

Carnegie Building Roof Rehabilitation Phasing Plan

Phase 1 - Fall 2013 COMPLETED (approximately \$12,500)

- 1) Remove the decorative finial on the south wall to prevent it from falling (needs to be done before winter)
- 2) Installing temporary caulking in all masonry joints that are cracked and allowing water to penetrate the upper walls (this caulking will need to be removed in the future)
- 3) Glue a moisture barrier on the back of the upper walls to prevent water from penetrating the deteriorated brick above the roofing material (this will also need to be removed in the future)
- 4) Do patch work on roof surface.

Phase 2 - Summer of 2014 (approximately \$100,000)

- 1) Rebuild the south upper south wall as specified (Portico) Metal panels on back of wall
- 2) Reinstall the decorative finial

Phase 3 - Summer of 2015 (approximately \$200,000)

- 1) Complete rebuilding of east and west uppers walls original building
- 2) Complete all remaining cap stone work and all remaining wall / flashing repairs /Metal panels on backside of rebuilt walls

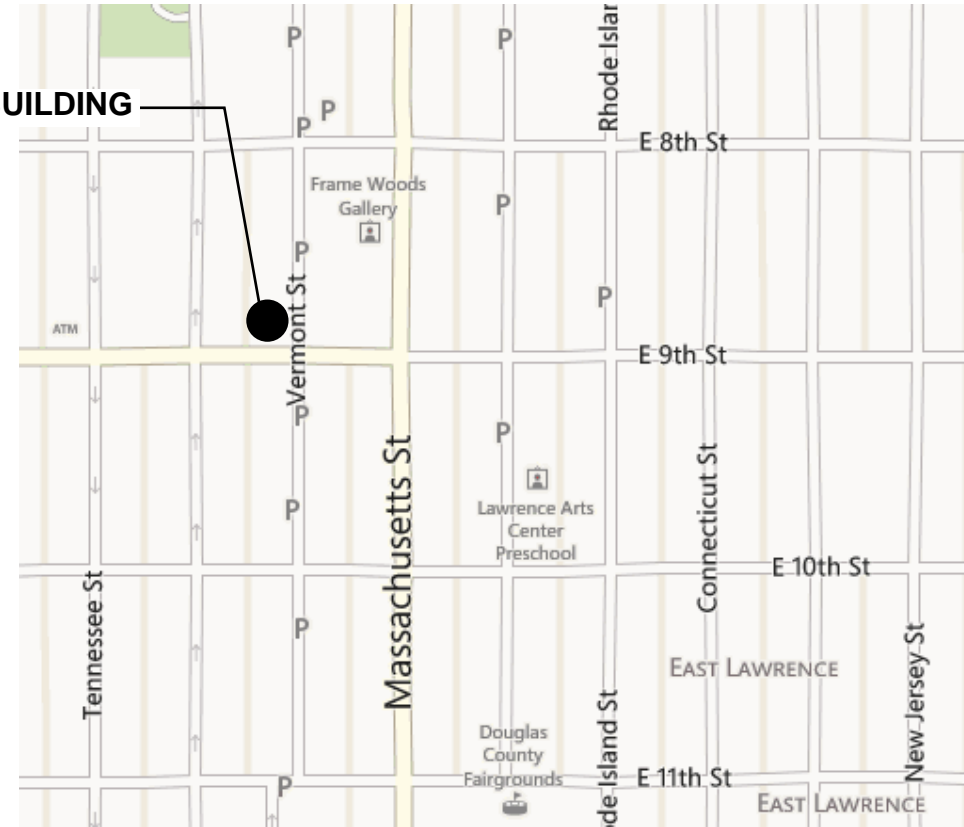
Phase 4 - Fall of 2015 or summer of 2016 (approximately \$100,000)

- 1) Rebid and replace the roof - Removal of old roof on the original library and the second addition. Repair any decking that may be damaged due to moisture. Add crickets where needed to direct the water to the roof drains. The new roof system will be 3 ply with a smooth cap sheet and flood coated with asphalt and gravel.

DRAWING LIST

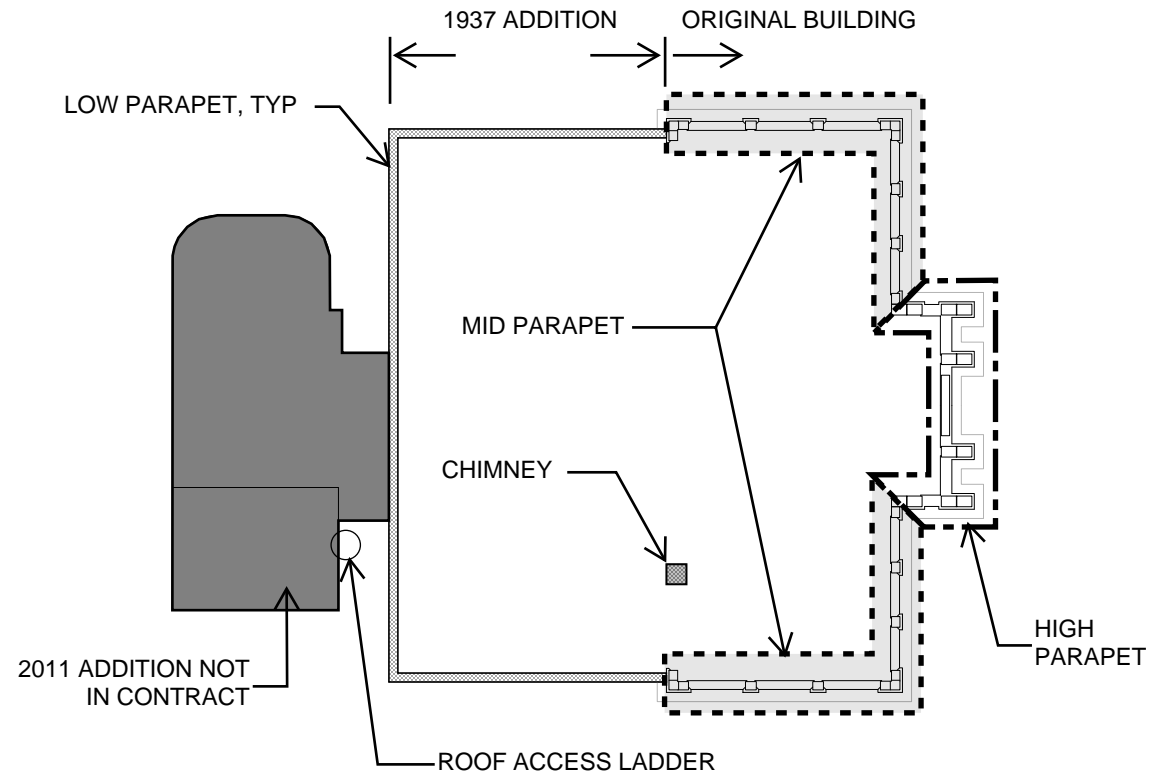
- 1.0 COVER SHEET
- 1.1-1.4 SPECIFICATIONS
- 2.0 ROOF PLAN
- 3.0 SOUTH ELEVATION
- 4.0 PARTIAL EAST ELEVATION
- 5.0 PARTIAL WEST ELEVATION
- 6.0 WALL SECTIONS
- 7.0 MID PARAPET SECTIONS
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CARNEGIE BUILDING



LOCATION MAP

LAWRENCE, KS



ROOF KEY PLAN

NO SCALE



**THE CARNEGIE BUILDING
PARAPET WALL REHABILITATION**

200 West 9th Street
Lawrence, KS 66044

DGM Consultants, P.A.

10251 Goddard St.
Overland Park, KS 66214
VOICE - 913-894-2048
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DGM PN - 2012014

**THE CARNEGIE BUILDING
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200 West 9th Street
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COVER SHEET

DATE:

ISSUE FOR REV. 7/29/2013
ISSUE FOR BIDS
ISSUE FOR PERMIT
REVISION #1
REVISION #2
REVISION #3

1.0

MASONRY

I. GENERAL

A. ACTION SUBMITTALS

1. Product Data: Each product
2. Shop Drawings:
 - a. Sheet metal flashing (sections, preformed corners, & backing plates).
 - b. Cast Stone Copings
3. Mix Designs: Mortar, Grout, Cast Stone wet-cast mix
4. Samples for Initial Selection:
 - a. Pointing Mortar: Three sets of sample mortar strips, 6" long.
 - b. Patching Compound: Three sets of terra cotta patch samples, briquettes, at least 3" long by 1-1/2" wide.
 - c. Cast stone: 10 inches square in size for each color & finish.
 - d. Each set contain a close color range of at least 3 different mixes to produce a mortar matching the cleaned masonry when cured and dry.
5. Samples for Verification:
 - a. Each type of masonry unit to be used for replacing existing units. to show the full range of shape, color, and texture.
 - b. Full-Size Cast Stone Sample.
 - c. Three sets of sample mortar strips, 6" long. Include precise measurements on ingredients, proportions, and gradations for each Sample.
 - d. Make available for Engineer's review at Project site.

B. INFORMATIONAL SUBMITTALS:

1. Qualification Data: For restoration specialists.
2. Restoration Program.

C. QUALITY ASSURANCE

1. Restoration Specialist
Qualifications: Engage an experienced masonry restoration firm to perform work. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance.
2. Cast Stone Manufacturer
Qualifications: A qualified manufacturer of units similar to those indicated for this Project, that has sufficient production capacity to manufacture required units, and is a plant certified by the Cast Stone Institute.
3. All Work shall be in compliance with the Secretary of Interior's

Standards for the Treatment of Historic Properties.

