDED IN PRESENCE OF NYCHA REPRESENTATIVE AND CONSTRUCTION MANAGER (CM).
  - PROVIDE SHOP DRAWINGS SHOWING TEMPORARY SHORING AND SUPPORT OF EXISTING MASONRY TO REMAIN, FOR REVIEW AND APPROVAL PRIOR TO MASONRY REMOVAL.
  - PROVIDE TEMPORARY SHORING AND SUPPORT AT EXISTING MASONRY TO REMAIN PRIOR TO REMOVAL AS PER APPROVED SHOP DRAWINGS.



**MAS 02 CRACKED / SPALLED BRICK MASONRY REPLACEMENT AT CAVITY WALL (SF)**

Date: Revision:

Date: Submissions:

**NEW YORK CITY HOUSING AUTHORITY**  
**DESIGN DEPARTMENT**  
 90 Church Street 10th floor, New York, NY 10007  
 Tel 212 306-3000 Fax (call)

Development: VARIOUS  
 Bldg. Addresses:  
 Building No: Oracle No:  
 Borough of: CITYWIDE



Key/ Location plan

Zoning Map: Zone:  
 Block No.: Lot No.:  
 Development No.: VARIOUS E.D.P No.:

Contract Title:  
**ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

Drawing Title: Restoration Details:  
 MAS 01, MAS 02

DOB Employee Stamps and Signatures

Seal / Signature: Issue Date: 12.04.2018  
 Scale: AS NOTED  
 Drawn By: AO / YZ / VP  
 Checked By: NS / VS  
 Drawing No.:  
**A543.00**  
 Sheet 58 of 64

DOB BSCAN STICKER

PROGRAM UNIT:  
 Project Management Team 1

Date: Revision:

Date: Submissions:

**NEW YORK CITY HOUSING AUTHORITY  
 DESIGN DEPARTMENT**  
 90 Church Street 10th floor, New York, NY 10007  
 Tel 212 306-3000 Fax (call)

Development: VARIOUS  
 Bldg. Addresses:  
 Building No: Oracle No:  
 Borough of: CITYWIDE



Key/ Location plan

Zoning Map: Zone:  
 Block No.: Lot No.:  
 Development No.: VARIOUS E.D.P No.:

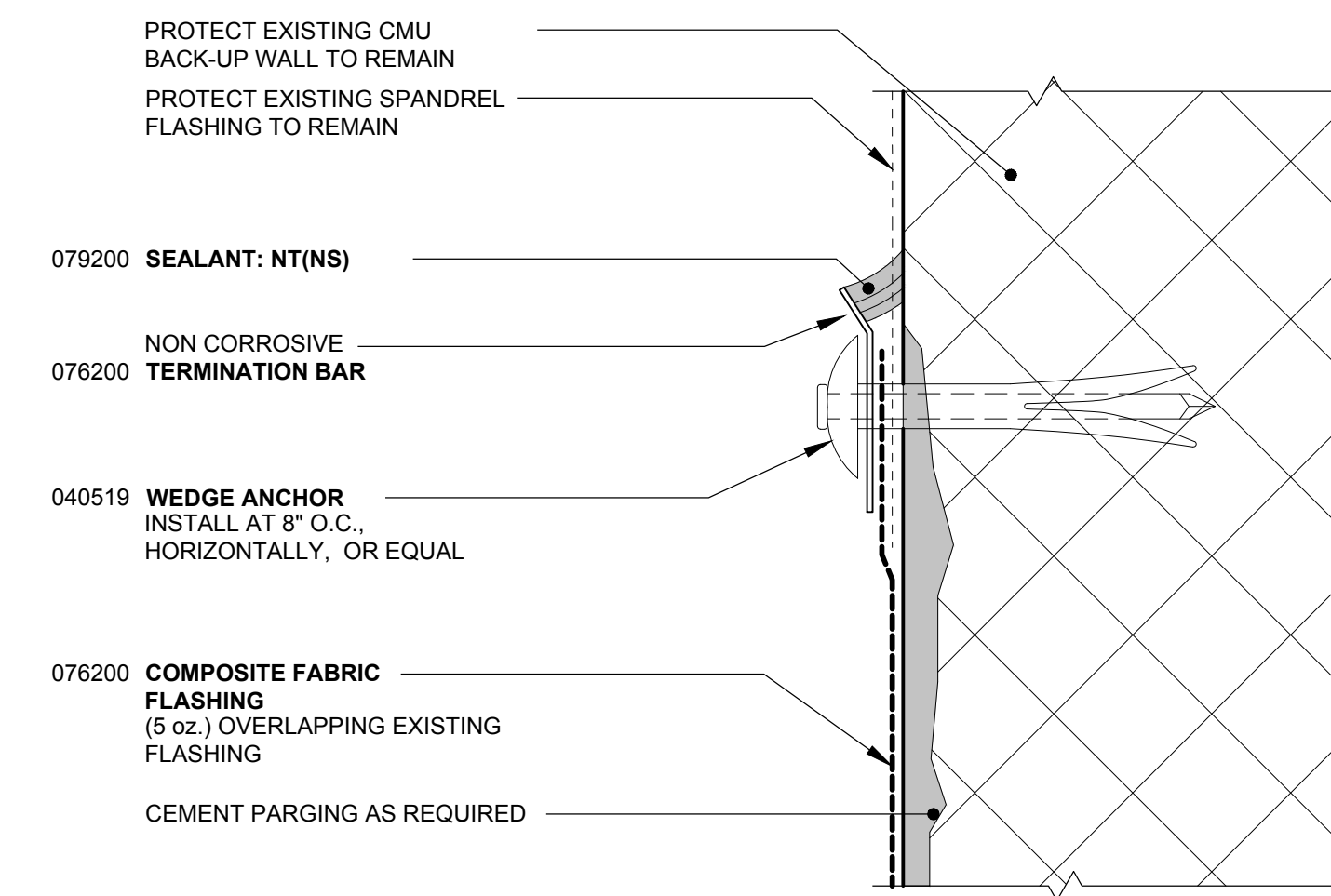
Contract Title:  
**ROOF REPLACEMENT AND  
 ROOFTOP STRUCTURE RENOVATION  
 REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

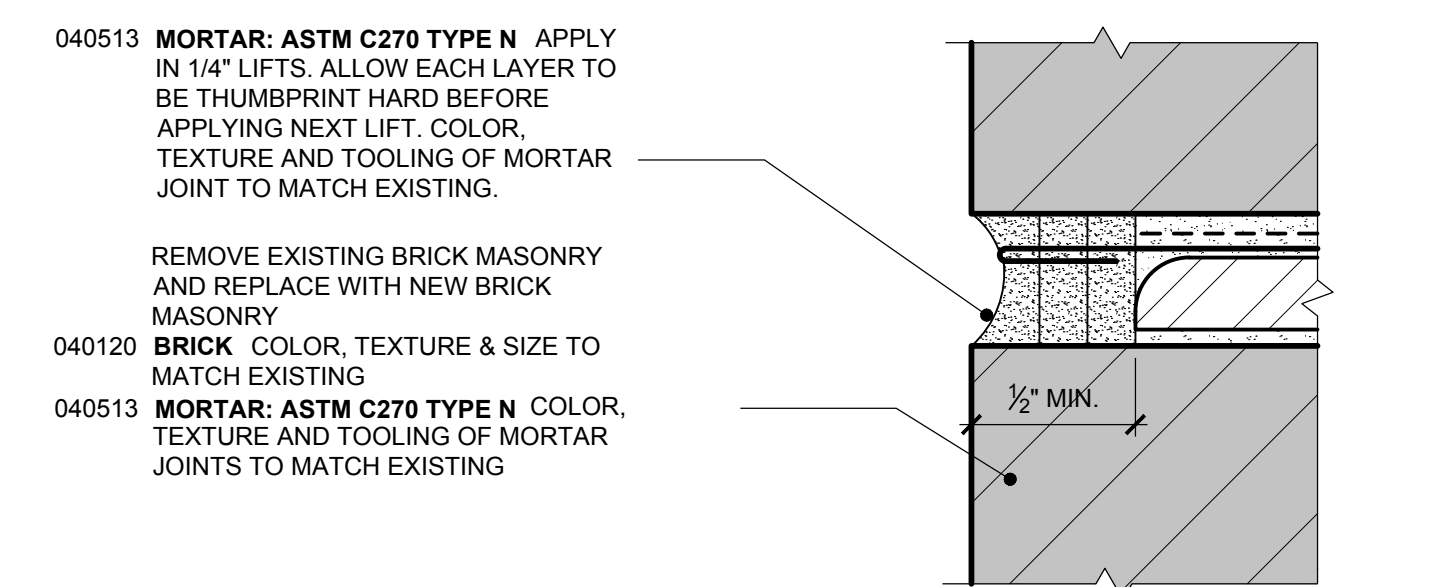
Drawing Title: Restoration Details:  
 LTL 01

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.:
	<b>A544.00</b>
	Sheet 59 of 64

