

Procurement Department  
IFB: Neuberger Museum South West Courtyard  
Project SU-111320  
Addendum #1 \* January 28, 2021

To: Prospective Bidders

No. of Pages: 36 pages

SUNY Purchase hereby issues this Addendum, dated 1/28/2021, for the above referenced IFB, in order to provide the following clarification:

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**Item 1:**

SUNY Purchase received questions at the pre-bid meeting and via email. Answers with additional clarification and revised drawings are provided on pages 2 – 5.

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**Item 2:**

SUNY Purchase is providing missing technical specifications for 04200 Masonry on pages 6-36.

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Please be sure to sign THIS ADDENDUM (as acknowledgment that your firm received it) and submit it with your bid package, which is due **Thursday, February 4<sup>th</sup> at 2 pm.**

Respectfully,

Elizabeth Pleva  
Director of Procurement and Accounts Payable

Acknowledgement of ADDENDUM #1

\_\_\_\_\_  
Signature                      Date

\_\_\_\_\_  
Typed printed name and title

\_\_\_\_\_  
Company name

**Addendum #01 - Bidder's Questions & Answers**

- Q1. What is the thickness of Existing concrete pavement including tiles, built up roof?
- A1.** The buildup roof including roof tiles varies, assuming highest point close to the storefront, thickness of the buildup roof varies from 6".
- Q2 Do we need a licensed plumber to perform plumbing work?
- A2.** Yes, a licensed plumber can inspect and make quick decisions.
- Q3. What kind of overhead protections are required to keep the work area safe from rainwater while waterproofing work in progress?
- A3** Contractor to submit to EOR "Means and Methods" to plan an enclosure during demolition to curtail dust and debris.
- Also, refer to attached revised drawing C103.01. The space below is conditioned. The area below needs to be contained to avoid any suspended dust spreading around surrounding art work.
- Q4 Are there existing sidewalk pavers to be replaced or reset and what would be their quantity of removal?
- A4** Refer to revised drawing C103.01, a note added, salvage 12"x12" existing concrete pavers and reinstall after compaction of subgrade to desired levels. Contractor to make the levels good in the area marked as "Contract Limit".
- Q5 Where the new brick masonry (3) courses are going to be replaced in kind, is there going to be any waterproofing behind the new bricks?
- A5** Refer to Section 1/C202 and enlarged detail 3/C202 for waterproofing detail that will be integrated with the drainage mat. The brick will be replaced on the North wall and the East wall underneath the curtain wall system.
- Q6 In relation to the new brick masonry (3) courses which are going to be replaced in kind, the proposed site works plan, drawing no. C103.00, the area of the brick work is not shown. Would you be able to explain where the work is to be performed on the drawing? Do you have quantities of this work?
- A6** Refer to drawing C102.01 issued as Addendum.

**Addendum #01 - Bidder's Questions & Answers**

**Q7** Removal of existing drains: To which extent do the drain lines need to be removed and capped? Do you have linear footage of Pipe removal? Who will be responsible for removing and placing back the railings under the drains/pipes? Who will be responsible for removing the lights in the work area?

**A7** The estimated length of drain pipes to be removed is around 100 linear foot. However, the length should be field verified by the contractor. The pipe will be capped above the cleanout.

Removal of electrical light and reinstall is contractor's responsibility.  
Removal of railing and reinstalling back is contractor's responsibility.

For any specialty items SUNY Purchase will remove required equipment to make room for work area. However, it is the responsibility of contractor to protect surrounding areas from any damages. In the event of any damage contractor will replace the item in kind at no cost.

**Q8** Do we need to cover the floors and the artwork? If yes, what kind of protection is required?

**A8** Artwork and other valuables will be protected by the SUNY Purchase curator. However, contractor will protect and ensure that the artworks are not within the work area. Any concerns about the Artwork shall be addressed to the Curator of the Museum in writing.

**Q9** Plans calls for existing wall to be capped at the façade wall. How do they plan to cap at the façade wall? This occurs at two locations.

**A9** After breaking the courtyard boundary wall, the rough corners need to be finished with matching bricks masonry pattern. (Contractor shall match the courses vertically and horizontally)

**Q10** New Concrete pavers- The existing brick pavers in the courtyard are different then in the plaza. Please clarify the installation of pavers and what type pf pavers to be used as replacement pavers?

**A10** Pavers in the pathway will be salvaged and reinstalled after leveling the existing subgrade. Refer to drawing C103.01. New concrete pavers, matching to existing

For the courtyard, refer to the note in the detail 1/C103 calling for "New brick Pavement Tiles"

**Q11** Please confirm if a job trailer will be required for this project?

**A11** Contractor can choose to bring a trailer in the allocated staging area.

**Addendum #01 - Bidder's Questions & Answers**

Q12 Are new pavers required above where the 4" drain pipe is to be installed?

**A12** Yes; Refer to attached drawing C103.02, issued as addendum with a bubbled annotation calling for salvaging existing 12"x12" concrete pavers and reinstalling them after achieving desired level.

Q13 I cannot seem to find information on the type of drain pipe to be installed as per drawing C103. Can information be provided regarding type of pipe, size, etc?

**A13** Refer to attach drawing C103.02, issued as addendum with a bubbled annotation calling for new drain pipe. Also, refer to drawing C202.00 for section details.

Q14 Should leaking occur into space below Neuberger Museum Courtyard, the space may need to be repainted? Is any information available on paint or finishes in the basement space?

**A14** Contractor is expected to leave the basement work area tidy. All finishes to be replaced in kind.

Q15 I am looking for information on the square pavers to be replaced: type, material, size, colors, etc.

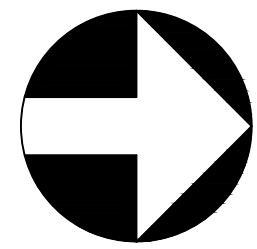
**A15** Existing concrete pavers are Hanover paver. Pavers to be salvaged and reinstalled. Only damaged concrete pavers will be replaced in kind.

Q16 Where will be staging area for stored material?