4. Restoration Program: Prepare a written, detailed description of materials, methods, equipment, and sequence of operations to be used for each phase of restoration work including protection of surrounding materials and Project site.
 - a. Include methods for keeping pointing mortar damp during curing period.
 - b. If materials and methods other than those indicated are proposed for any phase of restoration work, add a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project and worker's ability to use such materials and methods properly.
 - c. Cleaning and Repair Appearance Standard: Cleaned & repaired surfaces to have a uniform appearance as viewed from 20 feet. Perform additional stain removal, general cleaning, and spot cleaning of small areas that are noticeably different, so that surface blends smoothly into surrounding areas.
5. Mockups: Prepare mockups of restoration and cleaning to demonstrate aesthetic effects and set quality standards for materials and execution and for fabrication and installation.
 - a. Parapet: Location (1/2.0)
 - (1) Selective Demolition:
 - (2) Reconstruction of Parapet full height, incl. height-of-masonry phases at Mid Parapet & base flashing.
 - (3) Coping flashing, weeps, dowels, and head joints
 - (4) Perform in presence of Engineer.
 - b. Patching: Two terra cotta copings to be patched.
 - c. High Parapet Pointing: Rake out joints in south face area (2/14.0) and point half of area.
 - d. Cleaning: Clean area on Sheet 2/14.0
 - (1) Test cleaners and methods for possible adverse reactions. Do not

use cleaners and methods known to have deleterious effect.

- (2) Allow a waiting period of not less than seven days after completion of sample cleaning to permit a study of sample panels for negative reactions.
 - e. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Engineer specifically approves such deviations in writing.
 - f. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
6. Preinstallation Conference: Conduct conference at Project, with Contractor, Engineer, and Owner Representative.
- ### D. DELIVERY, STORAGE, & HANDLING
1. Site has limited space available for storage and staging area. Schedule deliveries to minimize over crowding site.
 2. Coordinate use of site with City.
 3. Store & protect existing units to be salvaged and reinstalled Mark each piece of terra cotta with code mark or setting number on unexposed face, using nonstaining paint.
 4. Deliver other materials to Project site in manufacturer's original and unopened labeled containers.
 5. Store preblended mortar on elevated platforms, under cover, and in a dry location. Do not use if they have become damp.
 6. Pack, handle, and ship cast stone units in suitable packs or pallets.
 - a. Lift with wide-belt slings; do not use wire rope or ropes that might cause staining. Move cast stone units, if required, using dollies with wood supports.
 - b. Store cast stone units on wood skids or pallets with nonstaining, waterproof covers, securely tied. Arrange to distribute weight evenly and to prevent damage to units. Ventilate under covers to prevent condensation.
- ### E. PROJECT CONDITIONS
1. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions

- permit masonry work to be performed according to manufacturers' written instructions and specified requirements.
2. Repair masonry units and repoint mortar joints only when air temperature is between 40 and 90 F and is predicted to remain so for at least 7 days after completion of the Work unless otherwise indicated.
 - a. Cold-Weather Requirements: When air temperature is below 40 F, heat mortar ingredients, masonry repair materials, & existing masonry walls to produce temperatures between 40 F & 120 F. When mean-daily air temperature is below 40 F, provide enclosure and heat to maintain temperatures above 32 F within the enclosure for 7 days after repair and pointing.
 - b. Hot-Weather Requirements: Protect masonry repair and mortar-joint pointing from excessive evaporation of water. Provide artificial shade and wind breaks and use cooled materials as required to minimize evaporation. Do not point with surface temperatures of 90 F & above unless otherwise indicated.
 - c. For manufactured repair materials, perform work within the environmental limits set by each manufacturer.
 3. Relay Masonry :
 - a. Comply with cold-weather requirements contained in TMS 602/ACI 530.1/ASCE 6. Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions.
 - b. Hot-Weather Requirements: Comply with hot-weather requirements contained in TMS 602/ACI 530.1/ASCE 6.
 4. Clean masonry surfaces only when air temperature is 40 F and above and is predicted to remain so for at least 7 days after completion of cleaning.
- ### F. COORDINATION
1. Coordinate masonry restoration and cleaning with public circulation

- patterns at Project site. Some work is near/above public circulation patterns. Public circulation patterns cannot be closed off entirely, and in places can be only temporarily redirected around small areas of work. Plan and execute the Work accordingly.
2. Coordinate delivery of cast stone with parapet work to avoid delaying the Work and to minimize the need for on-site storage.
 3. Provide overhead protection at entrances that are kept open while work is being performed above.
 4. Coordinate roofing repairs (under this Contract) with masonry repairs.
- ### G. SEQUENCING AND SCHEDULING
1. Order replacement materials at earliest possible date to avoid delaying completion of the Work.
 2. Evaluate historic mortar for matching color.
 3. Order a sufficient quantity of preblended mortar (sand, portland cement, lime, & pigments) for exposed mortar immediately after approval of mockups.
 4. Perform masonry work in the following sequence:
 - a. Inspect high parapet for open mortar joints and repair before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
 - b. Verify existing dimensions.
 - c. Salvage brick and terra cotta for reinstallation.
 - (1) Mark terra cotta units so they can be reinstalled to match original intent.
 - (2) Clean terra cotta units.
 - (3) Patch damage terra cotta units.
 - (4) Clean salvaged brick
 - d. Cover walls at demo areas to keep building dry.
 - e. Complete parapet mockups
 - f. Repair masonry, including replacing existing masonry with new masonry materials.
 - g. Install sealant joints.
 - h. After repairs and repointing have been completed and cured, clean walls of all staining and residues from this work.
 5. As scaffolding is removed, patch anchor holes used to attach scaffolding.

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II. PRODUCTS

A. MASONRY MATERIALS

1. Face Brick: ASTM C216, FBX Grade SW. Provide face brick, where insufficient quantity of salvaged units is available to complete masonry work. Provide units with colors, color variation within units, surface texture, size, and shape to match existing brickwork.
2. Concrete Masonry Units (CMU):
 - a. ASTM C 90, hollow units.
 - b. Unit Compressive Strength: 3050 psi minimum average net-area compressive strength.
 - c. Density: Normal weight.
 - d. Size: 4x8x16, manufactured to dimensions 3/8 inch less than nominal dimensions
3. Cast Stone Units (N. Coping):
 - a. Comply with ASTM C 1364, wet-cast method.
 - b. Portland Cement: ASTM C 150, Type I or Type III, containing not more than 0.60 percent total alkali when tested according to ASTM C 114. Provide natural color or white cement as required to produce cast stone color indicated.
 - c. Fine Aggregates: Natural sand or crushed stone complying with ASTM C 33, gradation and colors as needed to produce required cast stone textures and colors.
 - d. Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, nonfading, and resistant to lime & other alkalis.
 - e. Admixtures: Use only admixtures specified or approved in writing by Engineer. Use only admixtures that are certified by manufacturer to be compatible with cement and other admixtures used.
 - f. Air-Entraining Admixture: ASTM C 260. Manufacturer's prescribed rate to result in an air content of 5 to 7 percent with the CPWL shall be less than 5% after 300 cycles of freezing and thawing.
 - g. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.

B. MORTAR AND GROUT

- h. Water-Reducing, Retarding Admixture: ASTM C 494/C 494M, Type D.
 - i. Water-Reducing, Accelerating Admixture: ASTM C 494/C 494M, Type E.
 - j. Fabricate units with sharp arris and accurately reproduced details, with smooth texture on all exposed surfaces.
 - k. Fabrication Tolerances: Comply with recommendations of the Cast Stone Institute.
 - l. Curing: Comply with recommendations of the Cast Stone Institute.
 - m. Colors and Textures: Match existing terra cotta units.
 - n. Compressive Strength - ASTM C 1194: 6,500 psi minimum for products at 28 days.
 - o. Absorption - ASTM C 1195: 6% maximum by the cold water method, or 10% maximum by the boiling method for products at 28 days.
 - p. Linear Shrinkage - ASTM C 426: Shrinkage shall not exceed 0.065%.
1. Portland Cement: ASTM C 150, Type I or II, white, or gray, or both where required for color matching of exposed mortar. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.
 2. Hydrated Lime: ASTM C 207, Type S.
 3. Mortar Sand: ASTM C 144. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
 4. Fine Grout Aggregate: ASTM C 404.
 5. Mortar Pigments: Natural and synthetic iron oxides, compounded for mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars.
 6. Water: Potable.
 7. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
 8. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following

C. MANUFACTURED REPAIR MATERIALS

1. Patching Compound: Factory-mixed cementitious product that is custom manufactured for patching terra cotta. Use formulation that is vapor- and water permeable (equal to or more than the masonry unit), exhibits low shrinkage, has lower modulus of elasticity than the masonry units being repaired, and develops high bond strength to all types of masonry. Use formulation having working qualities and retardation control to permit forming and sculpturing where necessary. Formulate patching compound in colors and textures to match each unit being patched. Provide sufficient number of colors to enable matching the color, texture, and variation of each unit.
 2. Terra Cotta Glaze Replacement: A high-solids, nonyellowing, fade-resistant, waterborne polyurethane or epoxy coating intended for exterior use as terra cotta glaze replacement. Product shall be custom mixed by manufacturer to match color and gloss of existing terra cotta glaze.
- ### D. CLEANING MATERIALS
1. Basis-of-design: The following products are based on past experience with products manufactured by Prosoco.
 2. Mortar stains:
 - a. Brick: Vana Trol.
 - b. Cast Stone: Burnished Custom Masonry Cleaner.
 3. Biological stains: ReVive
- ### E. ACCESSORY MATERIALS

types of mortar for applications stated:

- a. CMU masonry: Type N (P-94# (gray), L-50#, S- 540#) .
 - b. Coping stones and brick above flashing: Type N, (P-94#, L-50#, S- 540#) - match existing color.
 - c. Pointing mortar: Type O, (P-94#, L-100#, S-840#) - match existing color.
9. Grout for Unit Masonry: Comply with ASTM C 476, self-consolidating fine grout. Proportion grout in accordance with ASTM C 476, paragraph 4.2.2 with a, specified 28-day compressive strength not less than 3000 psi.