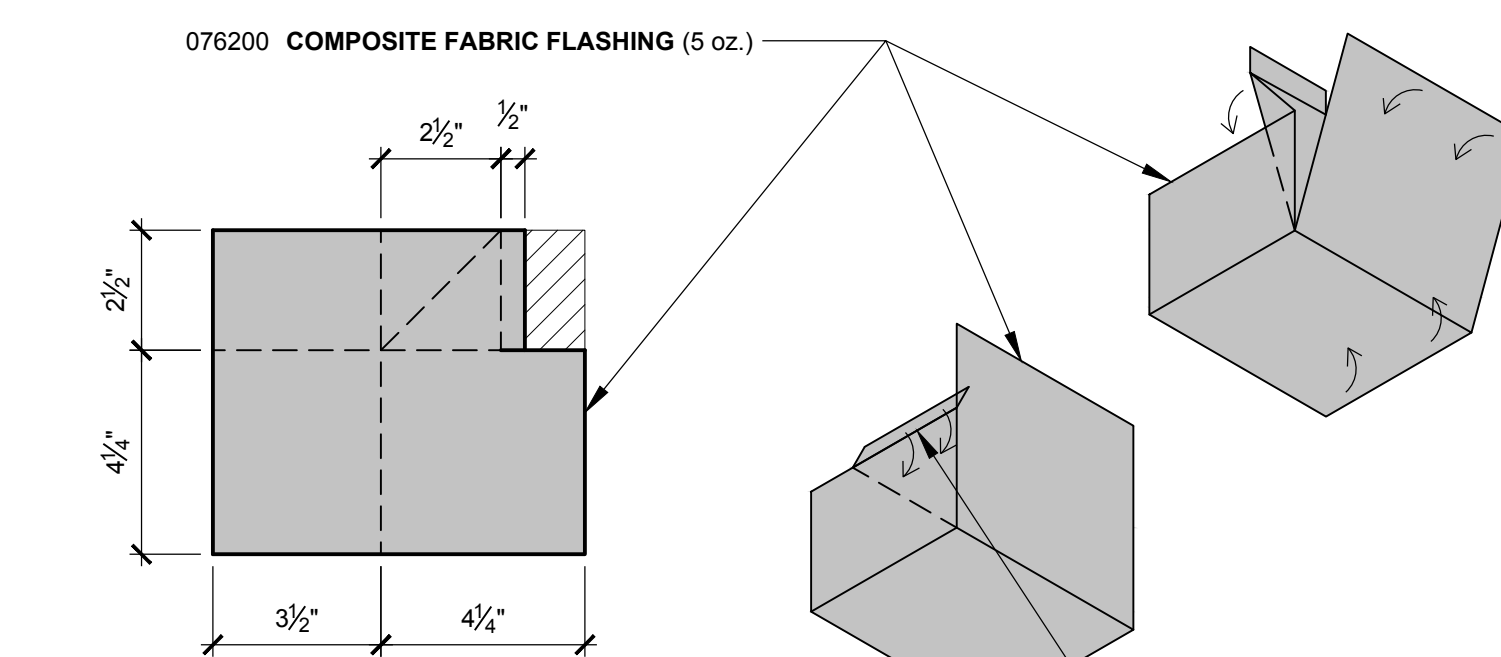
DOB BSCAN STICKER



**A** SECTION FLASHING ANCHORAGE  
 12" = 1"

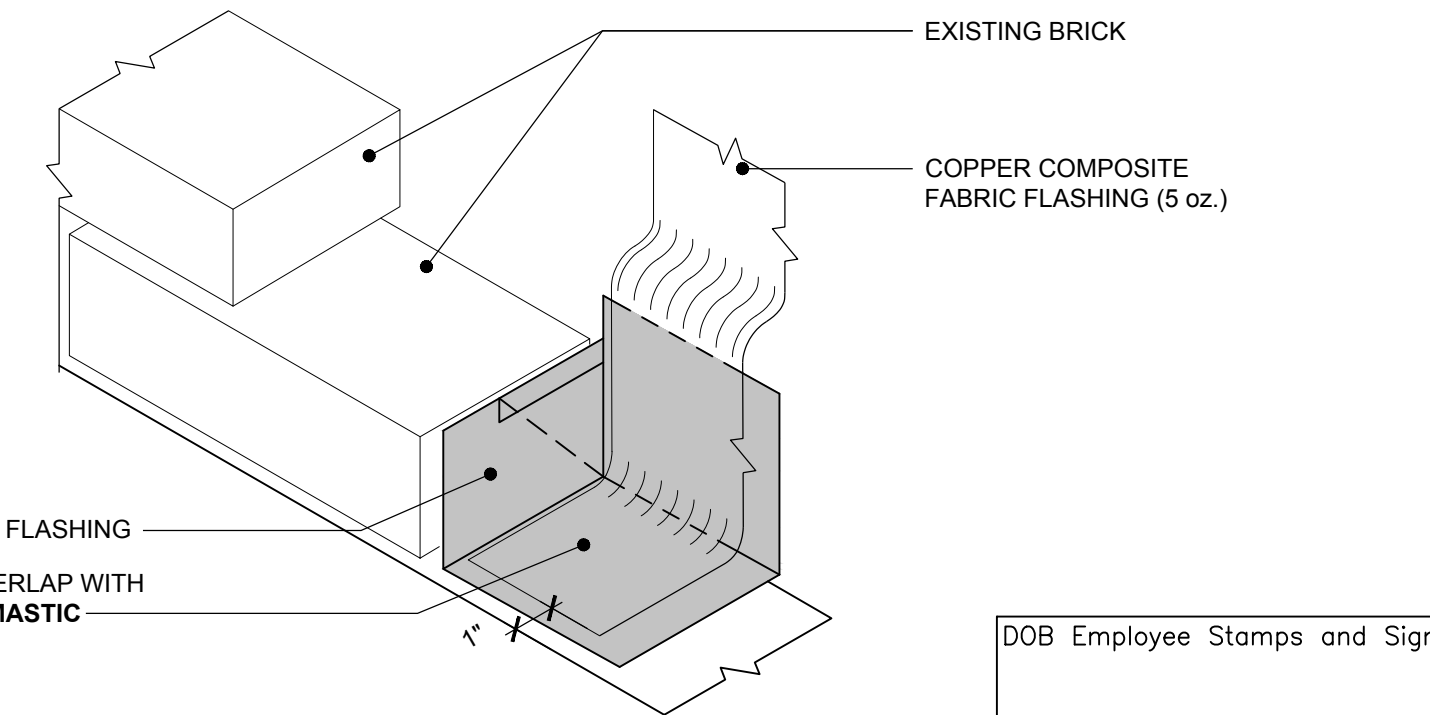


**B** SECTION TOE OF LINTEL POINTING  
 12" = 1"



**END DAM FLASHING EXPANDED ELEVATION**  
 CUT FLASHING ALONG SOLID LINES FOLD ALONG DASHED LINES

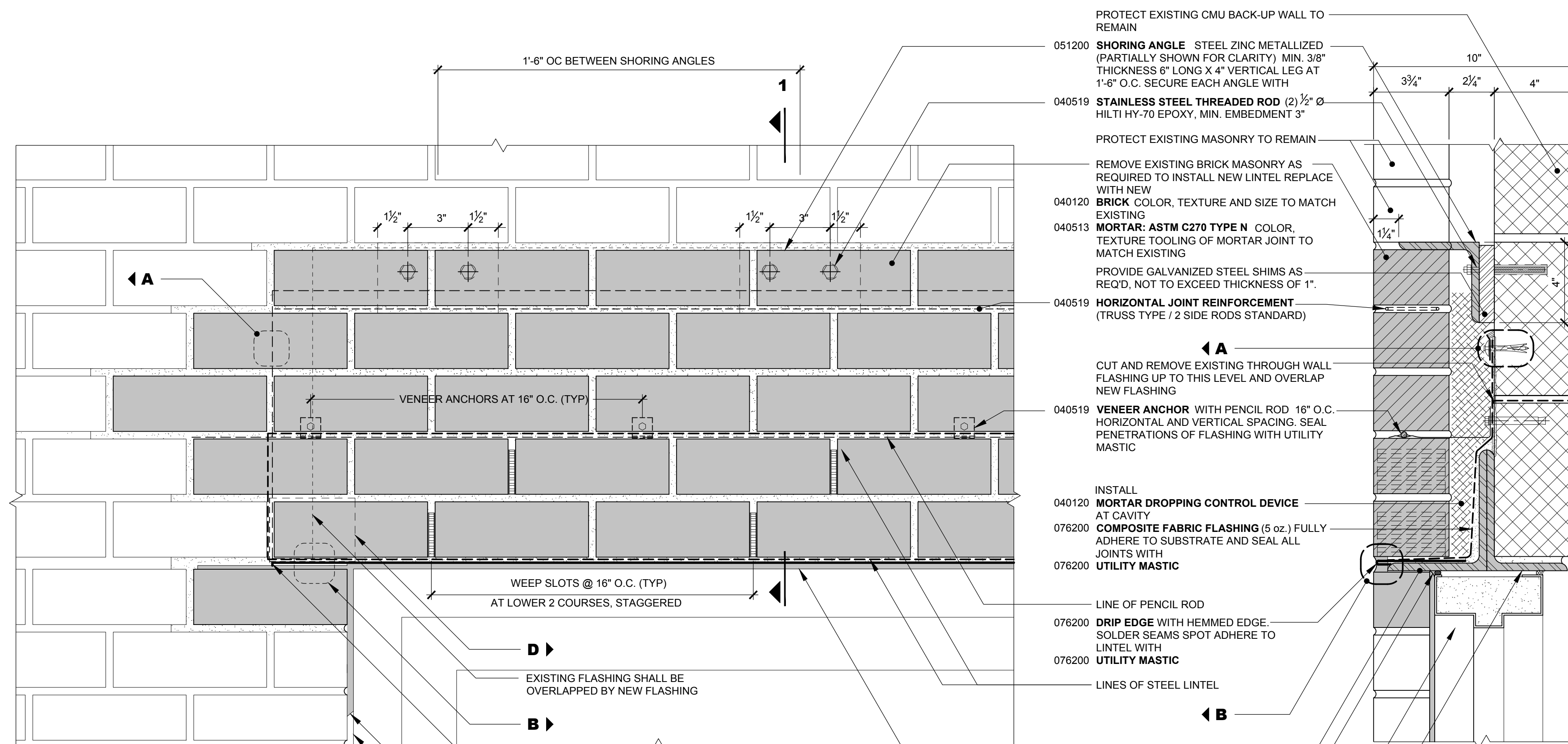
**FOLDING DIAGRAM**  
 APPLY UTILITY MASTIC



**D** END DAM FLASHING  
 NTS

NEW STEEL ANGLE SIZE (LLV)	
CAVITY WIDTH	ANGLE SIZE
2 1/2"	6" X 6" X 3/8"
1"	6" X 4" X 3/8"

**C** STEEL ANGLE SIZE  
 NTS



SECTION 1-1

3" = 1"