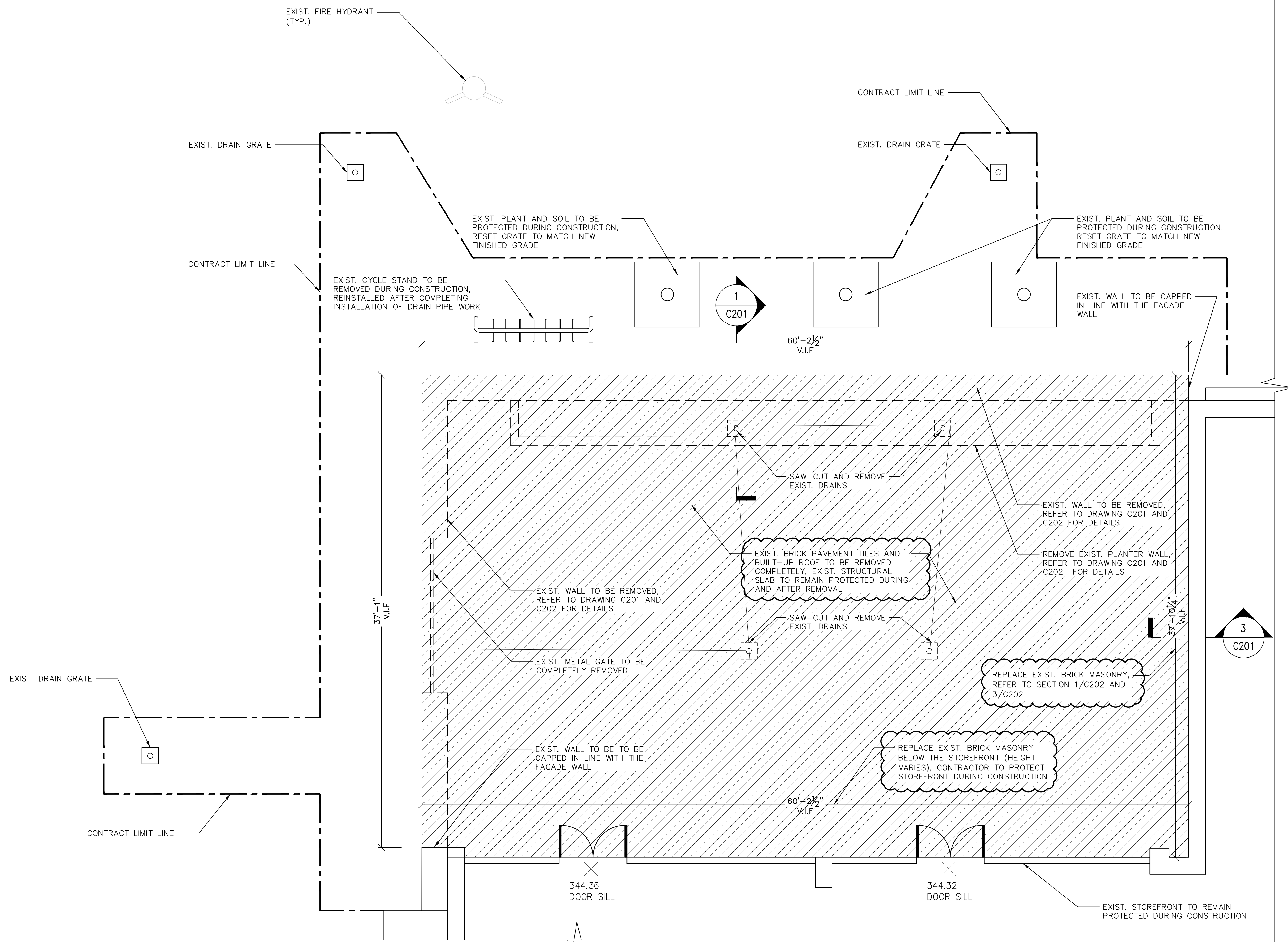
**A16** The staging area will be south of cemetery. Campus expectation is that staging area to be wrapped with green fabric. Parking is in W2. Contractor is required to buy parking permit.

Q17 I need information regarding MWBE form 104. Is that to be filled out by General Contractor, who is not a MWBE or by a MWBE subcontractor?

**A17** Please reference the Prospective Bidder's Notice 7557-121B document. It provides clarification on all the required MWBE documentation. Form 7557-104 is the vendor's (your) own EEO Policy Statement.



NORTH



- NOTE:**
1. ALL EXIST. DRAIN PLUMBING IN COURTYARD TO BE REMOVED, CLEANED AND FILLED WITH NEW CONCRETE TO SEAL PROPERLY, REFER TO SECTION 2/S201 FOR DETAILS.
  2. CAP DRAIN PIPES AT BASEMENT LEVEL AS INSTRUCTED BY THE ENGINEER.
  3. CONTRACTOR TO ASCERTAIN NO SOIL OR SILT GOES INTO THE EXIST. DRAINS TO BE REUSED.
  4. CONTRACTOR TO REINSTALL ALL EXIST. EQUIPMENT IN ITS ORIGINAL POSITION.
  5. ALL DIMENSIONS ARE TO BE VERIFIED IN FIELD, ANY DISCREPANCY IN FIELD DIMENSIONS ARE TO BE NOTIFIED IMMEDIATELY.
  6. CONTRACTOR WILL NOTIFY OF ANY DISCREPANCY DUE TO EXISTING SITE CONDITIONS.

08/24/2020 ISSUED FOR CONSTRUCTION

No. Date Revision

**AFRIDI ASSOCIATES**  
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Designer: AKBER AFRIDI, P.E.

Drawn by: AZHER MALIK

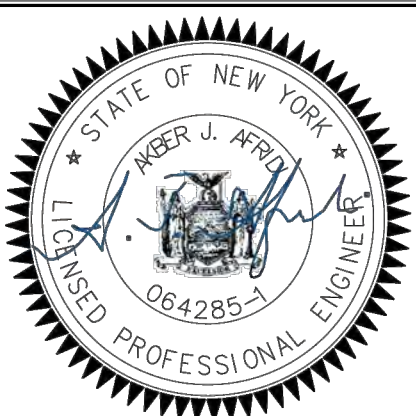
Checked by: AKBER AFRIDI, P.E.

Project:  
**SUNY PURCHASE  
NEUBERGER MUSEUM  
SOUTH COURTYARD  
WATERPROOFING**

Address:  
735 Anderson Hill Road  
Purchase NY 10577

Drawing Title:

**SITE PARTIAL REMOVAL PLAN**



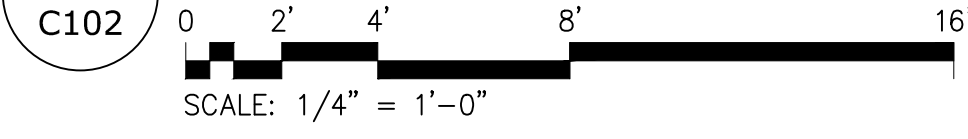
Drawing No.:

**C102.01**

Scale: AS NOTED

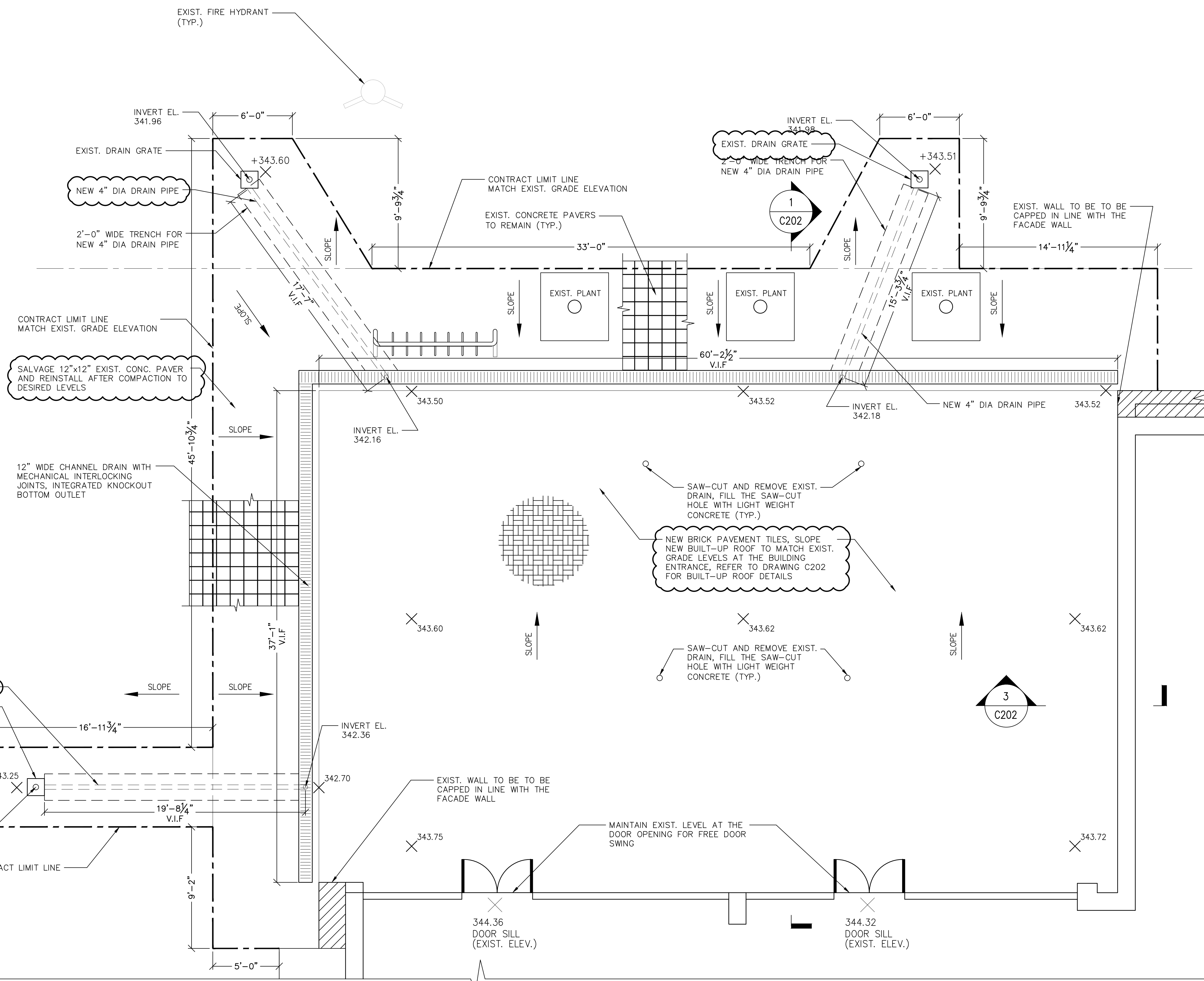
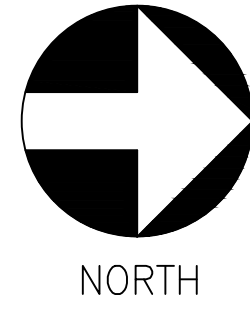
Date: 08/24/2020

**1 NEUBERGER MUSEUM COURTYARD - PARTIAL REMOVAL PLAN**



- NOTE:**
- ALL EXIST. DRAIN PLUMBING IN COURTYARD TO BE REMOVED, CLEANED AND FILLED WITH NEW CONCRETE TO SEAL PROPERLY, REFER TO DRAWING C202 FOR DETAILS





- NOTE:**
1. ALL EXIST. DRAIN PLUMBING IN COURTYARD TO BE REMOVED, CLEANED AND FILLED WITH NEW CONCRETE TO SEAL PROPERLY, REFER TO SECTION 2/S201 FOR DETAILS.
  2. CONTRACTOR TO PROTECT OTHER APPERTINENT ELEMENTS FROM DAMAGE AND DUST DURING CONSTRUCTION.
  3. CONTRACTOR TO REPLACE IN KIND OTHER APPERTINENT ELEMENTS THAT ARE DAMAGED DURING CONSTRUCTION AT NO COST.
  4. CONTRACTOR TO SUBMIT TO EOR "MEANS AND METHODS" TO PLAN AN ENCLOSURE DURING DEMOLITION TO CURTAIL DUST AND DEBRIS.
  5. CAP DRAIN PIPES AT BASEMENT LEVEL AS INSTRUCTED BY EOR.
  6. CONTRACTOR TO ASCERTAIN NO SOIL OR SILT GOES INTO THE EXIST. DRAINS TO BE REUSED.
  7. CONTRACTOR TO REINSTALL ALL EXIST. EQUIPMENT IN ITS ORIGINAL POSITION.
  8. ALL DIMENSIONS ARE TO BE VERIFIED IN FIELD, ANY DISCREPANCY IN FIELD DIMENSIONS ARE TO BE NOTIFIED IMMEDIATELY.
  9. CONTRACTOR WILL NOTIFY OF ANY DISCREPANCY DUE TO EXISTING SITE CONDITIONS.

08/24/2020 ISSUED FOR CONSTRUCTION

No. Date Revision

**AFRIDI ASSOCIATES**  
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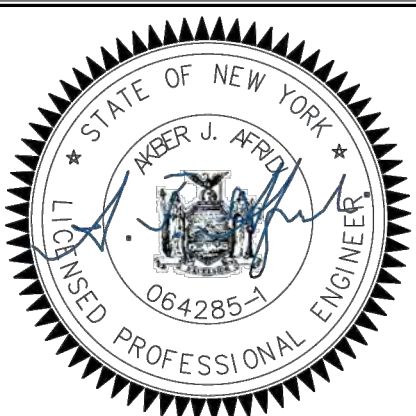
Designer: AKBER AFRIDI, P.E.

Drawn by: AZHER MALIK

Checked by: AKBER AFRIDI, P.E.

Project:  
**SUNY PURCHASE  
NEUBERGER MUSEUM  
SOUTH COURTYARD  
WATERPROOFING**  
Address:  
735 Anderson Hill Road  
Purchase NY 10577

Drawing Title:  
**PROPOSED SITE WORKS PLAN**



Drawing No.:  
**C103.02**  
Scale: AS NOTED  
Date: 08/24/2020

SECTION 04200  
UNIT MASONRY

PART 1 - GENERAL

**1.01 DESCRIPTION OF WORK**

A. This Section includes, but is not limited to, the following:

Provide brick masonry, cavity wall insulation, and other masonry Work as specified herein, as shown on the Drawings, and as needed for a complete and proper installation.

B. Related Work includes, but is not limited to, Division 7 Section "Fluid-Applied Membrane Air Barrier, Vapor Retarding", for air barrier system at masonry cavity walls.

**1.02 WORK FURNISHED BUT NOT INSTALLED UNDER THIS SECTION**

A. Dovetail anchor slots

**1.03 WORK INSTALLED BUT NOT FURNISHED UNDER THIS SECTION**

A. Compressible filler in masonry joints..... Section 07900

**1.04 SUSTAINABILITY REQUIREMENTS**  
(NOT USED)

**1.05 DESIGN REQUIREMENTS**

A. No air-entraining admixtures or material containing such shall be permitted in the mortar. Also, no anti-freeze compounds, calcium chloride, or other compounds, unless expressly permitted otherwise, shall be permitted in the mortar.