- ### F. STEEL REINFORCEMENT
1. Reinforcing Bars: ASTM A 615/ A 615M, Grade 60; deformed.
 2. CMU Joint Reinforcement: Truss ASTM A 951, stainless steel. Wire size: 0.148-inch diameter (9 ga).
- ### G. EMBEDDED FLASHING MATERIALS
1. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:
 - a. Stainless Steel: ASTM A 240, Type 304.
 - b. Fabricate continuous flashings in 120 inch long sections.
 - c. Provide splice (backing) plates at butt joints.
 - d. Provide 6"x6" preformed and soldered corners.
 - e. Fabricate metal drip edge by extending flashing out from wall as indicated, with outer edge bent down 30 degrees and hemmed.
 - f. Solder and Sealants for Sheet Metal Flashings: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.
 - g. Seal tape: Butyl tape (4" wide) under flashing to seal joint to substraight.
 2. Flexible Flashing:
 - a. Rubberized-asphalt composite flashing product consisting of a 32-mil pliable, adhesive rubberized-asphalt compound,

1. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, and polished stone surfaces from damaging effects of acidic and alkaline masonry cleaners.
2. Masonry Repair Anchors, Rod/Screen Tube Type: Stainless-steel screen tube with stainless-steel rod, injection adhesive, and other devices required for installation.
3. Masonry Ties, Spiral Type: Type 304 stainless-steel spiral rods
 - a. Provide driven-in anchors designed to be installed in drilled holes and relying on screw effect rather than adhesive to secure them to backup and veneer.
 - b. Basis-of-Design: 8 mm Helifix.
4. Dowels: 3/8" diameter threaded stainless steel rods.

H. SEALANT MATERIALS

1. Provide manufacturer's standard, non-staining, low-dirt pickup, low-modulus, field tintable silicone sealant:
 - a. Pecora: 890FTS
 - b. Tremco: Spectrem 4-TS
 2. Primer: Provide primer for all joints.
 3. Color: Match color of masonry mortar (or slightly darker).
 4. Joint-Sealant Backing:
 - a. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material) with a surface skin, and of size and density to control sealant depth.
 - b. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.
 5. Masking Tape: Nonstaining, nonabsorbent material, compatible with joint primers, sealants, and surfaces adjacent to joints; that will easily come off entirely, including adhesive.
- ### I. CLEAR WATER REPELLENT: TREATMENT OF SKYWARD FACING CAST STONE COPINGS.
- Basis-of-design: Prosoco, Weather Seal Siloxane PD.
- ### III. EXECUTION
- #### A. EXAMINATION
1. Examine conditions, with Installer and Engineer present, for review of existing conditions at base of selective demolition for compliance conditions affecting performance of the Work.
 2. Measure existing parapet construction accurately. Reconstruct new parapet wall to match original historic structure. Review dimensions with Engineer and mark record set of drawings with existing approved dimensions.

bonded to an 8-mil high-density, cross-laminated polyethylene film to produce an overall thickness of not less than 0.040 inch. Provide one of the following products:
(1) Carlisle Coatings & Waterproofing: CCW-705-TWF Thru-Wall Flashing.
(2) W. R. Grace: Perm-A-Barrier Wall Flashing.
b. Accessories: Provide solvent based primer and mastic seaming materials produced by flashing manufacturer.

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1.2

B. PROTECTION

1. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.
 - a. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of restoration and cleaning work.
 - b. Prevent the intrusion of water and other cleaning materials into the walls, roof, & interior.
 - c. Do not overload roof structure.
2. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical-cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
 - a. Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless chemical cleaners being used will not damage adjacent surfaces. Use materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
 - b. Keep wall wet below area being cleaned to prevent streaking from runoff.
 - c. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
3. Prevent mortar from staining face of surrounding masonry and other surfaces.
 - a. Cover sills, ledges, and projections to protect from mortar droppings.
 - b. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.

- c. Immediately remove mortar in contact with exposed masonry and other surfaces.
- d. Clean mortar splatters from scaffolding at end of each day.

C. UNUSED ANCHOR REMOVAL

1. Remove masonry anchors and other extraneous items no longer in use. Remove items carefully to avoid spalling or cracking masonry unit. Patch the hole where each item was removed.

D. BRICK

1. At locations indicated, remove and salvage face brick without damaging surrounding masonry, in a manner that permits reuse.
2. Support and protect remaining masonry that surrounds removal area. Maintain adjoining construction in an undamaged and dry condition.
3. Notify Engineer of unforeseen detrimental conditions including voids, cracks, bulges, and loose units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.
4. Remove in an undamaged condition bricks to be salvaged and reinstalled.
 - a. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
 - b. Remove sealants and roof mastic by cutting close to brick with utility knife and cleaning with solvents.
 - c. Store brick for reuse. Store off ground, on skids, and protected from weather.
 - d. Deliver cleaned salvaged brick not required for reuse to Owner unless otherwise indicated.
5. Clean bricks surrounding removal areas by removing mortar, dust, and loose particles in preparation for replacement.
6. Relay face of parapet wall and pilasters, in advance of CMU wythe, with salvaged brick in good quality, where possible, or with new brick matching existing brick, including size. Do not use broken units unless they can be cut to usable size.
7. Install brick into bonding and coursing pattern of original construction. If cutting is required, use a motor-driven saw designed to

- cut masonry with clean, sharp, unchipped edges.
8. Lay brick with completely filled bed and head joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks that have ASTM C 67 initial rates of absorption (suction) of more than 30 g/30 sq. in. per min. Use wetting methods that ensure that units are nearly saturated but surface is dry when laid.

9. At pilasters:

- a. Lay brick to form a grout cell.
 - b. Install vertical reinforcing through terra cotta watertable by diamond core drilling a 2.5-inch diameter hole 24" into the existing masonry below watertable. Grout cored hole and adjacent voids in watertable after installing reinforcing with self-consolidating grout.
 - c. Install horizontal bar near top of wall and support at mid-depth of adjacent brick course.
 - d. Rest of grouting above will be done when backup CMU wythe is laid.
10. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.

E. CMU WALLS

1. Lay CMU backup wythe in advance of laying units to avoid using less-than-half-size units where possible.
2. Lay CMU masonry with all units in a wythe in running bond.
 - a. Bond and interlock each course of each wythe at corners.
 - b. Do not use units with less than nominal 4-inch horizontal face dimensions at corners.
 - c. Lay CMUs with face shells fully bedded in mortar and with head joints of depth equal to bed joints.
 - d. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness.
3. Reinforce bed joint with horizontal joint reinforcing spaced at 16" on center vertically. Cut and bend reinforcing units for continuity at corners.

4. Anchor CMU coursing into back of new brick face wythe by installing masonry ties that are drilled into back of brick wythe after it has cured sufficiently.
 - a. Install anchors after determining appropriate pilot hole sizes during preconstruction testing.
 - b. Do not damage brick wythe when installing anchors.
5. Stopping and Resuming Work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar before laying fresh masonry.
6. Grouting:
 - a. Grout new wall solid with self-consolidating grout when masonry has gained sufficient strength to support fluid pressure of grout.
 - b. Fill CMU cores and collar joint between wythes full with grout. Limit grout lift (height of CMU wythe) to 16" max.

F. FLASHING

1. Install embedded flashing in masonry where indicated.
2. Near top of wall, where flashing is through wall, form a 1/4-inch high mortar wash below flashing for positive drainage.
3. Prepare masonry surfaces so they are smooth & free from projections that could puncture flashing.
4. Fill all recesses and voids below flexible flashing.
5. Let masonry below flexible flashing set up 24 hrs before priming.
6. Install metal drip edges beneath flexible flashing at exterior face of wall.
 - a. Adhere sheet metal flashing to substraight with 4" wide butyl tape. Roll to ensure bond. Use to layers where irregular surface requires.
 - b. Prime sheet metal flashing.
 - c. Install flexible flashing and roll.
 - d. Trim flexible flashing 5/8 inch back from face of wall
7. Before covering flashing with mortar, seal penetrations and seams in flashing with mastic recommended by flashing manufacturer.
8. Notify Engineer so all completed flashing can be observed prior to covering with masonry.