ELEVATION

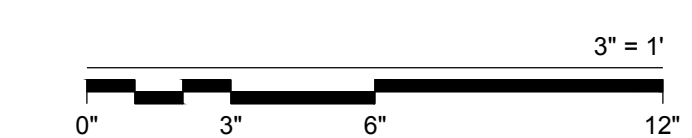
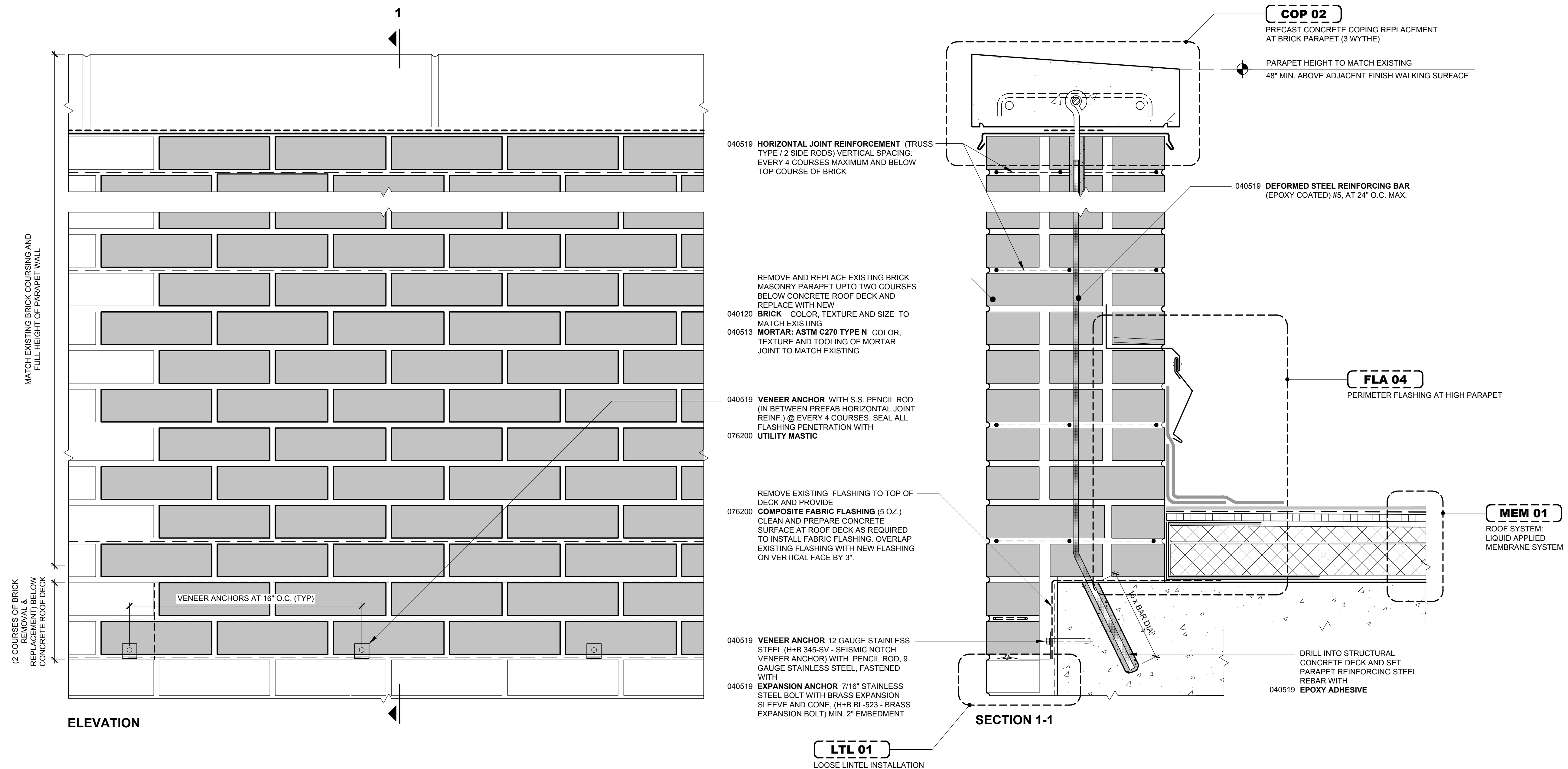
**D** EXISTING FLASHING SHALL BE OVERLAPPED BY NEW FLASHING  
**B** EXTENT OF STAINLESS STEEL DRIP EDGE EXTEND SEALANT DOWN 6" PAST BRICK TO BE REPLACED  
 PROTECT EXISTING SEALANT BEYOND TO REMAIN

**LTL 01 PROVIDE LOOSE LINTEL: BRICK MASONRY CAVITY WALL (LF)**



Key/ Location plan

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>A545.00</b>
	Sheet 60 of 64



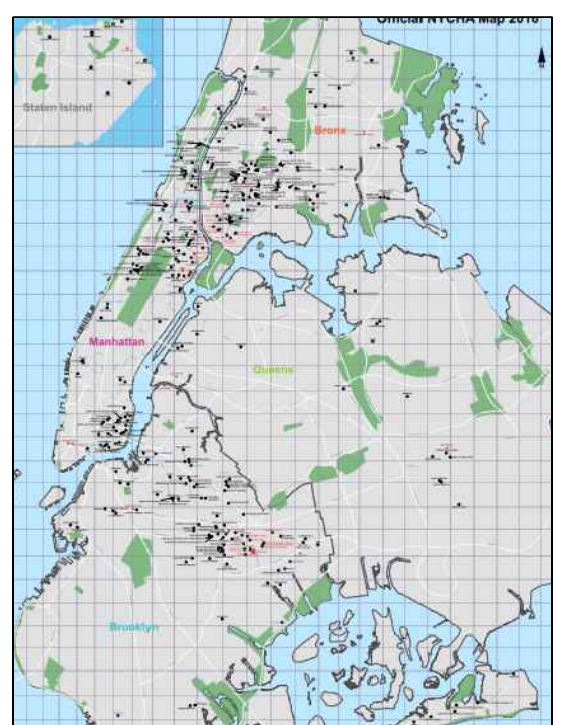
DOB Employee Stamps and Signatures

Date: Revision:

Date: Submissions:

**NEW YORK CITY HOUSING AUTHORITY**  
**DESIGN DEPARTMENT**  
 90 Church Street 10th floor, New York, NY 10007  
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Zoning Map: Zone:  
 Block No.: Lot No.:  
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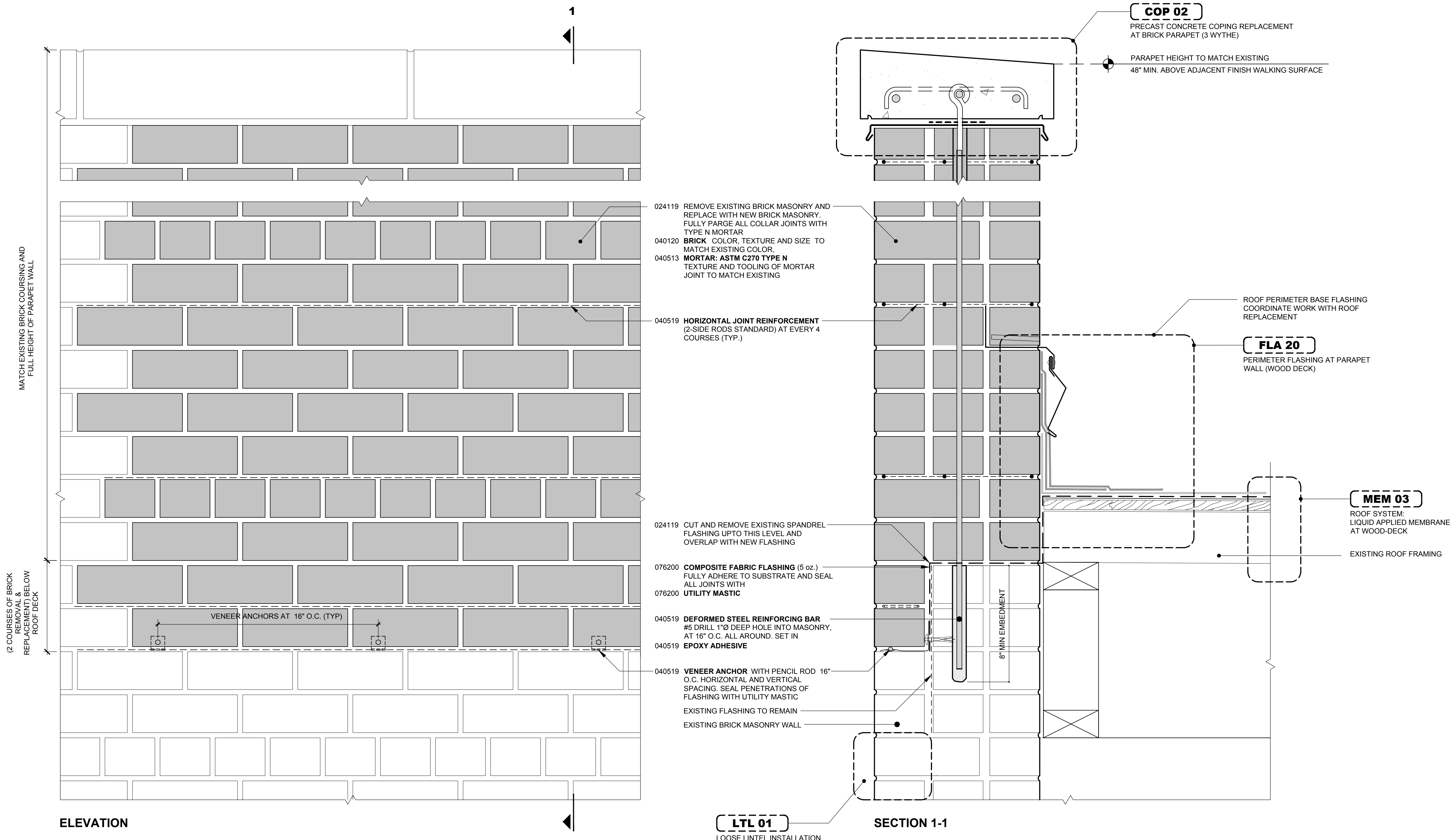
Contract Title:  
**ROOF REPLACEMENT AND ROOFTOP STRUCTURE RENOVATION REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