B. Mortar types to be used at the following locations, unless otherwise stated:

1. Face brick, concrete masonry units - Type N unless otherwise noted.

**1.06 REFERENCES**

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

A. American Society of Testing and Materials (ASTM) standards, latest editions.

- A951 Standard Specification for Steel Wire for Joint Reinforcement.
- C33 Standard Specification for Concrete Aggregates.
- C43 Standard Definitions of Terms Relating to Structural Clay Products.
- C67 Standard Methods of Sampling and Testing Brick and Structural Clay Tile.
- C109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-inch or 50 MM Cube Specimens).
- C126 Standard Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units.
- C129 Standard Specification for Non-Load-Bearing Concrete Masonry Units.
- C140 Standard Methods of Sampling and Testing Concrete Masonry Units.
- C144 Standard Specifications for Aggregate for Masonry Mortar.
- C150 Standard Specification for Portland Cement.
- C207 Standard Specification for Hydrated Lime for Masonry Purposes.



- C216 Standard Specification for Facing Brick (Solid Masonry Units made from Clay or Shale).
- C270 Standard Specification for Mortar for Unit Masonry.
- C404 Standard Specifications for Aggregates for Masonry Grout.
- C476 Standard Specification for Grout for Reinforced and Nonreinforced Masonry.
- C578 Standard Specification for Preformed, Cellular Polystyrene Thermal Insulation.
- C595 Standard Specifications for Blended Hydraulic Cements.
- C652 Standard Specification for Hollow Brick
- C979 Standard Specification for Pigments for Integrally Colored Concrete.
- C1019 Method of Sampling and Testing Grout
- C1405 Standard Specification for single-fired Glazed Brick

B. Industry Standards.

1. "Standard for Concrete Masonry Units" - UL 618-Underwriters Laboratory.
2. American Welding Society - AWS D1.4 - Structural Welding Code - Reinforcing Steel

**1.07 SUBMITTALS**

A. Submittals for Specified Items

1. For items that are specified herein by manufacturer's name and model number, submit a Product Schedule indicating the item description, manufacturer name, model number and any other identifying nomenclature. The Schedule will be accepted by the EOR for record purposes only.

Product Data and Samples are not required for such specified items except for selection of color or similar purpose. When submitting items that are not specified herein by manufacturer's name and model number, provide complete Product Data and Samples for each item for review and approval.

B. Product Data

Submit Product Data to show compliance with specified requirements.

1. Submit complete data for masonry units. Laboratory test reports for brick shall be no more than two years old. Submit a list indicating the maximum dry weight of each type and size of CMU to be used in the project.
2. Submit complete data for reinforcement and ties, of each type.
3. Portland Cement: Brand and manufacturer's name.
4. Lime: Brand and manufacturer's name.
5. Mortar Pigments: Brand and manufacturer's name.
6. Packaged Products: Manufacturer's specifications and application instructions.
7. Sand: Location of pit, name of owner, and previous test data.
8. Masonry reinforcement, anchors
9. Insulation
10. Insulation adhesive
11. Masonry cleaner, including specific masonry manufacturer's recommended cleaning procedure for the product selected.

C. Samples

1. Submit as many face brick of each color to show the entire color range and in quantities sufficient to determine percentages. Submit samples of face brick of special sizes and shapes, including factory fabricated corners and lip brick.

D. Shop Drawings

1. Submit drawings for brick of special shapes.
2. Submit plans indicating locations of control joints in interior partitions.

E. Quality Control Submittals

1. Schedule of Uses: By mortar type.
2. Certificates
  - a. Submit the lightweight CMU producer's and GCB manufacturer's certificate stating that the minimum equivalent thickness and mix design are in conformance with UL 618 for the indicated fire rating.
  - b. Submit lightweight CMU producer's certificate stating aggregate used is 100% lightweight, expanded shale, clay, or slate (rotary kiln) aggregate, in accordance with ASTM C331. To provide the required recycled content, it is acceptable to provide up to 20% lightweight recycled aggregate that will maintain the same fire resistance equivalent thickness of 100% expanded shale, clay, or slate without a decrease in block strength.
  - c. Furnish notarized Building Department affidavit from masonry manufacturer (Form 10H) stating materials delivered to project comply with the Specification requirements.
  - d. Furnish notarized Building Department affidavit from masonry supplier (Form 10J) stating materials delivered to project comply with the Specification requirements.

- e. Provide certification that insulation used in Project was not produced with, nor contains, any of the U.S. EPA regulated CFC compounds that are listed in the Montreal Protocol.

F. Mockups

In accordance with Article titled Quality Assurance.

**1.08 QUALITY ASSURANCE**

A. Qualifications

Company specializing in the Work of this Section shall have a minimum of three years experience and at least two projects with similar quantity of materials.

B. Regulatory Requirements

1. Building Code: Work of this Section shall conform to all requirements of the NYC Building Code and all applicable regulations of governmental authorities having jurisdiction, including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Building Code are given in this Section, the requirements of this Section shall govern.
2. UL 618: Fire rating of CMU and assemblies shall conform to the requirements UL 618.
3. NYC Board of Standards and Appeals (BSA) approvals, or
4. NYC Materials and Equipment Acceptance (MEA) approvals.

C. Controlled Inspection and Certification

Reinforced and unreinforced masonry shall conform to the material acceptance, certification and inspection requirements of Article 7, Chapter 1 - Subchapter 1 and Tables 10-1 and 10-2 of the Building Code (Title 27).

## D. Mockups

## 1. General

- a. Construct sample panels to conform with appearance and workmanship as indicated in the Drawings and Specifications.
- b. Use approved sample panels for a standard of comparison for the Project. All Work shall conform in workmanship and appearance to that of the approved samples.
- c. If not approved, remove panel and install new panel (or panels) repeating the process until panel is approved.
- d. Do not proceed with Work until panels are approved in writing by the Project Architect. Do not build Sample Panel "B" until Sample Panel "A" has been approved.
- e. Approved Panel "B" may remain in place as part of the Project.

## 2. Erect sample panels where directed, for approval by the Project Architect.

- a. Face Brick: Provide sample Panel "A", 4'x 4' panel illustrating mortar, bonding, jointing, course heights, and ties to back-up units. Lay up Panel "A" from brick furnished for this purpose. Provide a second sample Panel "B", incorporated into the building, from brick delivered for the job, Sample Panel "B" shall be 4'x8' minimum.

**1.09 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials to project site in undamaged condition per ASTM guidelines. Store in an enclosed location or off the ground with waterproof covering as needed to protect all materials from moisture, contaminants, corrosion, deleterious temperature changes, and other harmful conditions.

## B. Packaged Products

1. Deliver materials to the site in manufacturer's original, sealed containers. Do not deliver materials which have exceeded shelf life limitation set forth by the manufacturer. Material containers shall bear the manufacturer's label indicating manufacturer's name, trade name of product, lot number, shelf life of product, and mix ratio (if applicable). This includes individual bags of pre-bagged mortar mixes.
2. Comply with manufacturer's printed instructions for storing and protecting materials.

1.10 ENVIRONMENTAL REQUIREMENTS

## A. Construction Requirements

Salt or other chemicals for lowering the freezing temperature of the mortar shall not be used.