G. TERRA COTTA

1. Remove terra cotta units indicated to be relaid.
 - a. Carefully remove each units from joint to joint, without damaging units.
 - b. Clean salvaged terra cotta units by removing mortar, dust, and loose particles in preparation for reinstallation.
 - c. Mark each unit and record mark on record drawings.
 - d. Do not cut or grind glazed terra cotta.
2. Notify Engineer of unforeseen detrimental conditions.
3. Install salvaged units into bonding and coursing pattern to match existing.
 - a. Use setting shims to set units accurately spaced with uniform joints.
 - b. Dowel adjacent units together to form a section with mortared head joint, between soft joints, and dowel to top of wall with two dowels per section. Tie units at pilasters with bricks similar to existing construction.
 - c. Set salvaged units in a full bed of mortar.
 - d. Embed anchors in mortar.
 - e. Tool exposed mortar joints in repaired areas to match joints of surrounding existing terra cotta.
 - f. Rake mortared head joints on horizontal surfaces 1/4" deep for caulking.

H. CAST STONE

1. Set cast stone as indicated on Drawings. Set units accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.
 - a. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure units in place.
 - b. Coordinate installation of cast stone with installation of flashing.
2. Wet joint surfaces thoroughly before applying mortar or setting in mortar.
3. Set units in full bed of mortar with full head joints, unless otherwise indicated.

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- a. Set units with joints 3/8" wide, unless otherwise indicated.
 - b. Dowel units to top of wall with 2 dowels.
 - c. Fill dowel holes with urethane sealant.
 - d. Rake head joints in coping with exposed horizontal surfaces open to receive sealant.
 - e. Provide sealant joints at copings soft joints. Keep joints free of mortar and other rigid materials.
 - f. Form joint of width indicated, but not less than 3/8 inch.
 - g. Prime cast stone surfaces to receive sealant and install compressible backer rod in joints before applying sealant.
4. Water Repellent: Treat skyward facing (top) of coping with water repellent. Apply with brush or roller. Do not allow runs on exterior face of coping or building
- I. CLEANING MASONRY
1. Proceed with cleaning in an orderly manner.
 2. Clean salvaged units after removal from building prior to reinstallation.
 3. Remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, calking, asphalt, and tar.
 - a. Carefully remove heavy accumulations of material from surface of masonry with a sharp chisel. Do not scratch or chip masonry surface.
 - b. Remove asphalt and tar with solvent-type paint remover. Apply remover only to asphalt and tar by brush without prewetting. Allow remover to remain on surface for 10 to 30 minutes. Repeat application if needed.
 4. Ensure that dirty residues and rinse water will not wash over cleaned or existing dry surfaces below.
 5. Use only those cleaning methods indicated for each masonry material and location.
 - a. Do not use wire brushes or brushes that are not resistant to chemical cleaner being used. Do not use plastic-bristle brushes if natural-fiber brushes will resist chemical cleaner being used.
6. Perform cleaning in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.
7. Water-Spray Applications: Unless otherwise indicated, hold spray nozzle at least 6 inches from surface of masonry and apply water in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.
8. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces to comply with chemical-cleaner manufacturer's written instructions. Do not spray apply at pressures exceeding 50 psi. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.
9. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.
- J. POINTING MASONRY
1. Rake out and point joints to the following extent:
 - a. Portion of south facing parapet wall to remain.
 - b. Joints where mortar is missing or where they contain holes.
 - c. Cracked joints.
 - d. Joints where they sound hollow when tapped by metal object.
 - e. Joints where they are worn back 1/4 inch or more from surface.
 - f. Joints where they are deteriorated to point that mortar can be easily removed by hand, without tools.
 - g. Joints where they have been filled with substances other than mortar.
 - h. Joints indicated as sealant-filled joints.
 2. Do not rake out and point joints where not required.
 3. Rake out joints as follows, according to procedures demonstrated in approved mockup:
 - a. Remove mortar from joints to depth of 2 times joint width, but not less than 1/2 inch or not less than that required to expose sound, unweathered mortar.
 - b. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
 - c. Do not spall edges of masonry units or widen joints. Replace or patch damaged masonry units as directed by Engineer.
 - (1) Cut out mortar by hand with chisel and resilient mallet. Do not use power-operated grinders without Engineer's written approval based on approved quality-control program.
 - (2) Cut out center of hard mortar joints using angle grinders with diamond-impregnated metal blades. Remove remaining mortar by hand with chisel and resilient mallet. Strictly adhere to approved quality-control program.
 4. Notify Engineer of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units and other deteriorated items.
 5. Pointing with Mortar:
 - a. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
 - b. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
 - c. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 1/4 inch. Fully compact each layer and allow to become almost thumbprint hard before applying next layer. Avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces.
 - d. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
 - e. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours including weekends and holidays.
 - (1) Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.
 - (2) Adjust curing methods to ensure that pointing mortar is damp throughout its depth without eroding surface mortar.
- f. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.
- K. FIELD QUALITY CONTROL
1. Engineer's Project Representatives will observe progress and quality of portion of the Work during reinforcing, grouting, and at all completed flashing. Allow representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.
 2. Notify Engineer's Project representatives in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until representatives have had reasonable opportunity to make observations of work areas at lift device or scaffold location.
- L. REPAIRING AND CLEANING
1. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
 2. In-Progress Cleaning: Clean unit masonry as work progresses r fins and smears before tooling joints.
 3. Final Cleaning: After mortar is thoroughly set and cured, clean masonry as follows:
 - a. Test cleaning methods on sample; leave one sample uncleaned for comparison purposes. Obtain Engineer's approval of sample cleaning before proceeding with cleaning.
 - b. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels. Ensure face of CMU wall is even and ready for installation of metal panel.
 - c. Remove mortar stains on masonry units according to manufactures recommendations.

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**THE CARNEGIE BUILDING
 PARAPET WALL
 REHABILITATION
 200 West 9th Street
 Lawrence, KS 66044
 SPECIFICATIONS**

DATE:
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1.4

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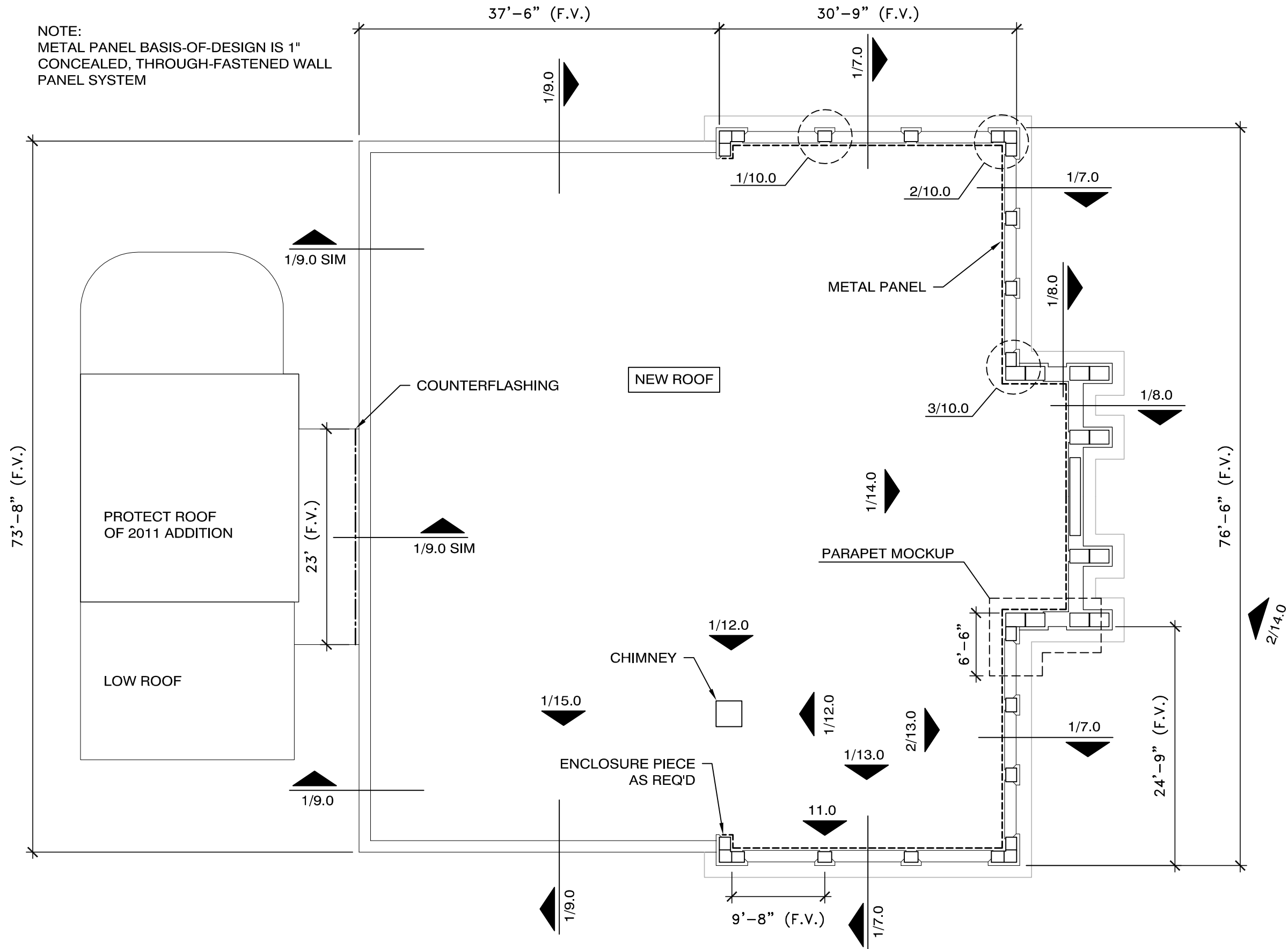
**THE CARNEGIE BUILDING
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ROOF PLAN