Drawing Title: Restoration Details:  
 PPT 02

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>A546.00</b> Sheet 61 of 64

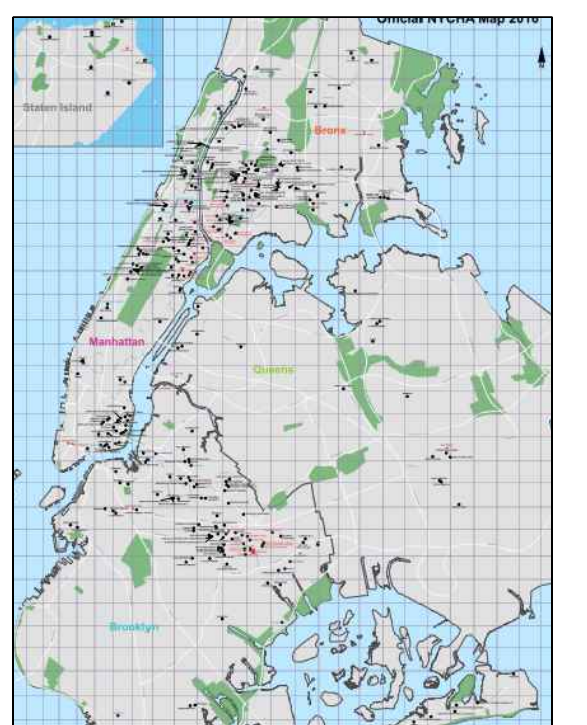
DOB BSCAN STICKER



**PPT 02 PARAPET RECONSTRUCTION OVER WOOD DECK - 3 WYTHE (LF)**

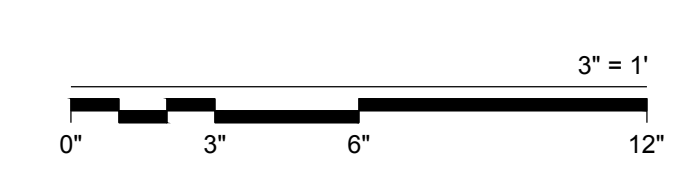
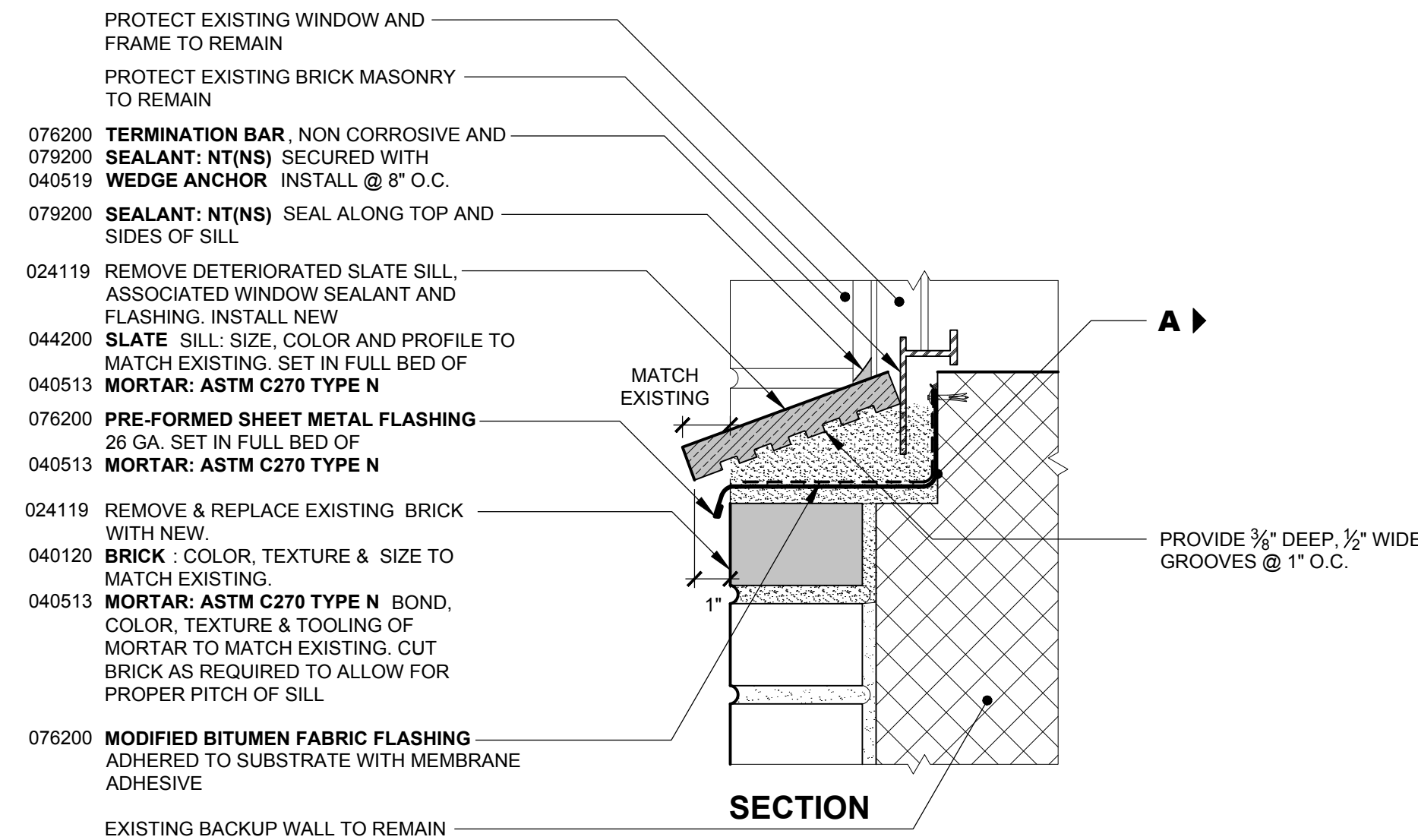