Masonry units, mortar, and grout shall be preconditioned and masonry protected for the following cold weather conditions:

1. Air temperature 40°F to 32°F:
  - a. Heat mixing water or sand to minimum of 70°F and to maximum of 160°F.
2. Air temperature 32°F to 25°F:
  - a. Heat mixing water and sand to minimum of 70°F and to maximum of 160°F.
  - b. Provide heat source to maintain a minimum air temperature 32°F on each side of masonry construction.
3. Air temperature 25°F to 20°F:
  - a. Heat mixing water and sand to minimum of 70°F and to maximum of 160°F.



- b. Provide heat source to maintain a minimum air temperature of 32° on each side of masonry construction.
  - c. Provide wind breaks for wind in excess of 15 miles per hour.
4. Air temperature 20°F and Below:
    - a. Heat mixing water and sand to a minimum of 70°F and to maximum of 160°F.
    - b. Provide enclosures and heat source to maintain a minimum air temperature of 32°F on each side of masonry construction during construction.
    - c. Keep temperature of masonry units a minimum of 30°F when laid.

#### B. Protection Requirements

1. Mean Daily Air Temperature of 40°F to 32°F:
  - a. Protect masonry from rain or snow for 24 hours.
2. Mean Daily Air Temperature of 32°F and Below:
  - a. An air temperature of at least 32°F shall be maintained on each side of masonry for a period of at least 48 hours if Type M or S mortar is used and at least 72 hours if Type N or O mortar is used.

#### C. Wetting of Clay Masonry Units

For units with initial rates of absorption that require their wetting before laying, follow the following cold weather requirements:

1. If surface temperatures are above 32°F, use water heated to about 70°F.
2. If surface temperatures are below 32°F, use water heated to about 120°F.

**PART 2 - PRODUCTS****2.01 MANUFACTURERS**

## A. Reinforcement and Ties

1. Hohmann & Barnard, Inc., Hauppauge, N.Y.
2. Dur-O-Wall, Arlington Heights, IL.

## C. Insulation

1. Dow Chemical Co., Midland, Michigan.
2. UC Industries Inc., Parsippany, NJ

## D. Insulation Adhesive

Adhesives, mastics, compatible with air barrier systems and other contacted materials:

1. Henry Company
2. W. R. Grace & Co.
3. Rubber Polymer Corporation

## E. Mortar Coloring

1. "SGS" Mortar Colors, Solomon Grind-Chem Services, Inc.
2. "True Tone Mortar Colors", Davis Colors, Rockwood Industries, Inc.
3. "Flamingo Colors ", Lehigh Corporation.

## L. Mortar Additives

1. ACM Chemistries, Norcross, GA 30010
2. Master Builders, Inc., Cleveland, OH 44122
3. Sika Corp., Lyndhurst, NJ 07071

- M. Mortar Dropping Collection Net
  - 1. Advanced Building Products Inc., Springvale, Maine.
  - 2. Mortar Net USA, Ltd., Gary, Indiana
- N. Mortar Weeps
  - 1. Mortar Net USA, Ltd., Gary, Indiana

## 2.02 FACE BRICK DISTRIBUTORS

- A. Consolidated Brick and Building Supplies, Inc., N.Y., N.Y.
- B. Tri-State Brick & Building Materials, Inc. N.Y., N.Y.
- C. Belden Brick Sales & Service, Inc., N.Y., N.Y.
- D. Glen-Gery Corp. Somerville, N. J.

## 2.03 MATERIALS

- A. Base Materials
  - 1. Portland Cement
    - a. Type I ASTM C150
    - b. Type II (for manholes) ASTM C150
  - 2. Slag cement (only use for ASTM C989, Grade  
Manufacture of concrete block 100 or 120.
  - 3. Sand for Mortar Mix ASTM C144  
Sand shall be washed natural sand with  
100% passing the No. 8 sieve.  
Mix shall not contain chlorides.
  - 4. Aggregate for CMU - 100% light- ASTM C331  
weight aggregate, expanded clay  
shale or slate (rotary kiln  
process). To meet recycled content,  
lightweight recycled aggregate of up  
to 20% of total material that will maintain  
the same fire resistance equivalent thickness  
of 100% expanded shale, clay, or slate

without a decrease in block strength may be used.

5. Aggregate for Masonry Grout                    ASTM C404
6. Hydrated Lime                                    ASTM C207  
    Type "S"
7. Water - Clean, potable New York City water free of injurious materials.
8. Mortar Coloring: Provide pure mineral pigments, natural and synthetic iron oxides, and chromium oxides compounded for use in mortar mixes. Material shall conform to ASTM C979. Coloring shall not contain alkalyde salts or chlorides. No liquid colorants shall be permitted.
9. Mortar additive for use in setting of exterior brick coping caps, granite steps, and other such elements with horizontal surfaces exposed to weather. Use additive for such elements within 10 vertical feet of grade or walking areas.
  - a. Additive shall be non-toxic, non-flammable, and non-hazardous during storage, mixing, application, and when cured.
  - b. Finished mortar shall be resistant to urine, dilute acid, dilute alkali, sugar, brine, and calcium chlorides and other salts used in de-icing salts.
10. Premixed sand and lime for mortar mixes is not permitted. The use of batched material by Spec-Mix and factory-packaged cement-lime-pigment by major mortar manufacturers is permitted. Each individual bag of material shall have the manufacturer's label identifying the mortar type.

#### B. Brick

1. Utility Modular Face Brick: Clay or shale, ASTM C216 (solid), grade SW, type FBX, or ASTM C652 (cored), grade SW, type HBX of size 3-5/8" x 3-5/8" x 11-5/8" (nominal dimensions 4"x4"x12"). Colors and textures as selected by the Project Architect.

Special sizes and shapes as shown on the Drawings or specified herein. Brick shall be manufactured to special sizes and shapes, not cut in the field. Glazed units are not permitted. Brick shall be tested for efflorescence in accordance with ASTM Test Methods C67 and the rating shall be "Not Effloresced".

- a. Lipped brick, such as are used above relieving angles and lintels, shall be manufactured with the lip portion having dimensions not less than 5/8" high and 3/4" deep. Provide brick with larger lip dimensions when recommended by brick manufacturer. When recommended by the manufacturer, lipped brick may be cut to the required dimensions from solid brick in the factory, provided that cuts are carefully made to a 90 degree interior angle and do not extend past this angle.

#### C. Joint Reinforcement and Ties

##### 1. Material

- a. Reinforcement and Ties for Exterior Walls: Formed from stainless steel, 18-8, type 304.
  - 1) Sheet steel: (No. 2B Finish), cold-rolled, annealed, ASTM A240.
  - 2) Wire steel: ASTM A951.
- b. Reinforcement and Ties for Interior Walls: ASTM A951, hot-dip galvanized (after fabrication), ASTM A153.
- c. Provide factory-fabricated corners and tees at corners and intersecting walls for continuous type reinforcing, such as truss type, except as indicated otherwise.
- d. Width of truss and mesh reinforcement to place edge of reinforcement 1" from each face of masonry.