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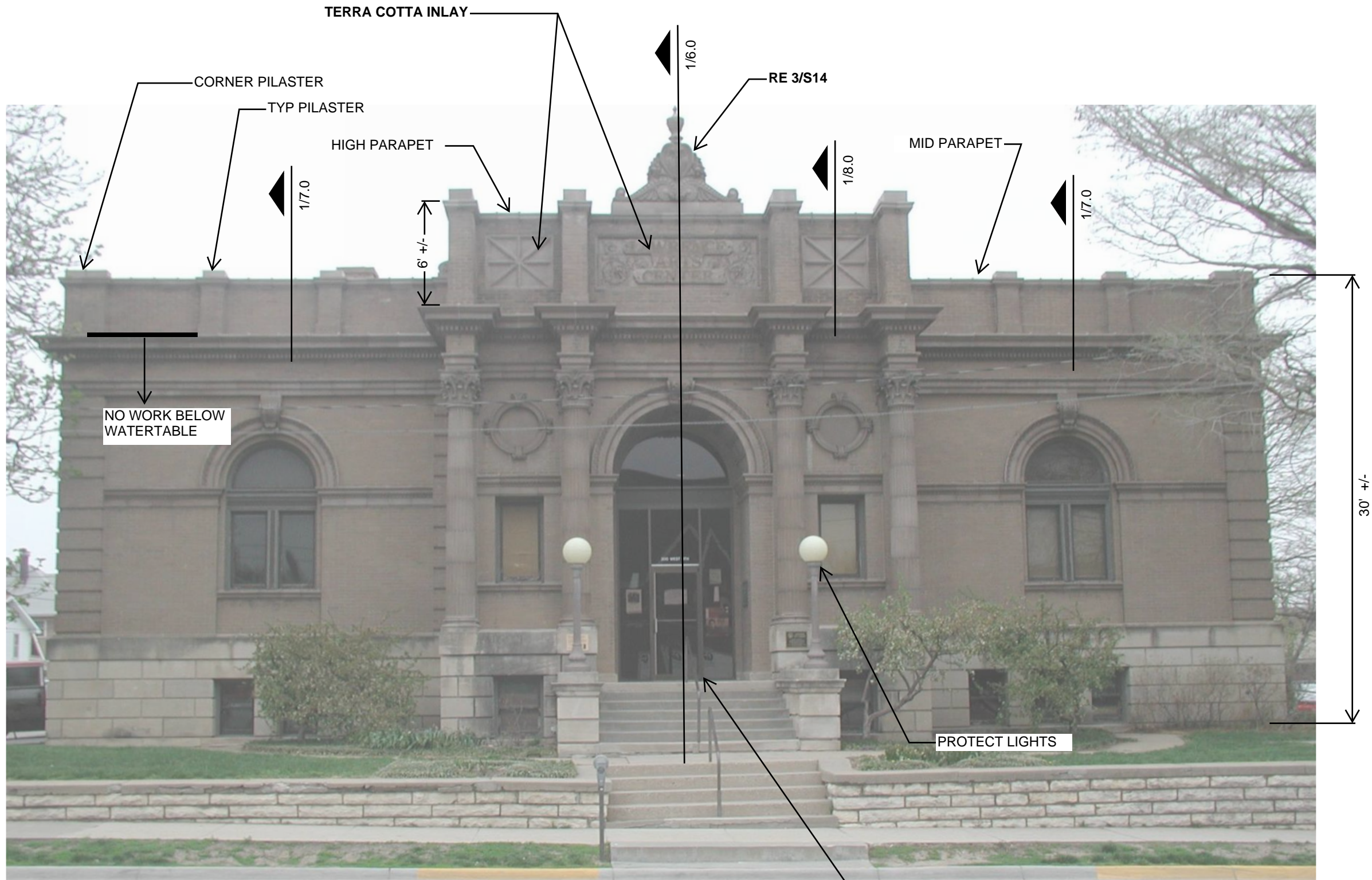
2.0

NOTE:
 METAL PANEL BASIS-OF-DESIGN IS 1"
 CONCEALED, THROUGH-FASTENED WALL
 PANEL SYSTEM



1 ROOF PLAN
 3/32" = 1'-0"

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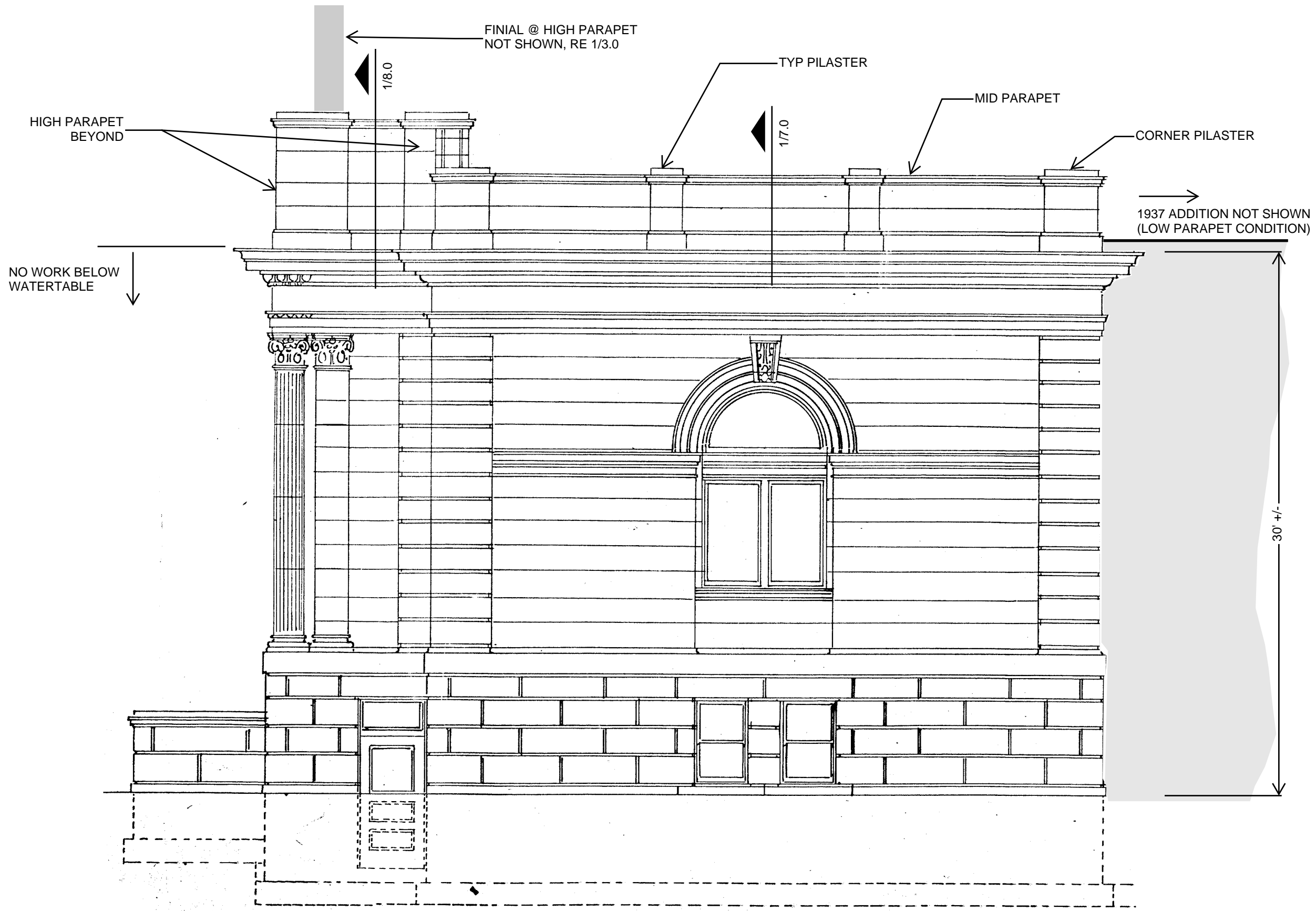
SOUTH ELEVATION