DOB Employee Stamps and Signatures



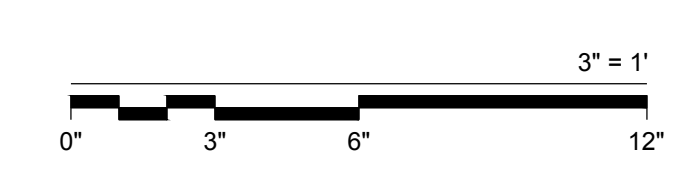
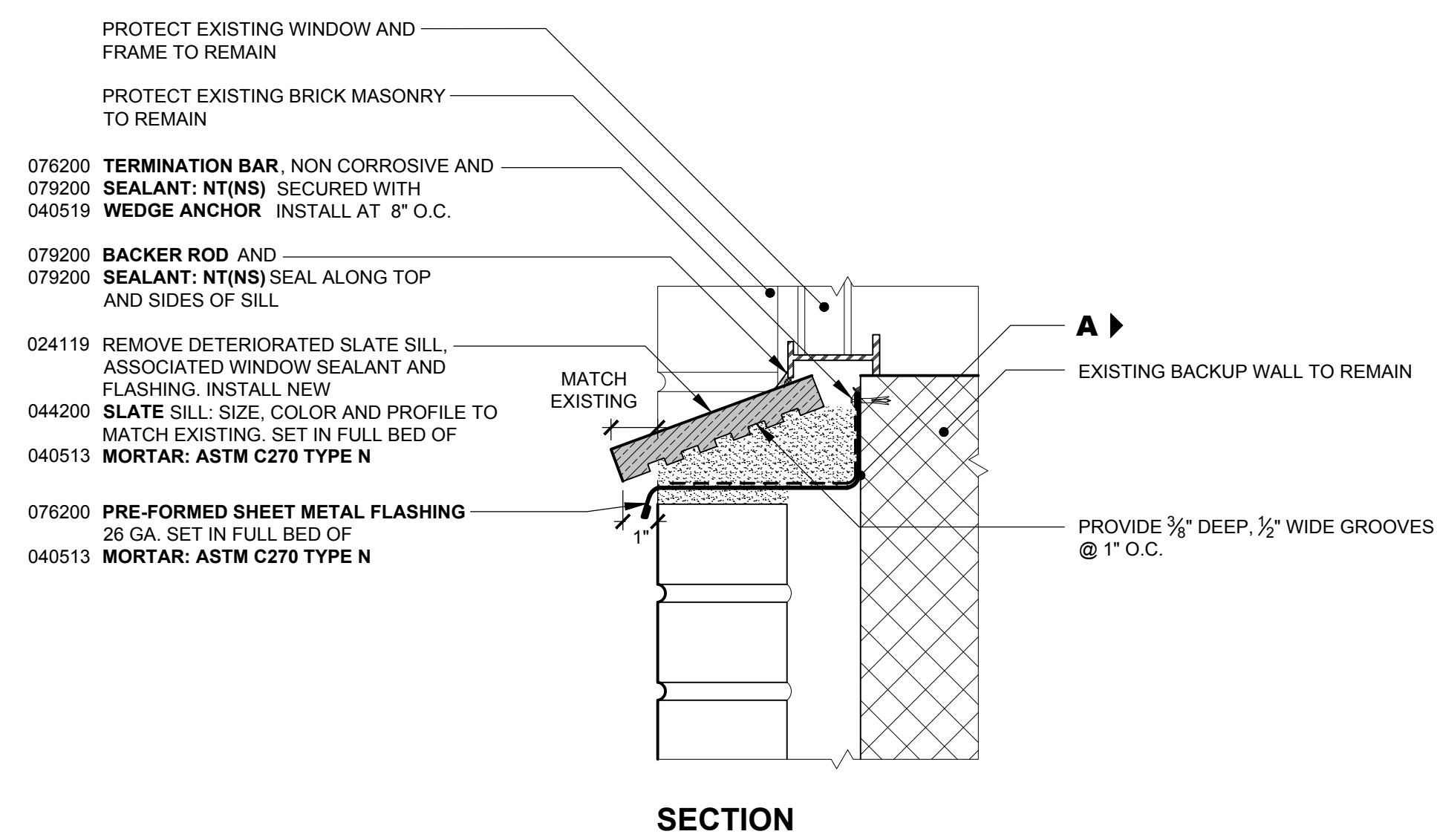


Key/ Location plan

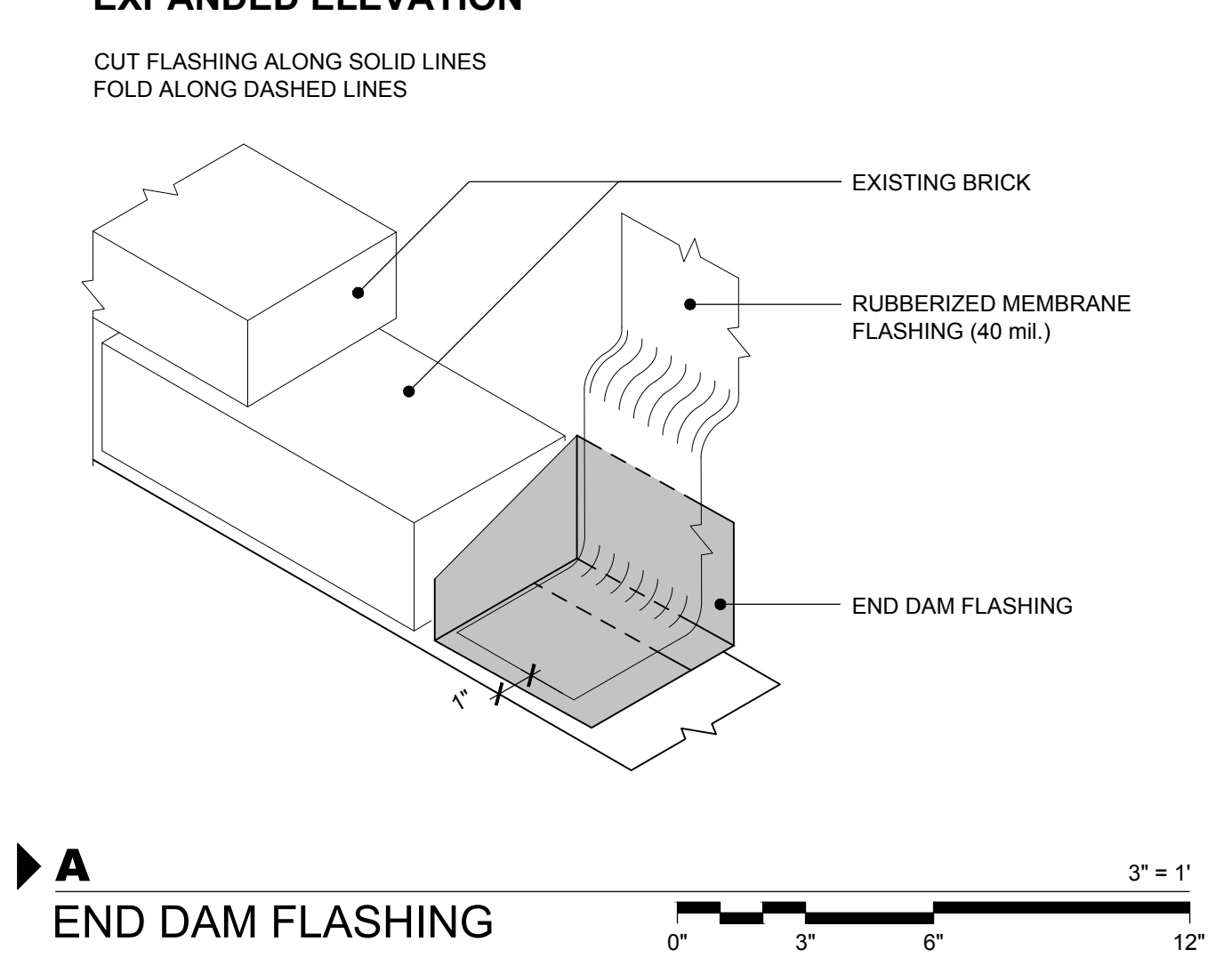
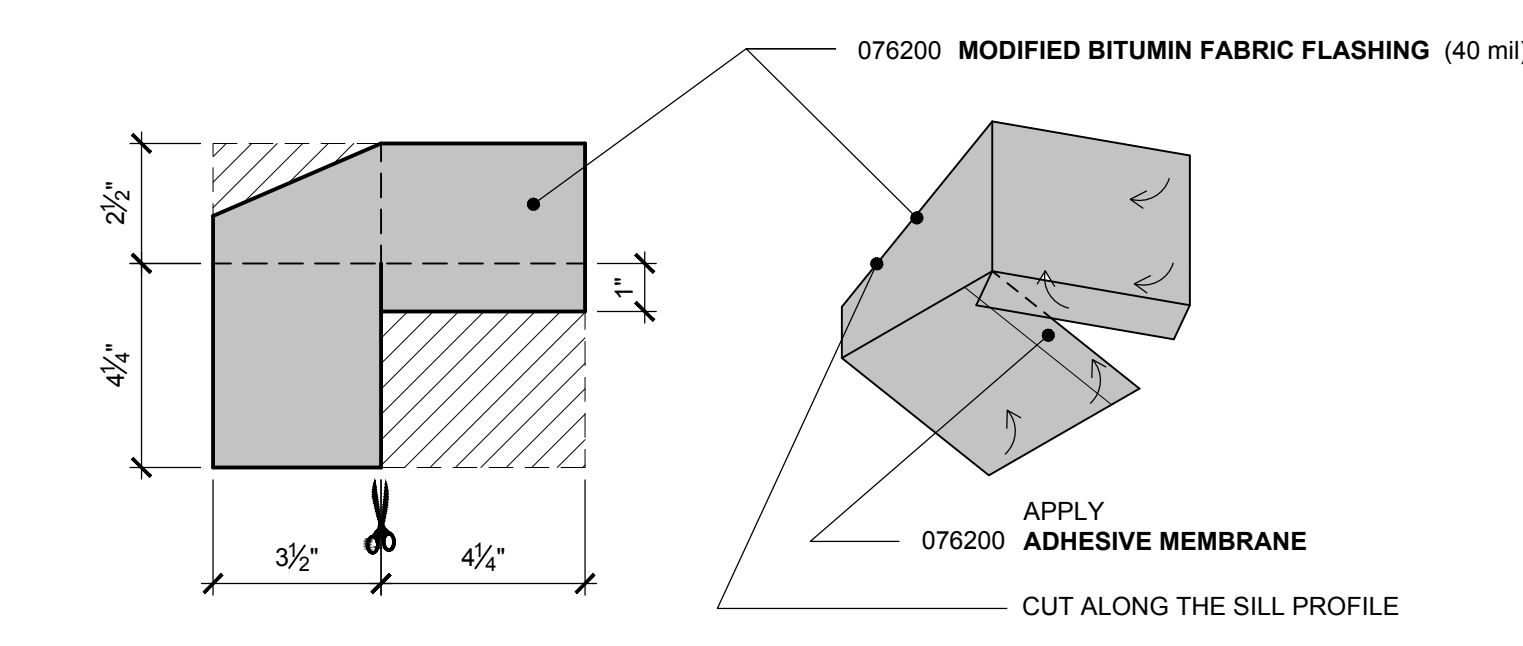
Seal / Signature:	Issue Date: 12.04.2018
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	Drawing No.: <b>A547.00</b> Sheet 62 of 64