2. Manufactured Units. Units are listed by Hohmann & Barnard model number in order to establish a

standard for comparison. Deliver all units with manufacturer's printed installation instructions.

a. Exterior Walls - Brick with Concrete Backup:

Provide #315-BT Flexible Dovetail Brick Tie, dovetail end to be 16 gage minimum, 1" wide. Provide Byna-Tie 3/16" in diameter, of length to provide 2" embedment in brick. Anchor slot shall be #305 Series Dovetail Anchor Slots. Provide multi-grooved rigid PVC Seismiclips, #187-A, for seismic interlock system. Provide 3/16" diameter Type 304 stainless steel continuous joint reinforcement wire.

b. Exterior Walls - Brick with Concrete Masonry Unit (CMU) Backup:

1) #180 S.I.S. Dub'l Loop Lok Truss Seismicclip Interlock System consisting of the following components:

- a) #180 Type 304 stainless steel Dub'l Loop Lok truss type horizontal joint reinforcement with welded loops. Truss 9 gauge. Loops 3/16" diameter.
- b) 3/16" diameter Type 304 stainless steel Byna-Ties. Provide Box type or Bent-Box type as required for coursing. Provide sizes required for 2" embedment in brick.
- c) Impact resistant, multi-grooved rigid PVC Seismiclips, #187-A.
- d) 3/16" diameter Type 304 stainless steel continuous wire.
- e) At walls with cavity insulation provide Loop-Lok Washers to mechanically lock rigid insulation in place.

2) #355L Column Anchor, 1/4" thick by 1-1/4" wide, twisted, with a slotted opening for



- lock stud. Provide a straight positive lock stud, 3/8" diam., threaded, with nut and washers for anchoring masonry to steel column when masonry is parallel to column flange. Length as required for conditions.
- 3) #353L Column Anchor, 1/4" thick by 1-1/4" wide, twisted, with a slotted opening for lock bolt. Provide a bent positive lock stud, 3/8" diam., threaded, with nut and washers, for anchoring masonry to steel column when masonry is perpendicular to column flange. Length as required for conditions.
  - 4) Juncture of exterior back-up wall with interior block partition: #MWT, 1/2" square by 16 gage, of proper width for wall thickness
  - 5) Concrete block to steel spandrel: #360 Gripstay Channel with # 365 Gripstay Anchor, 12 gage. Weld channel to steel spandrel. Length as required for conditions.
- c. Exterior Brick Walls/Parapet Walls (Multi-wythe): LOX-ALL #120 truss, 9-gage, of proper width for wall thickness.
  - d. Expansion and Control joints: "Slip-set stabilizer.
  - i. Exterior Brick with Steel Back-up: #362 Gripstay Channel, 12 gage welded to steel, with #315-BT Flexible Dovetail Brick Tie, dovetail end to be 16 gage minimum, 1" wide. Provide Byna-Tie 3/16" in diameter, of length to provide 2" embedment in brick. Provide multi-grooved rigid PVC Seismiclips, #187-A, for seismic interlock system. Provide 3/16" diameter Type 304 stainless steel continuous joint reinforcement wire.

## I. Miscellaneous Accessories

1. Weeps: High Density polyester, polypropylene, or polyethylene woven mesh, 90% open, full height of adjacent brick x full width of joint. Recessed 1/4" from face of brick, and extending to back of brick. Color to be selected by Architect from manufacturer's standard colors.
  - a. "Weep Vent" by Mortar Net
2. Mortar Collection/Deflection Device: High density polyethylene, polyester, or polypropylene open woven mesh of width to fill entire cavity after installation of the insulation. Provide double layer of material to ensure cavity is filled. Mesh shall be installed to create an up and down effect.
  - a. "Mortar Break" or "Mortar Break II" by Advanced Building Products Inc.
  - b. "Mortar Net" by Mortar Net, Inc.

## K. Insulation

1. Extruded polystyrene, rigid, ASTM C578 Type X with R-value (aged) of 5.0/inch at 75°F mean temperature when tested in accordance with ASTM C518.
  - a. Minimum compressive strength: 15 psi in vertical direction when tested in accordance with ASTM D1621.
  - b. Maximum water absorption: 0.1% by volume when tested in accordance with ASTM C272.
  - c. Surface Burning Characteristics in accordance with UL tests): Flame Spread - 5, Smoke Developed - 165.
2. Product shall not be produced with or contain any of the U.S. EPA regulated CFC compounds which are listed in the Montreal Protocol.
3. Provide Styrofoam Brand Cavity-mate by Dow Chemical.

Panel size: 16" x 96". Thickness: as shown on the Drawings. Provide each panel of full thickness indicated.

4. Adhesive: Type recommended by insulation manufacturer and air barrier manufacturer. Compatible with insulation and substrate.

L. Masonry Cleaner

Masonry cleaner capable of cleaning masonry without degrading the masonry material or mortar. Cleaner must be approved by the masonry manufacturer.

- M. Electrodes for Welding  
Electrodes for welding stainless steel to carbon steel: E309-16.

**2.04 MIXES**

A. Mortar (basic)

Shall conform to ASTM C270 and BIA M1-88. Provide Type I Portland cement (Type II Portland Cement when used for manholes). Masonry cement shall not be used as a substitute. Preconstruction testing with the proportions carefully monitored is to be used to establish the upper end of the strength range, which should generally be near the minimum strength of the next higher strength mortar.

1. Type M: 1 part gray cement, 1/4 part lime, 3<sup>3</sup>/<sub>4</sub> parts dry sand. Minimum compressive strength shall be 2500 psi at 28 days.
2. Type S: 1 part gray cement, 1/2 part lime, 4<sup>1</sup>/<sub>2</sub> parts dry sand. Minimum compressive strength shall be 1800 psi at 28 days.
3. Type N: 1 part gray cement, 1 part lime, 6 parts dry sand. Minimum compressive strength shall be 750 psi at 28 days.
4. Type N "White": 1 part white cement, 1 part lime, 6 parts dry white sand. Minimum compressive strength shall be 750 psi at 28 days.

## B. Colored Mortar

Proportion mortar coloring with other mortar mix ingredients to obtain desired color, as approved by the Project Architect. Provide white cement instead of gray cement where required to meet the desired color. Do not exceed 1 part pigment to 10 parts cement, by weight. If consistent color cannot be obtained, provide as a minimum premixed Portland cement and coloring from major cement manufacturer.

## C. Grout for Masonry

## 1. Mixes

- a. Fine Grout: 1 part Portland Cement, 0-1/10 part Hydrated Lime,  $2\frac{1}{4}$ -3 times the sum of volumes of cementitious materials of fine aggregate (Proportions by volumes).
- b. Coarse Grout: 1 part Portland Cement, 0-1/10 part Hydrated Lime,  $2\frac{1}{4}$ -3 times the sum of volumes of cementitious materials of fine aggregate, and 1-2 times the sum of the volumes of cementitious materials of coarse aggregate (Portions by volume).
- c. Aggregates for Mixes: ASTM C 404.
- d. Slump: 8" minimum, 11" maximum.
- e. Compressive Strength: At least equal to the strength of the masonry, and not less than 2000 psi as determined by ASTM C1019 - Method of Sampling and Testing Grout.

## 2. Location

- a. For spaces less than 2" in any direction, use fine grout.
- b. For spaces 2" and more in any direction, use coarse grout.