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3.0

2 SOUTH ELEVATION
 NO SCALE

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PART. EAST ELEVATION

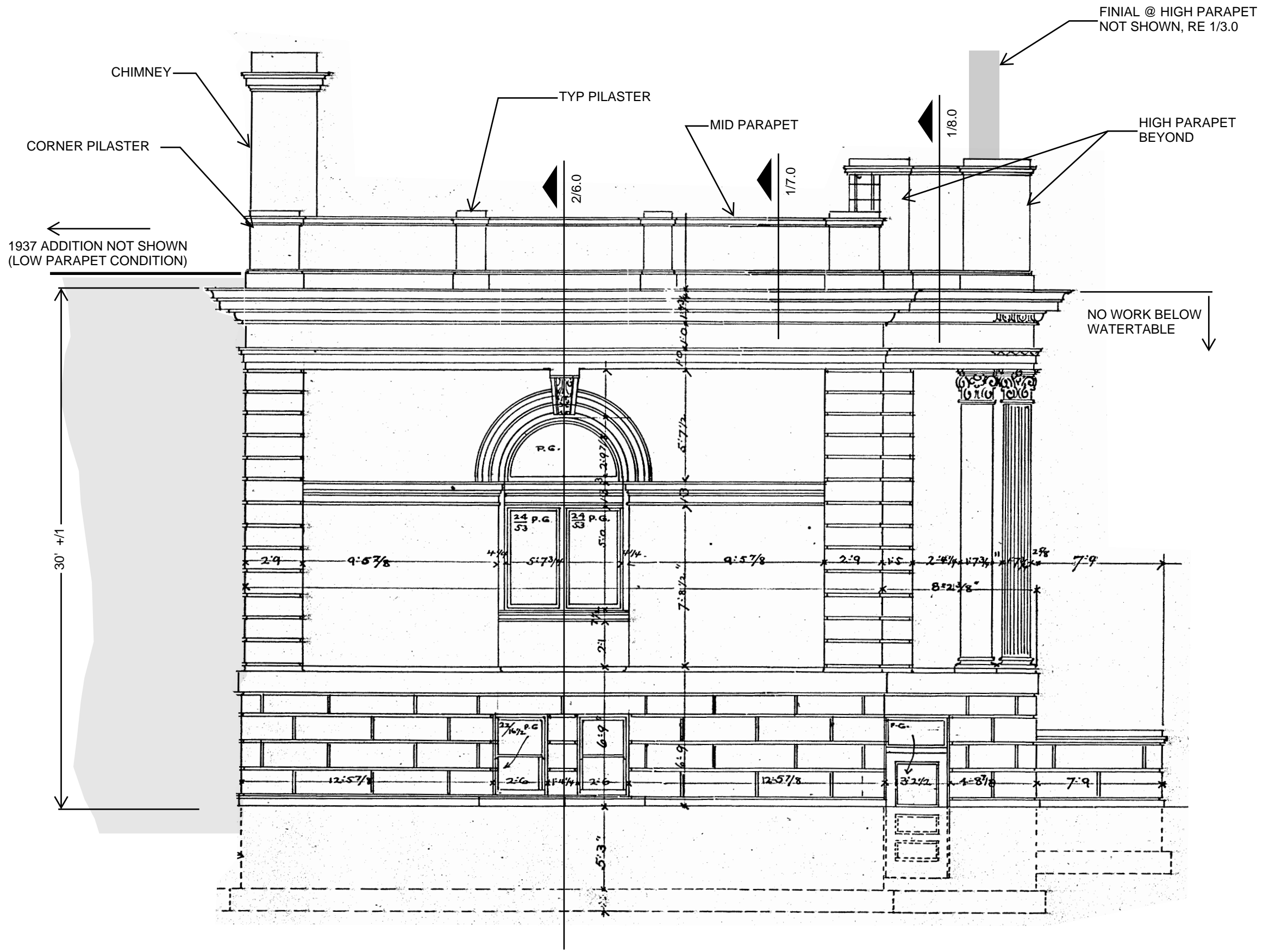
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REPRODUCTION OF ORIGINAL DRAWING &
 ADDED INFO FOR INFORMATION (FIELD VERIFY)

2 PARTIAL EAST ELEVATION
 NO SCALE

4.0

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 PARAPET WALL
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PART. WEST ELEVATION

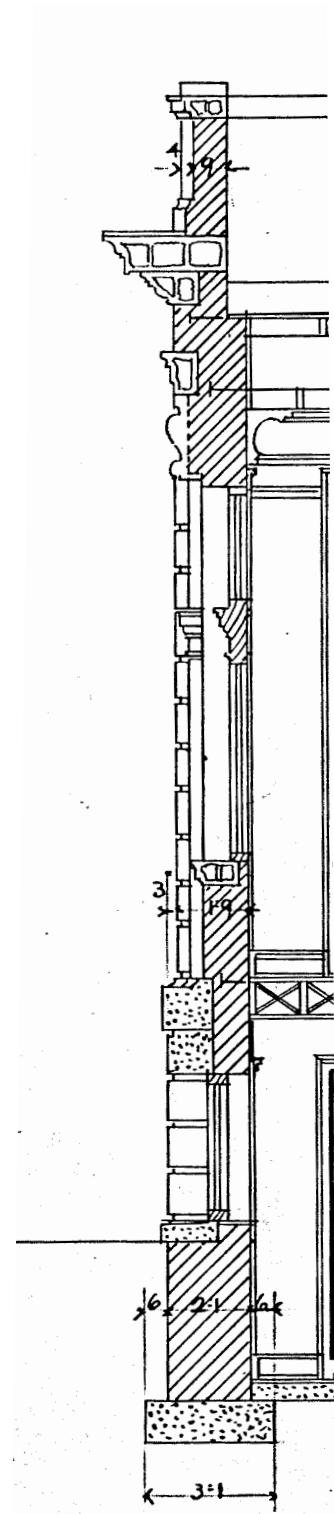
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5.0

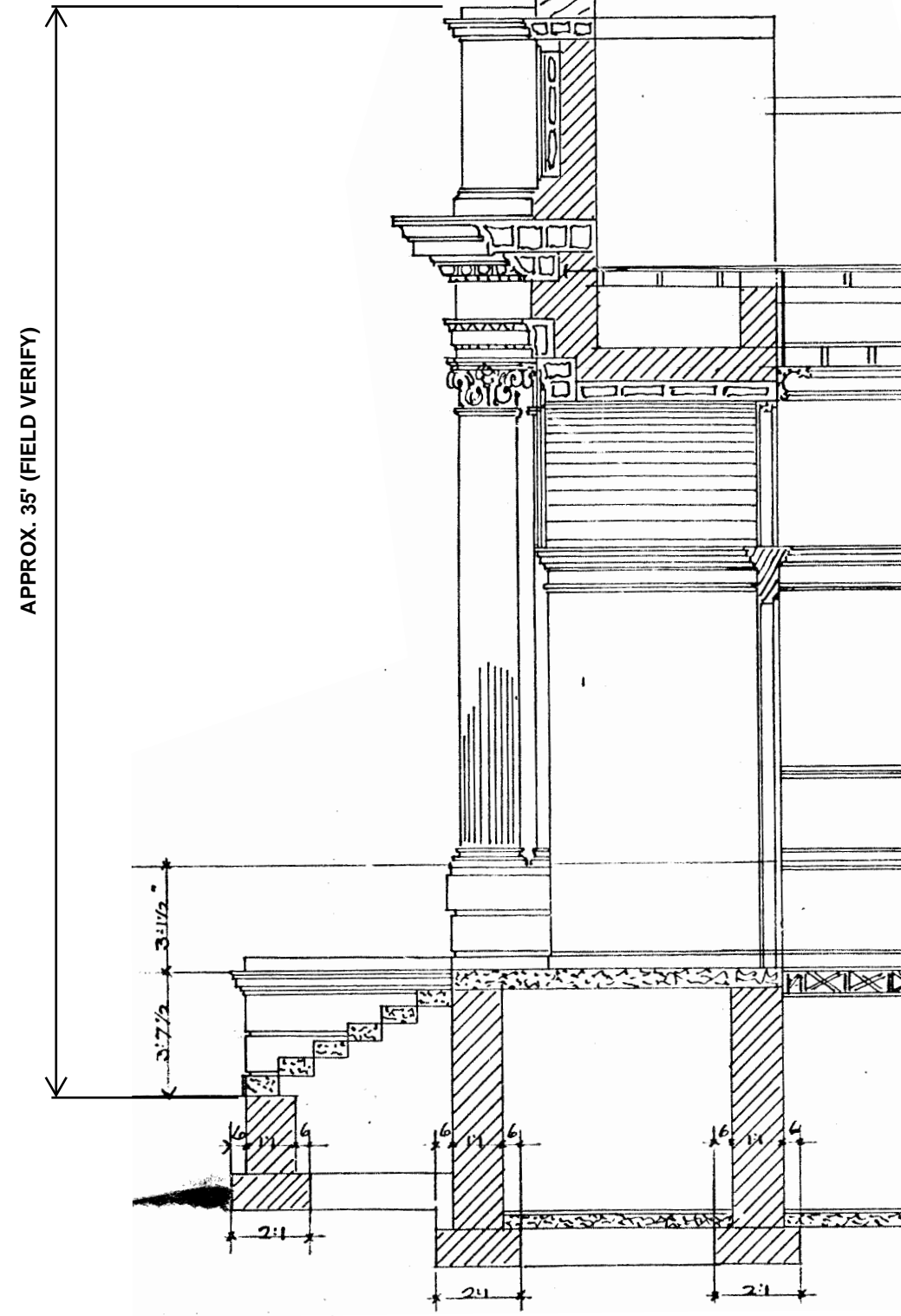
REPRODUCTION OF ORIGINAL DRAWING &
 ADDED INFO FOR INFORMATION (FIELD VERIFY)