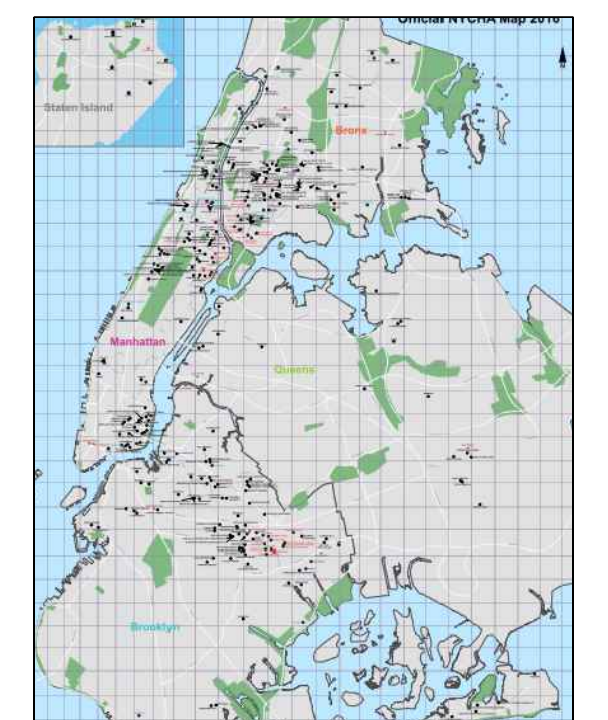
**SIL 02 SLATE SILL REPLACEMENT: BRICK MASONRY SOLID WALL (LF)**



**SIL 01 SLATE SILL REPLACEMENT: BRICK MASONRY CAVITY WALL (LF)**



**END DAM FLASHING**



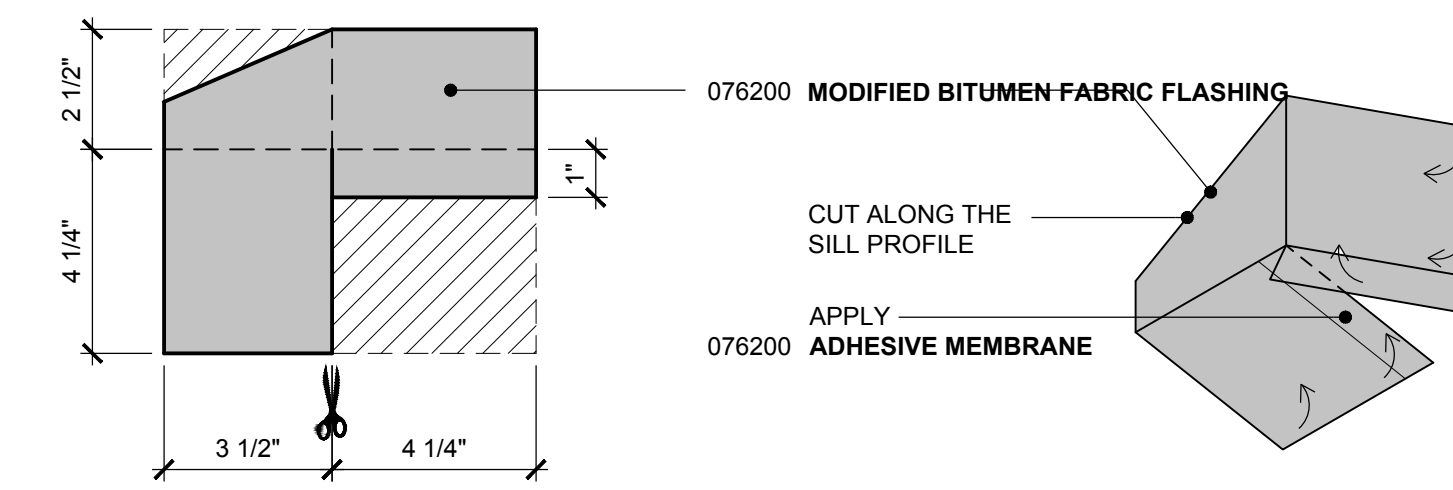
Key/ Location plan

**Contract Title:**  
**ROOF REPLACEMENT AND**  
**ROOFTOP STRUCTURE RENOVATION**  
**REQUIREMENT CONTRACT**

Contract No.:  
**RF 1805337**

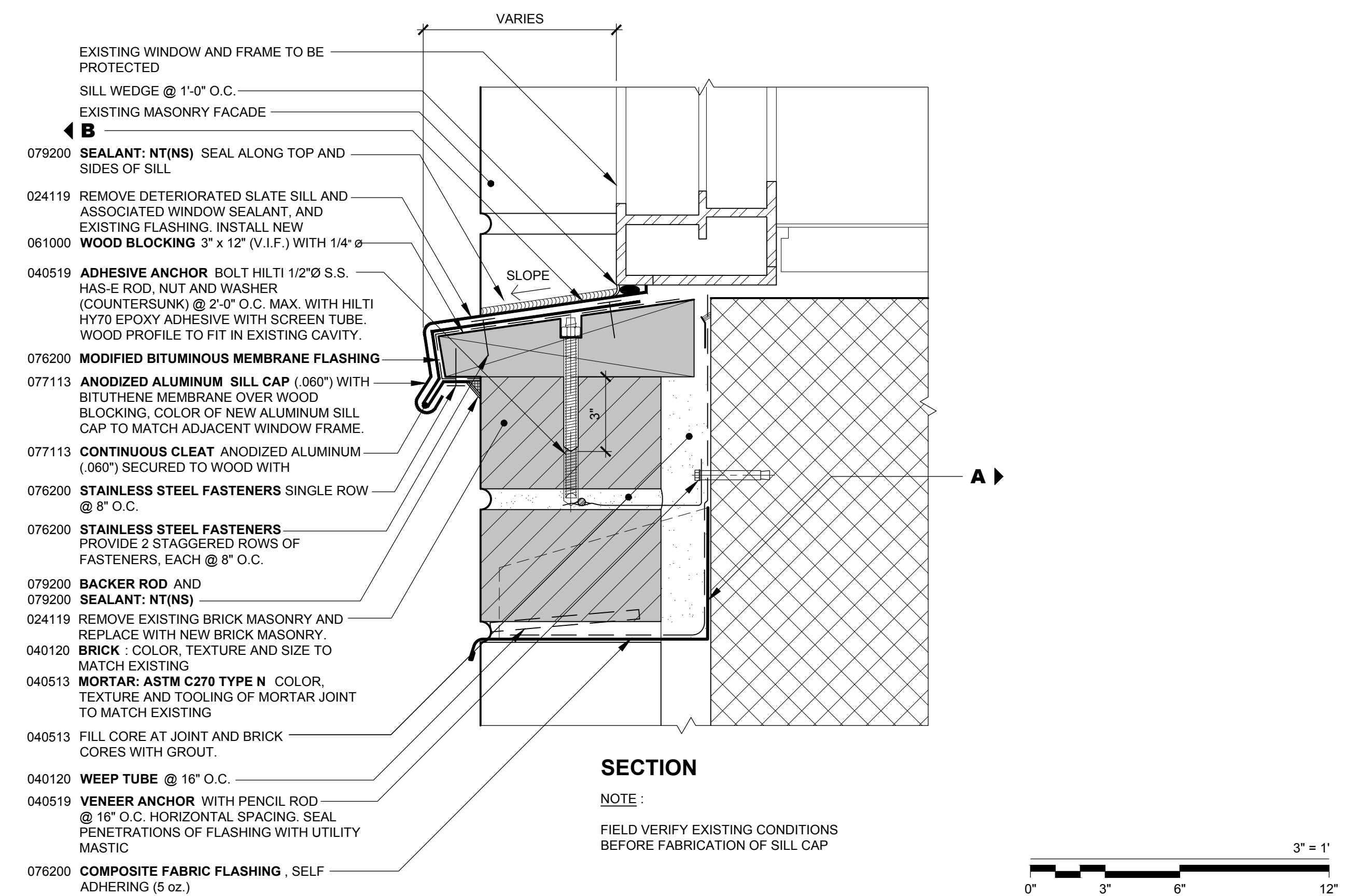
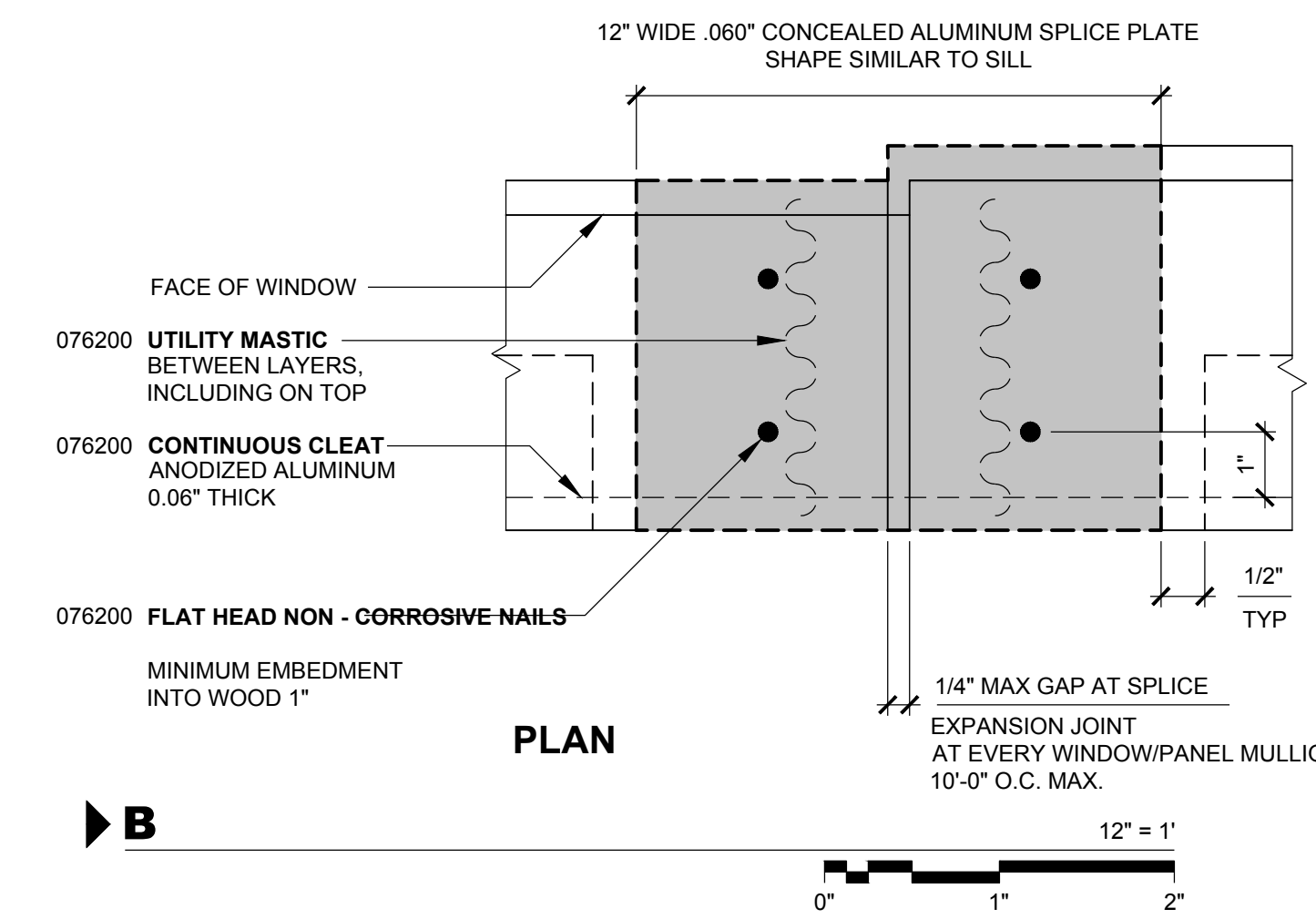
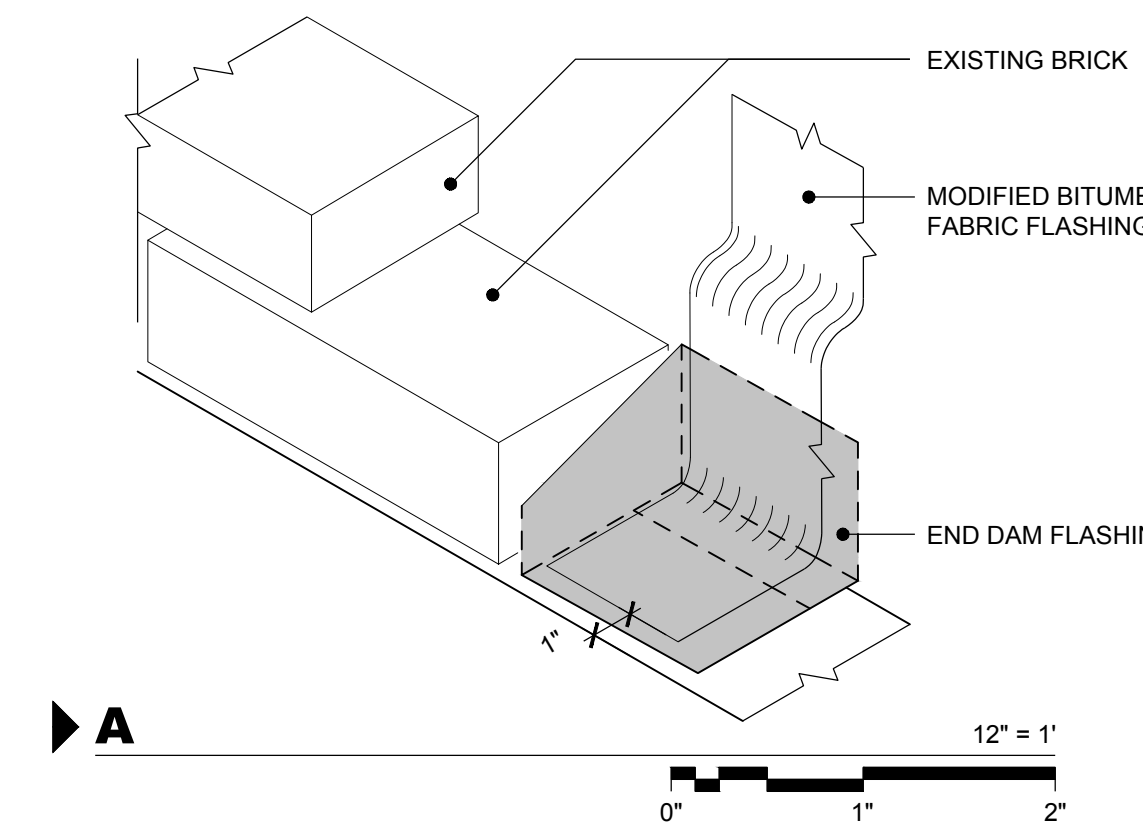
Drawing Title: Restoration Details:  
 SIL 03, SIL 04

Seal / Signature:	Issue Date: 12.04.2018
	Scale: AS NOTED
	Drawn By: AO / YZ / VP
	Checked By: NS / VS
	Drawing No.: <b>A548.00</b> Sheet 63 of 64