**2.05 SOURCE QUALITY CONTROL**

- A. The EOR will assign a Licensed Professional Engineer designated for Controlled Inspection who will inspect the masonry construction under the requirements of paragraphs 27-132 and 27-602, Tables 10-1 and 10-2 (Reinforced and Unreinforced Masonry), and R&R 9/29/83 (Appendix A) (Curtain Wall Construction) of the Building Code.
- B. Preconstruction Testing
1. Preconstruction testing of mortar properties will be done in accordance with ASTM C780. The Contractor shall assist the EOR's laboratory by any means necessary and shall supply the approved base materials to the laboratory for testing.
  2. Compressive strength tests of field mixed mortar are to be done during construction of the mock-up, or earlier if desired by the Contractor, to provide a benchmark for the strength based on actual field conditions and proportioning of the mortar. If mortar strengths are too high, proportions may be required to be modified if directed by the Architect or Engineer of Record.
  3. Preconstruction testing of masonry grout properties will be done in accordance with ASTM C1019. The Contractor shall assist the EOR's laboratory by any means necessary and shall supply the approved base materials to the laboratory for testing and for making the molds.

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

- A. Examine all adjoining Work on which this Work is in anyway dependent for proper installation and workmanship. Report to the EOR any conditions that prevent the performance of this Work.

**3.02 PROTECTION**

- A. Cover top of masonry wall with waterproof plastic membrane at the end of the work period, when work is not

in progress, and at other times when Work needs to be protected from rain and other precipitation. Extend cover down sides as needed to thoroughly protect the Work.

- B. During cold weather, do not use wet masonry units and frozen masonry units.
- C. Do not use frozen materials or lay masonry on frozen materials; remove frozen materials from wall. Refer to Part 1 of this Section, "Environmental Requirements" for temperature restrictions.
- D. Remove excess mortar from walls as soon after laying units as practicable to prevent staining and to facilitate cleaning of wall.
- E. Brace walls as needed until sufficiently set, or until intersecting walls provide lateral support.
- F. Prevent masonry cleaners from coming in contact with adjacent glass, metal, and other masonry surfaces such as cast stone. Protect adjoining glass and metal surfaces and all other adjacent materials and property from masonry operations.

### **3.03 MIXING PROCEDURES FOR MORTAR**

- A. Measure material by volume or equivalent weight. In measuring by volume, measure ingredients by container. Do not measure by shovel.
- B. Mix ingredients in a clean mechanical mixer for a minimum of 3 minutes, maximum of 5, with the minimum amount of water to produce a workable consistency.
- C. Mortar that has stiffened because of evaporation of water from the mortar may be retempered only once, and only during the first hour of placement to restore the required consistency. Mortar shall be used within 2<sup>1</sup>/<sub>2</sub> hours after initial mixing. Limit amount of mortar batched at one time to stay within these requirements.

### **3.04 LAYING - GENERAL**

- A. Lay units true to dimensions, plumb and level, square; exterior and interior bond work in bond indicated on the



Drawings or specified herein. Lay courses level with joints uniform; vertical joints spaced properly for plumb alignment. Provide masonry lines, plumb bobs, and utilize a 4 foot level to maintain wall within  $\frac{1}{4}$ " of theoretical dimensions.

- B. Fill bed joints and cross joints solid with mortar. Furrowed bed and spotted cross joints not permitted. For hollow block units, apply mortar full length on all bearing surfaces.
- C. "Tooth" temporary openings in exposed masonry walls, to maintain proper bond when closed.
- D. Tool joints in exposed masonry with a concave jointer to provide a neat, smooth, compacted surface.
- E. Rough cut joints in masonry that are to receive plaster, to provide good plaster bond.
- F. Remove excess mortar, leaving masonry surface clean.
- G. Cut brick and concrete masonry units with circular masonry wet saw.
- H. Build-in miscellaneous metal inserts and other items not furnished under this Section but specified to be installed under this Section.
- I. Lay brick in bond patterns as shown on the Drawings. If bond is not indicated on Drawings, use running bond, all stretchers.

### 3.05 FACE BRICK WORK

- A. Lay face brick from scaffolding erected on face brick side of wall. Do not build or attach scaffolding into the brick face.
- B. Use face brick for exterior walls, chimneys, bulkheads, and backs of parapets, except where concrete parapets are indicated.
- C. Use 100% solid brick over exterior relieving angles/lintels or other brick projections on exterior face of building. (Use of solid brick with cores is

acceptable if cores are filled solid with mortar and the cores are not visible to view.)

- D. Wet clay and shale brick which have initial rates of absorption of more than 30 grams for each 30 square inches per minute (ASTM C67). Wet brick sufficiently to prevent excess absorption of mortar moisture, but keep surface dry enough to obtain bond.
- E. Lay with shoved joints, avoiding dry contacts between brick.
- F. Lay not more than 5 courses before setting backup units.
- G. Clean loose mortar from wall as brick is laid.
- H. Provide weep holes in the head joints of the first two courses of masonry above wall flashing (space at 24" o.c. linear in each course, staggering the first course with the second course). Provide weep holes at other locations as denoted on the Drawings.
- J. Construct 1/2" wide vertical expansion joints at locations indicated on the drawings. If not indicated, provide at approximately 25'-0" o.c. and within 5'-4" from the corners.

### 3.06 CAVITY WALL

- A. Keep the cavity free of mortar droppings. Do not permit mortar to collect on ties and bridge across the cavity.
- B. Provide continuous row of mortar mesh at base of wall, over relieving angles and lintels, at all locations with flashing and weep holes, and as indicated, directly on flashing. Flashing shall extend above top of mortar mesh except where indicated otherwise. Trim mortar mesh to size indicated on the Drawings.
- C. In laying up the wall, keep the cavity clean of mortar droppings by temporarily placing a wood strip 2" high and full width of cavity on each succeeding course of anchors as they are installed, removing the strip, cleaning it off, and reinserting it on the next course of anchors before laying up the next portion of wall. Do not leave any wood strips in the cavity.

- D. Prepare CMU backup for application of fluid applied membrane air/vapor barrier specified in Division 7. Mortar joints shall be completely filled and struck flush with unit masonry. Leave surfaces clean, and without projections, voids, cracks, contaminants, or other irregularities that would hinder proper application of the membrane. Clean mortar droppings from surfaces and brick ties.
- E. Provide reinforcement between brick and backing.
- F. After the wall has been topped out, inspected and when directed by the Project Architect, flood the cavity with water to verify that all weeps drain freely and no water passes the backing.

### 3.07 INSULATION

- A. Prior to installation of cavity insulation verify that:
  - 1. Substrate is properly prepared.
  - 2. Wall is clean.
  - 3. Air barrier membrane provided under Section 07272 has sufficiently cured, if applicable for the membrane system used, as recommended by the membrane manufacturer.
- B. Application
  - 1. Install insulation horizontally within cavity space, against concrete block wall and other substrates, butt edges tightly, with vertical joints staggered. Cover wall completely.
  - 2. Adhere insulation using one of the following methods, as recommended in writing by the air barrier manufacturer for the specific air barrier system provided for this Project:
    - a. Method A. Use this method for adhesive air/vapor barrier systems.  
  
Embed the insulation into the membrane material and press firmly into place to ensure full contact and adhesion.