1 PARTIAL WEST ELEVATION
 NO SCALE

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2 ORIG. SECTION @ WEST WALL
 NO SCALE INFORMATIONAL



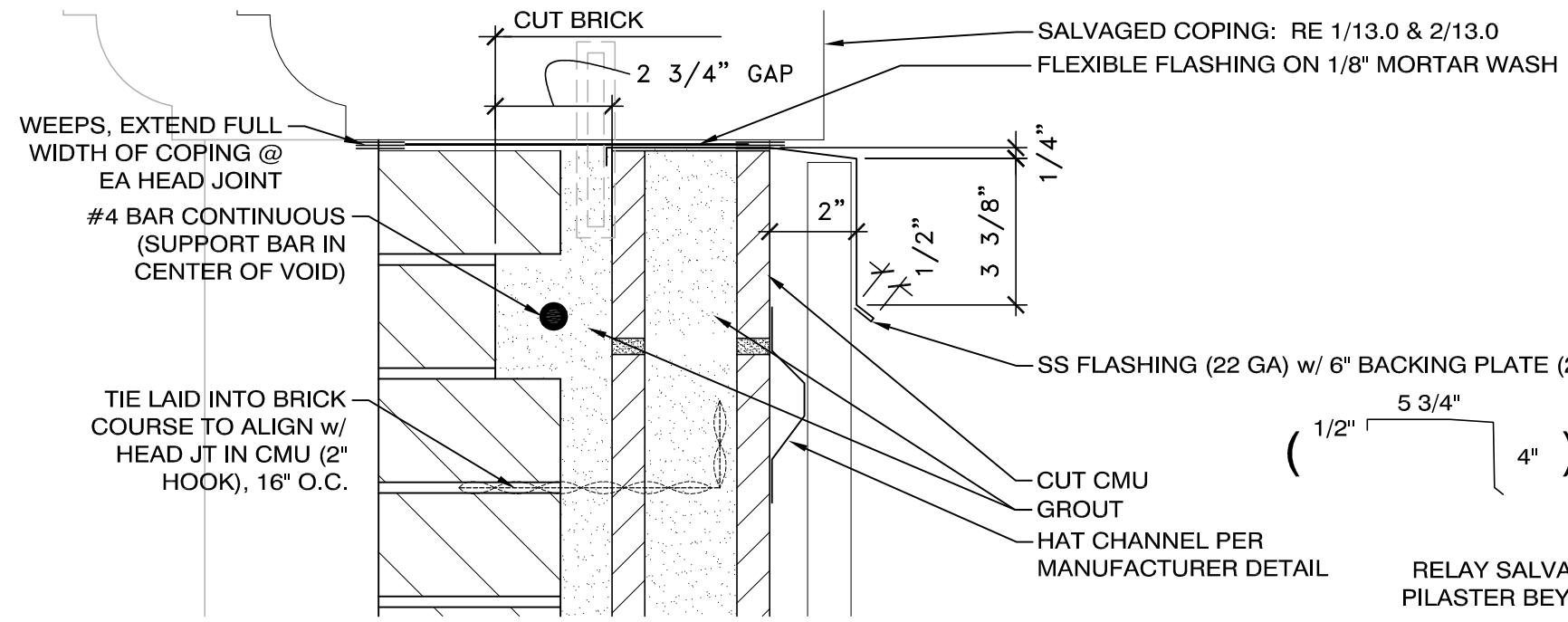
1 ORIG. SECTION @ SOUTH WALL
 NO SCALE INFORMATIONAL

REPRODUCTION OF ORIGINAL
 DRAWINGS PROVIDED FOR
 INFORMATION ONLY (FIELD VERIFY)

**THE CARNEGIE BUILDING
 PARAPET WALL
 REHABILITATION**
 200 West 9th Street
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WALL SECTIONS

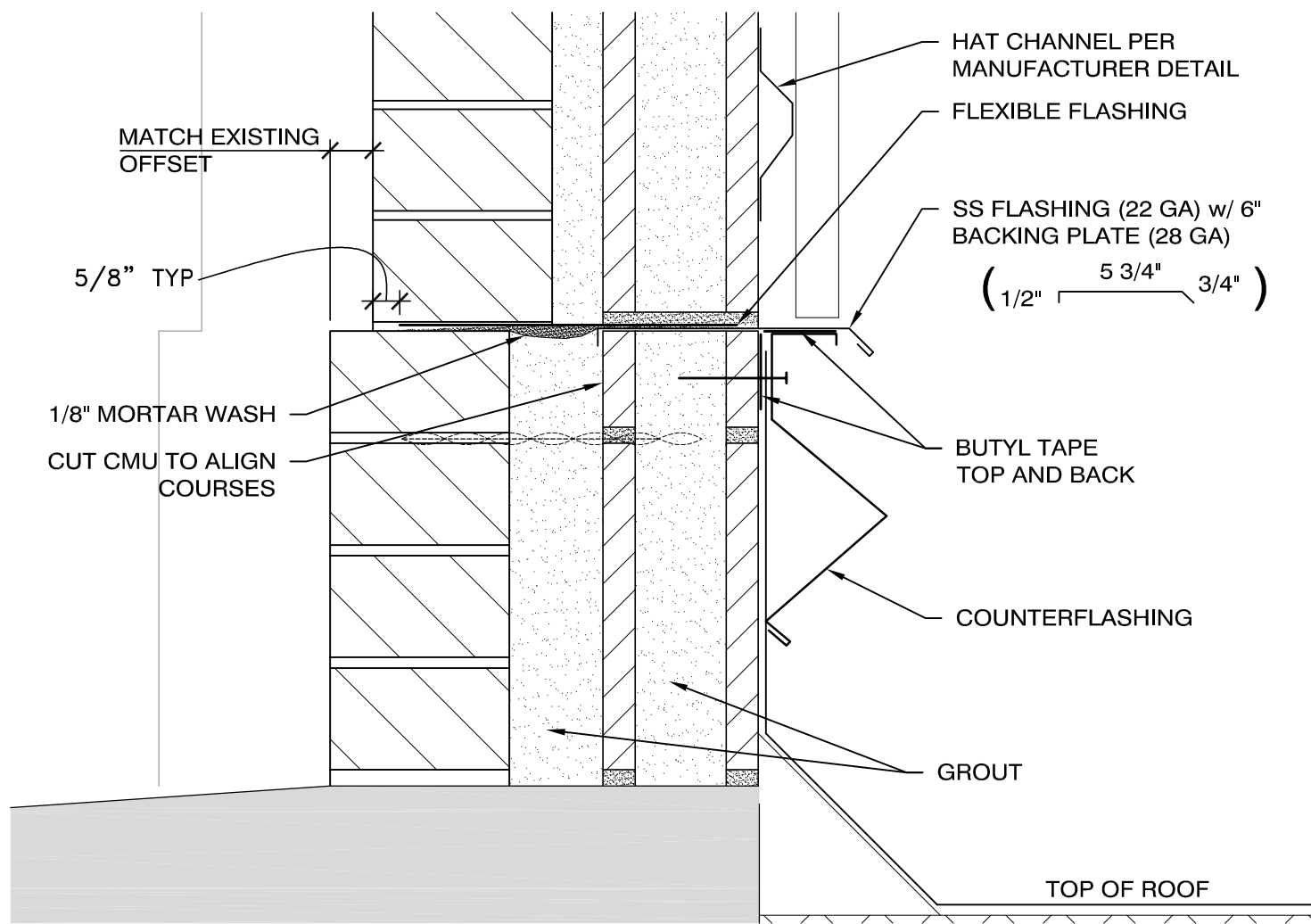
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6.0