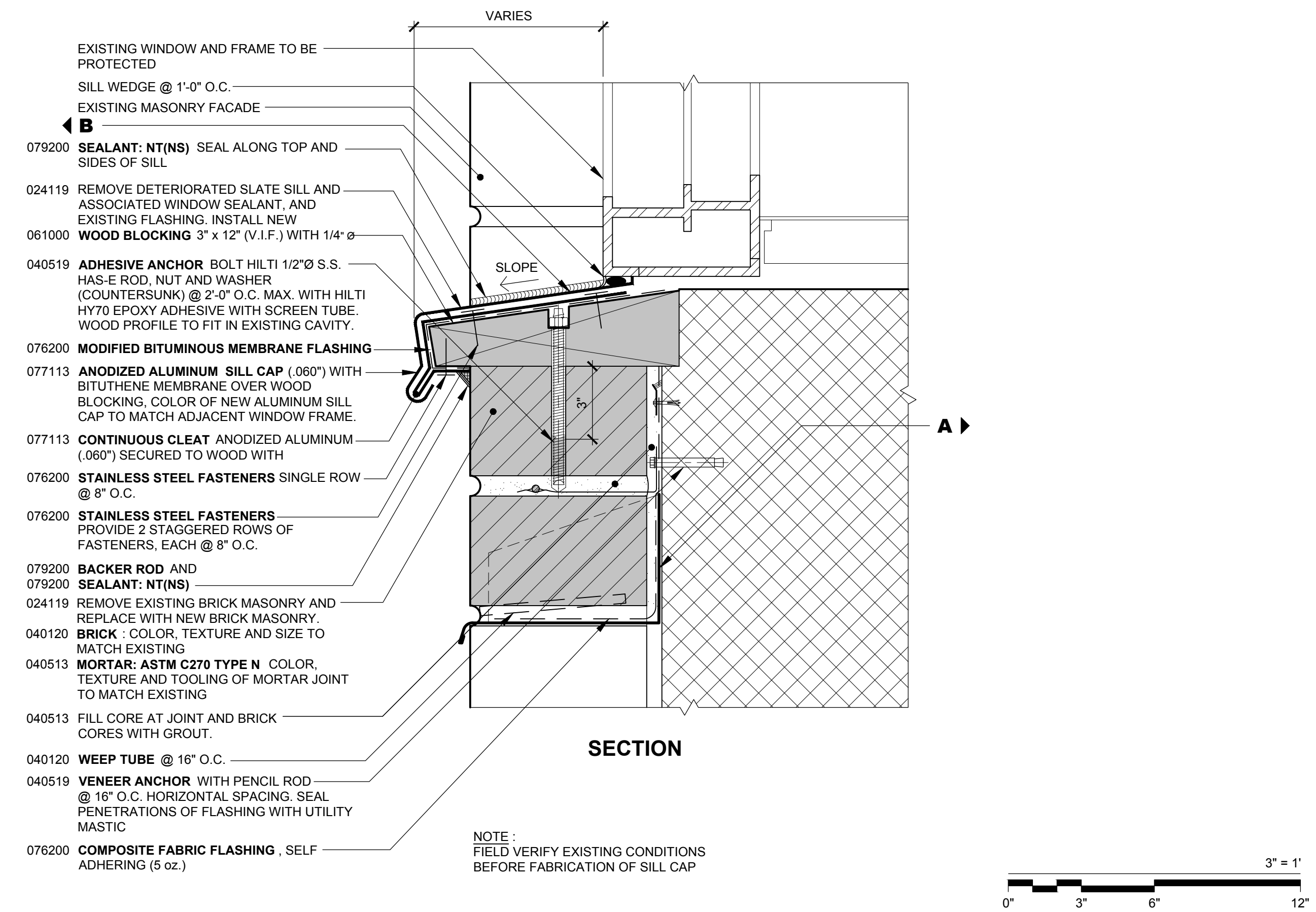


**END DAM FLASHING**  
**EXPANDED ELEVATION**  
 CUT FLASHING ALONG SOLID LINES  
 FOLD ALONG DASHED LINES

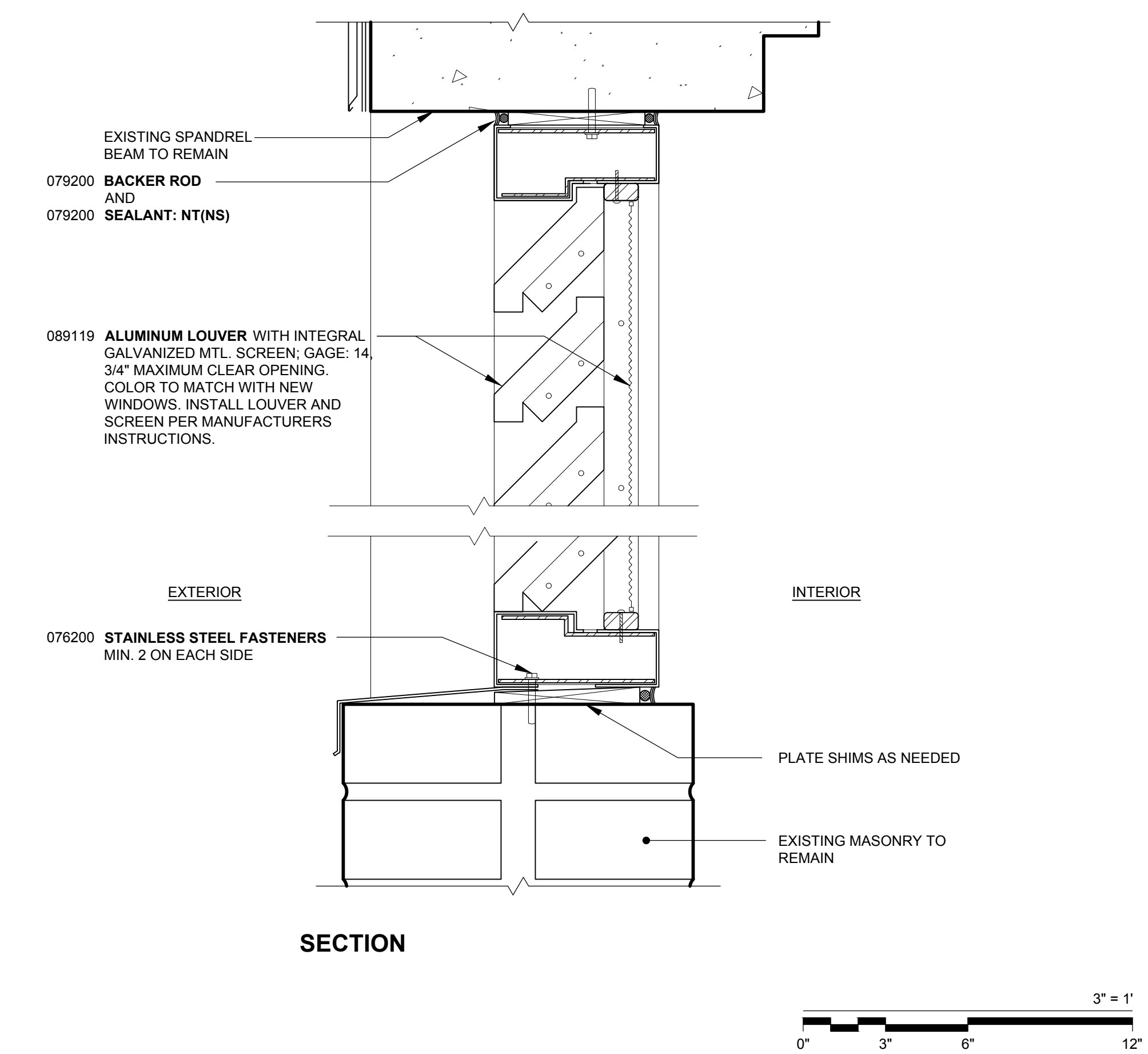
**FOLDING DIAGRAM**



**SIL 03 SHEET METAL SILL REPLACEMENT: BRICK MASONRY CAVITY WALL (LF)**



**SIL 04 SHEET METAL SILL REPLACEMENT: BRICK MASONRY SOLID WALL (LF)**

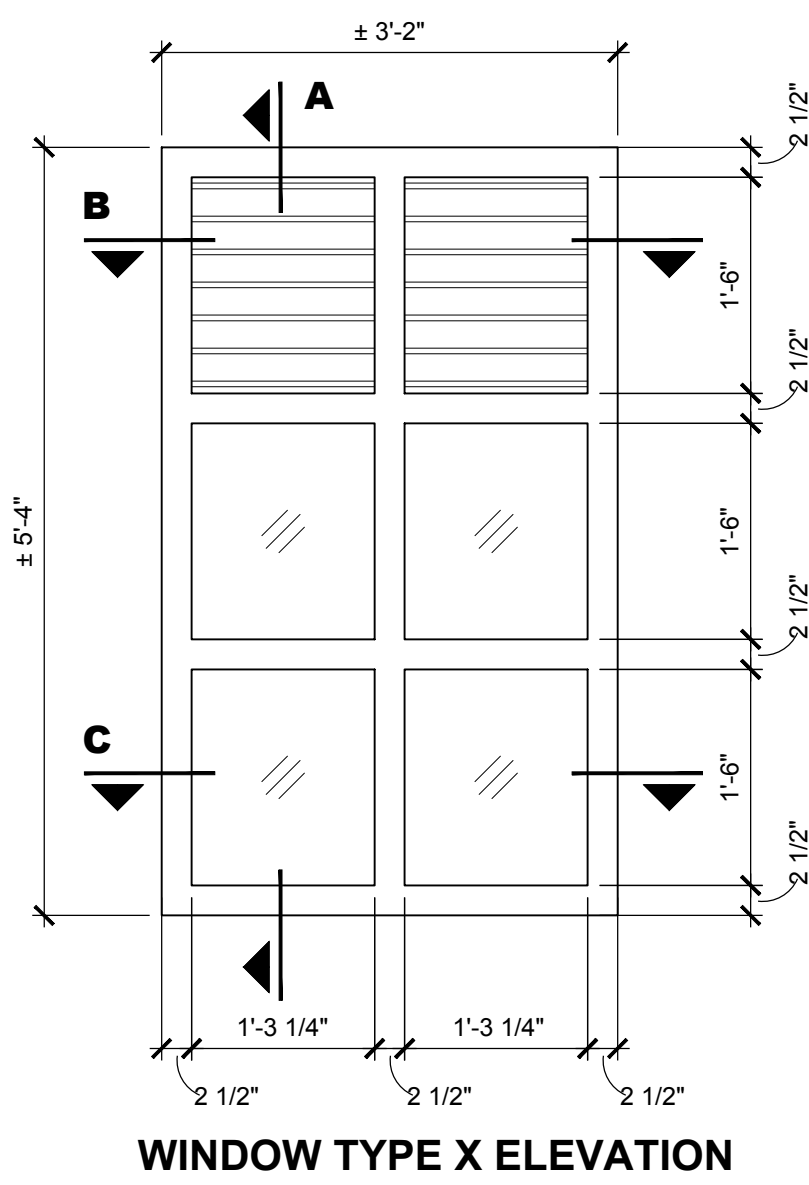


**LOU 01 BULKHEAD STAIRWELL LOUVER REPLACEMENT (EA)**

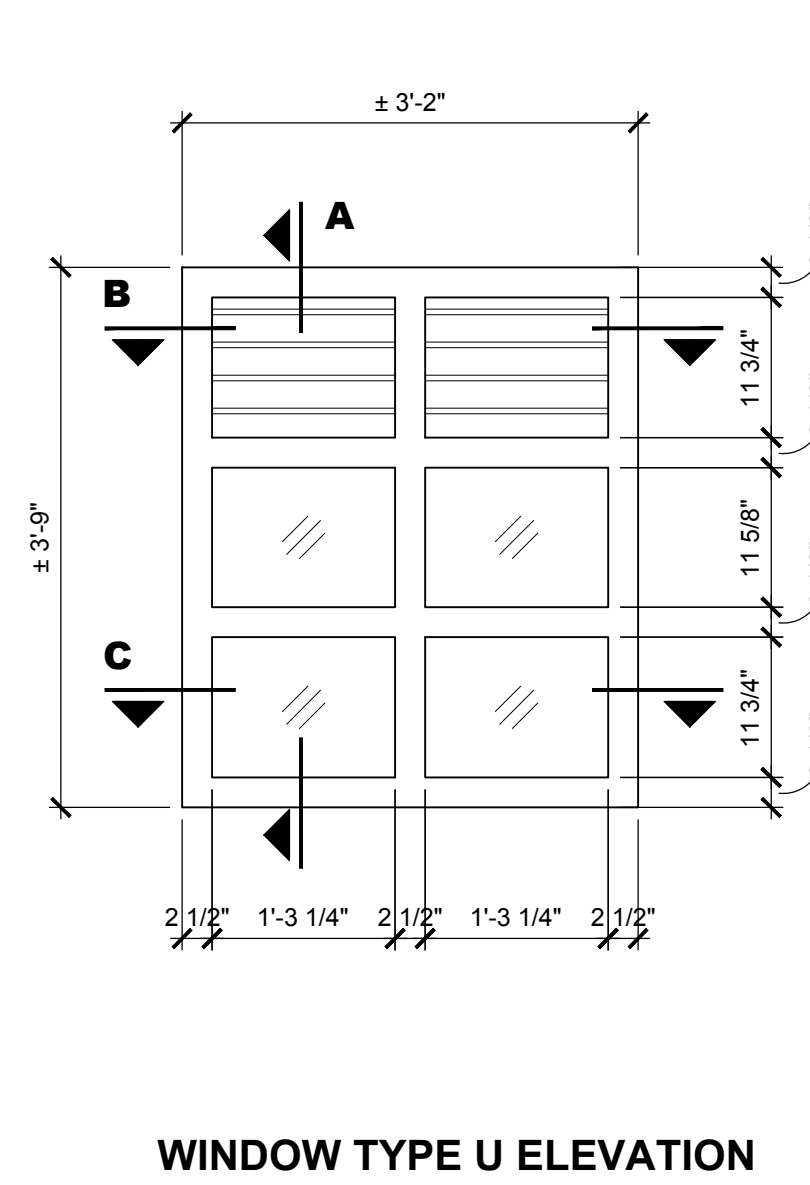