- 1) Install the insulation immediately after applying the continuous "Air-Bloc 21" system.
  - 2) Adhere insulation to the continuous "Rub-R-Wall Airtight" system, after initial set time of 1 to 2 hours subject to temperature and humidity conditions, while material is still tacky.
- b. Method B. Use this method for air/vapor barrier systems such as Henry Co. "Air-Bloc 32", and W.R. Grace "Perm-A-Barrier Liquid", requiring a separate application of adhesive. Upon completion of the air barrier membrane system, and after a curing period recommended by the membrane manufacturer, apply insulation adhesive in a serpentine pattern over the air barrier membrane using a notched trowel. Immediately after application of the adhesive, or within the time period recommended by the manufacturer, embed insulation board into the adhesive and press firmly into place to ensure full contact and adhesion over entire area of board. Apply additional adhesive if allowed to skin over.
3. In addition to adhesive attachment of insulation to all substrates, provide an insulation retainer washer at each brick tie.
  4. Fabricate insulation panels by means of saw, knife or other sharp tool to fit around obstructions across cavity such as vents, louvers, piping, conduits, and other penetrations. Make insulation continuous, filling all voids. Use largest pieces of insulation possible to minimize joints. Fill cracks with material compatible with insulation, air barrier, and masonry.

### 3.08 REINFORCEMENT

#### A. General

1. Brick ties: Shall be embedded a minimum of the midpoint of the brick to 2" into brick, exclusive

of the seismic clip and wire. Wire shall be  $\frac{3}{4}$ " back from the face of the joint.

2. Block ties: Shall be embedded a minimum of  $\frac{2}{3}$  the block width

B. Exterior Walls - Brick with concrete back-up:

Provide ties at 16" o.c. vertical spacing, 24" o.c. horizontal spacing.

C. Exterior Walls - Brick with concrete masonry unit (CMU) back up:

1. Provide truss/ladder type horizontal joint reinforcement/box tie system between block and veneer brick, continuous at alternate block courses (16" o.c.), with loops spaced at 16" o.c. horizontally, maximum. Provide seismic interlock system, including seismic clips, and continuous wire. Provide retainer washer at each set of loops to lock insulation in place.
2. Provide ties with interior partitions at 16" o.c.
4. Provide spandrel anchor to anchor block masonry to steel spandrels. Provide anchors spaced 16" o.c. maximum vertically.
5. Install reinforcing bars in cells and bond beams at locations and spacing indicated on Drawings.

D. Exterior Brick Walls (multi-wythe with no cavity):

1. At multi-wythe walls without cavity, provide truss/ladder type joint reinforcement at 16 o.c. vertical spacing.
2. Install reinforcing bars at locations and spacing indicated on Drawings.

H. Exterior Walls - Veneer Brick with multi-wythe solid brick back-up:

1. Provide truss type horizontal joint reinforcement/box tie system between multi wythe brick back-up and veneer brick, continuous at 16"

o.c., with loops spaced at 16" o.c. horizontally, maximum. Provide seismic interlock system, including seismic clips, and continuous wire. Provide retainer washer at each set of loops to lock insulation in place.

2. Install reinforcing bars at locations and spacing indicated on Drawings.

I. Exterior Brick with steel back-up:

Provide ties at 16" o.c. vertical spacing, 24" o.c. horizontal spacing. Provide seismic interlock system, including seismic clips, and continuous wire.

K. Expansion joints and control joints

Install "slip-set" stabilizer at 24" o.c. vertically in all masonry control and expansion joints of masonry partitions, CMU walls, and multi-wythe brick walls/parapets.

- L. Lap ends of adjoining strips of continuous reinforcement 6".

- M. Size (width) of reinforcement as required for 4", 6", 8", 10" partitions.

**3.09 FIELD QUALITY CONTROL**

- A. The EOR will assign, under the requirements of paragraphs 27-132 and 27-602, Tables 10-1 and 10-2 (Reinforced and Unreinforced Masonry), and R&R 9/29/83 (Appendix A) (Curtain Wall Construction) of the Building Code a Licensed Professional Engineer designated for Controlled Inspection who will inspect the masonry construction.
- B. The Contractor, upon award of the Contract, will receive a signed statement stating that the Engineer designated for Controlled Inspection has assumed the responsibility for masonry inspection and will file all reports as required by the Building Department.
- C. The Engineer will make inspections and any testing deemed necessary. Testing of mortar properties shall be in accordance with ASTM C780. Mortar suspected or tested to be too strong or too weak will be subject to petrographic

analysis or other methods deemed necessary by the Engineer of Record and Engineer designated for Controlled inspection. Testing of masonry grout shall be in accordance with ASTM C1019. The Contractor shall pay for all tests if they verify improper work. Inspection are to include, but not be limited to, the following:

1. Proper installation of reinforcement and placement of brick on angles.
  2. Proper installation of mortar, including proportioning and mixing. Those mortar properties listed in the Appendix of ASTM C780 are to be tested at the discretion of Engineer designated for Controlled Inspection or the Architect/Engineer of Record Mortar strengths, when tested, will be determined in accordance with ASTM C780 using cubes.
  3. Proper installation of weeps, flashing, mortar mesh, cleaning of cavity (if cavity wall construction), etc.
  4. For cavity wall construction, all bed and head joints are filled completely. At solid masonry construction, all bed, head, and collar joints are filled completely.
- D. If any results are found to be not in conformance with the applicable ASTM, industry practice, and the Specifications the masonry in question shall be removed and redone.

### 3.10 CLEANING

- A. Before cleaning masonry walls, examine faces for holes, cracks, and other defects. If corrections cannot be made to provide an appearance acceptable to the Project Architect, replace defective units.
- B. Exterior Masonry
  1. After completion of laying and the completion of other adjacent work liable to soil masonry, clean face work and point all open joints.

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2. Start cleaning operations at top and proceed downward, using solution not detrimental to material or mortar.
3. Use only masonry cleaners approved by the manufacturer of the specific face brick and follow the brick manufacturer's instruction for use of the product. The use of muriatic acid is not approved.

END OF SECTION

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LIST OF SUBMITTALS

<u>SUBMITTAL</u>	<u>DATE SUBMITTED</u>	<u>DATE APPROVED</u>
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Product Data:	_____	_____
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- 1. Masonry unit data
- 2. Reinforcement, anchors & ties
- 4. Portland Cement Mfr & Brand
- 5. Lime Mfr & brand
- 6. Mortar Pigments Mfr & Brand
- 7. Packaged Products: Mfr's specs & application instructions
- 8. Sand: Location of pit, Owner's name, & previous test data
- 9. Insulation
- 10. Insulation adhesive
- 11. Masonry cleaner

Samples:	_____	_____
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- 1. Face Brick

Shop Drawings:	_____	_____
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- 1. Control joint locations

Quality Control Submittals:	_____	_____
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- 1. Schedule of Uses  
(By mortar type)

- 2. Certificates

Notarized Bldg Dept.  
affidavit re: Mas. Producer,  
Materials comply (Form 10H)

Notarized Bldg Dept.  
affidavit re: Mas. Supplier,  
Materials comply (Form 10J)

Certification Polystyrene  
Insul. mfrd in compliance  
with Montreal Protocol:

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Mockups:

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1. Sample panels(B) incorporated into the project, for Face Brick.

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