DOB Employee Stamps and Signatures



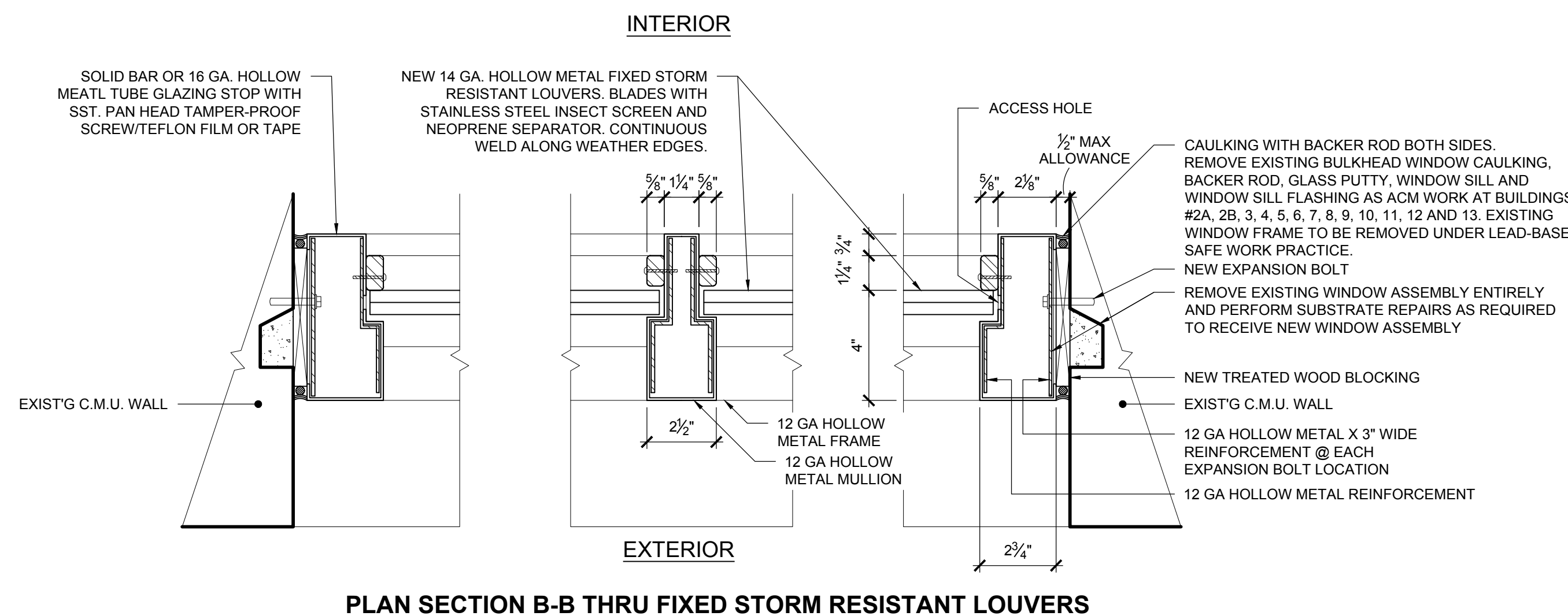
Key/ Location plan



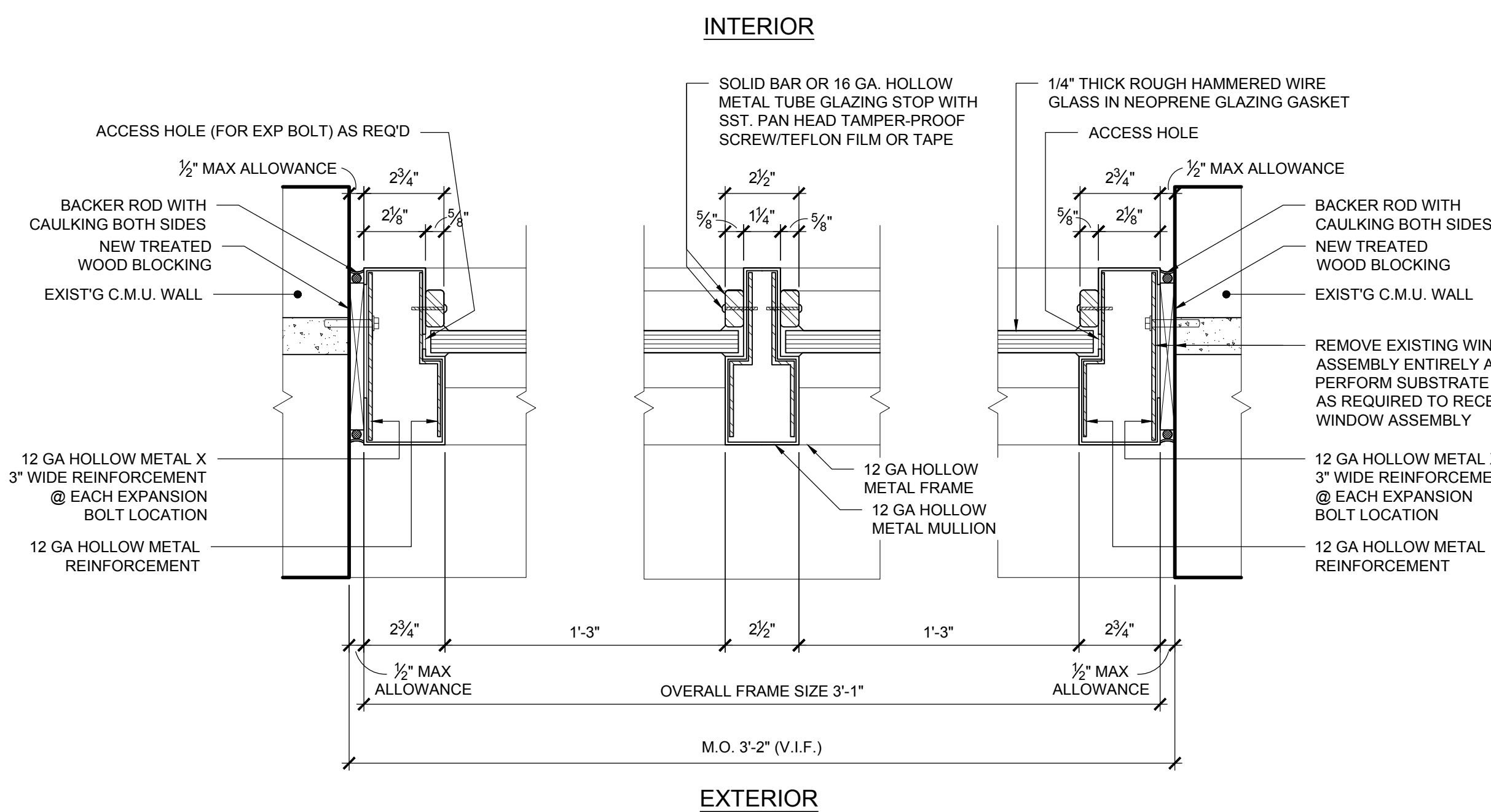
WINDOW TYPE X ELEVATION



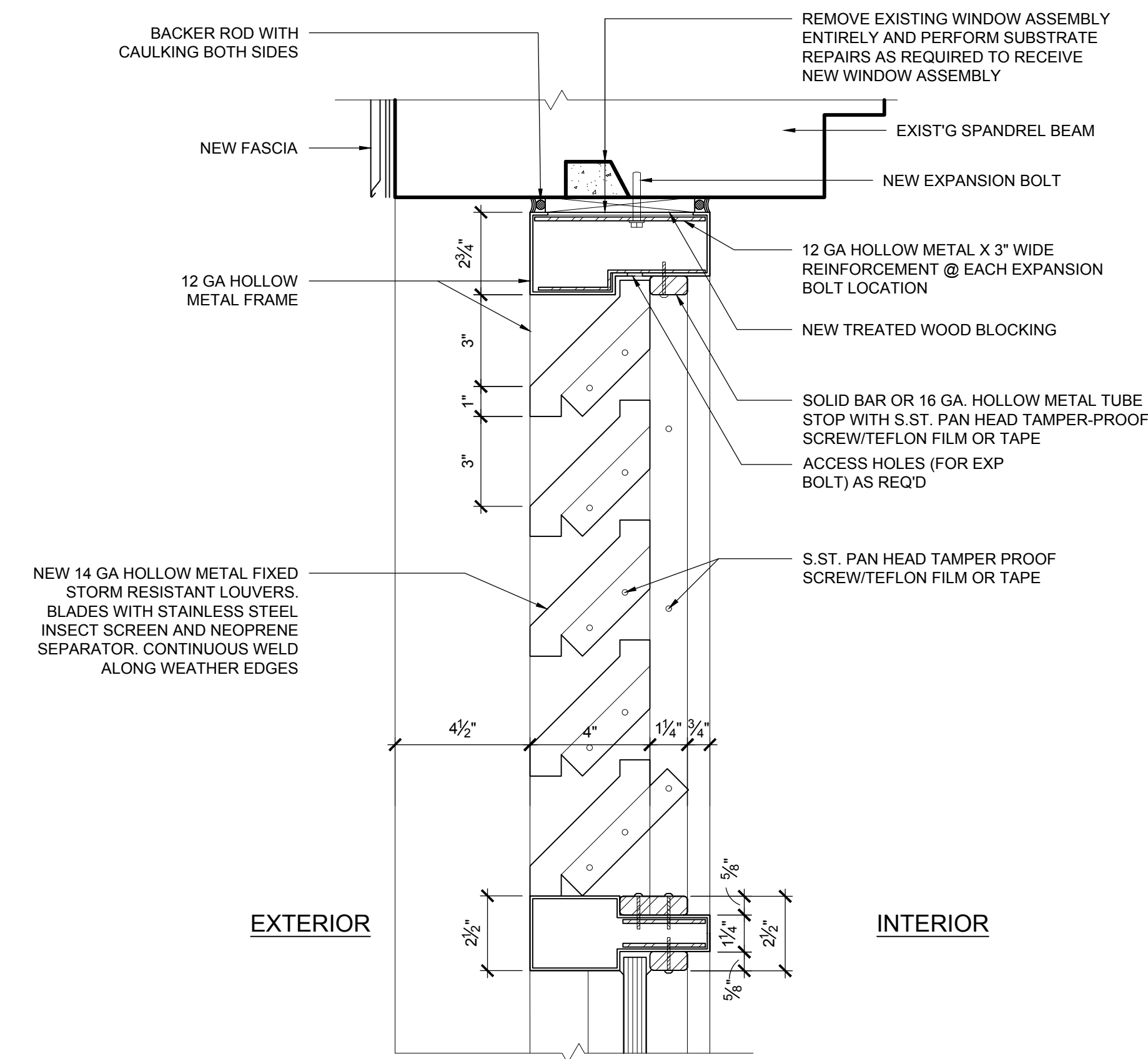
WINDOW TYPE U ELEVATION



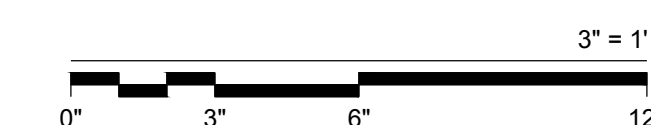
PLAN SECTION B-B THRU FIXED STORM RESISTANT LOUVERS



PLAN SECTION C-C THRU GLAZING



VERTICAL SECTION A-A



DOB Employee Stamps and Signatures