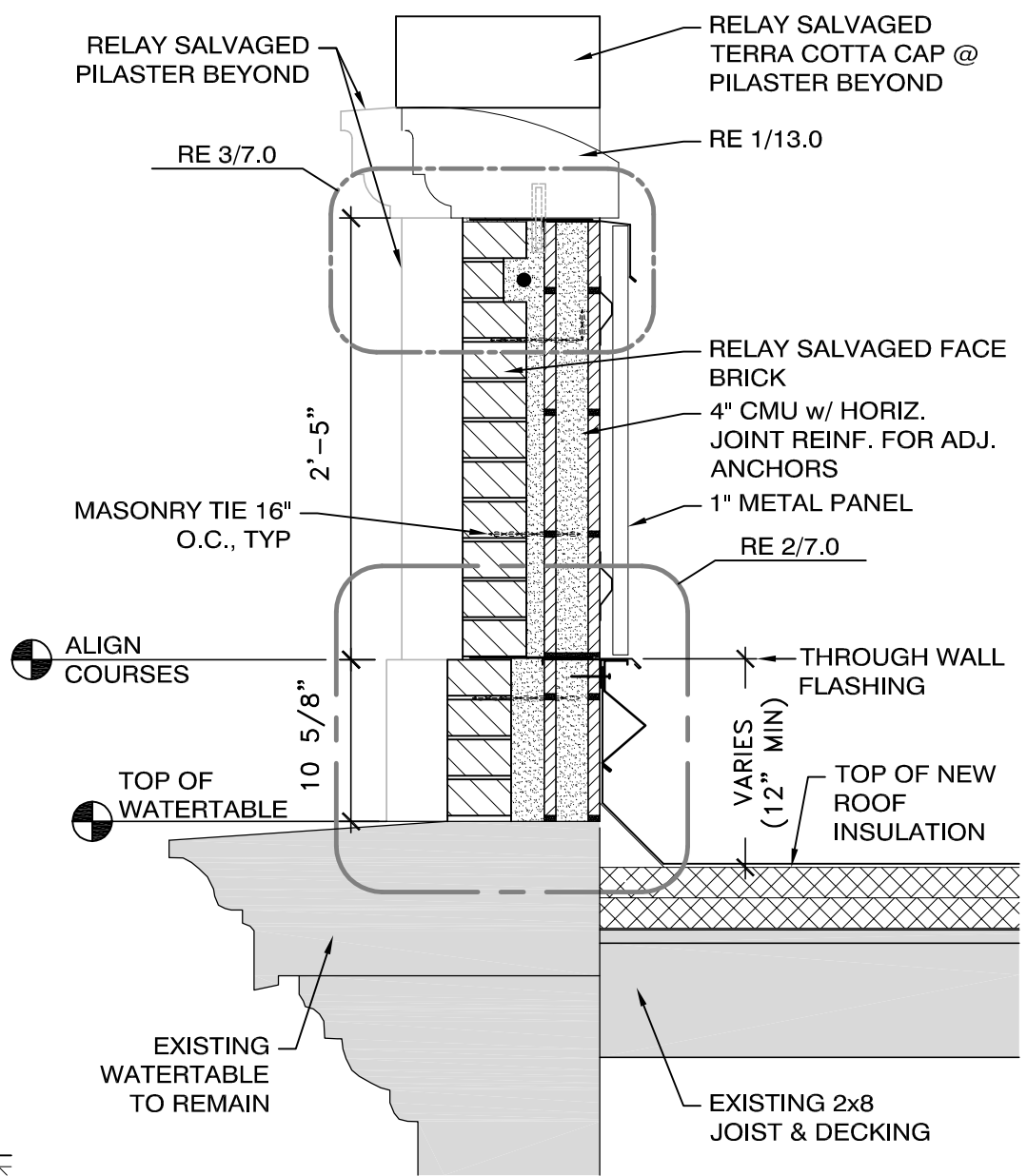


3 TOP OF MID PARAPET
 3" = 1'-0"

- MID PARAPET DEMO:**
1. DISMANTLE ALL WYTHES OF PARAPET DOWN TO TOP OF TERRA COTTA WATERTABLE.
 2. SALVAGE FACE BRICK & CLEAN FOR REINSTALL
 3. SALVAGE & CLEAN TERRA COTTA COPING. (RE SHEET 17.0).
 4. DISCARD EXISTING INTERIOR WYTHE BRICKS TO BE REPLACED w/ 4" CMU.



2 BASE OF MID PARAPET
 3" = 1'-0"



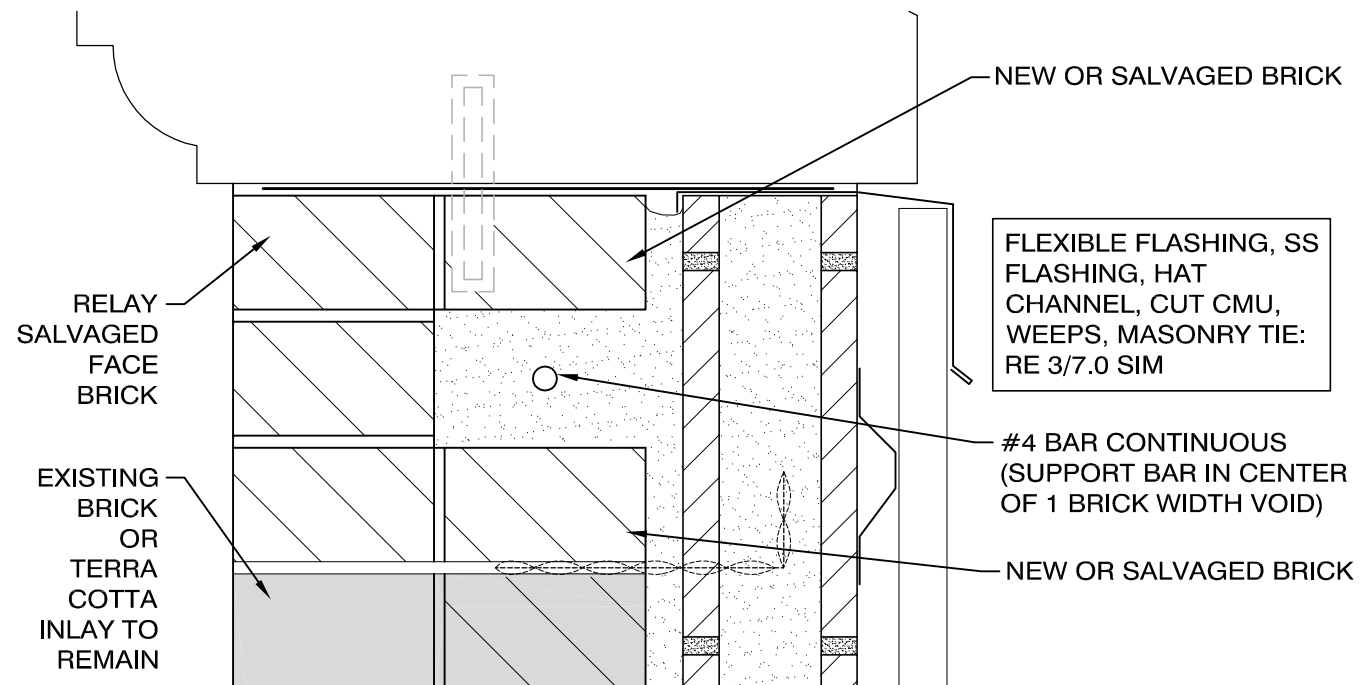
1 MID PARAPET SECTION
 1" = 1'-0"

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 PARAPET WALL
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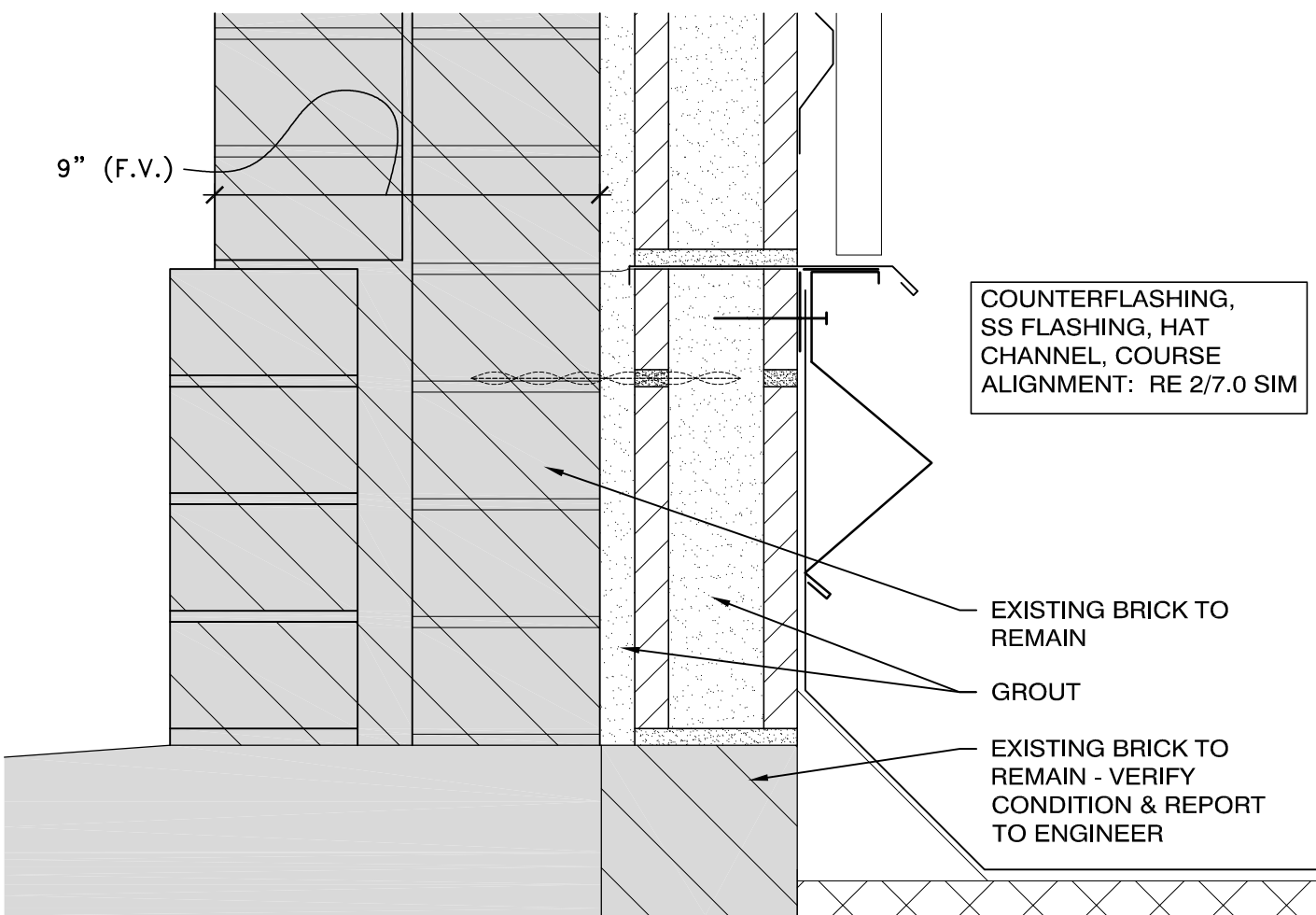
MID PARAPET SECTIONS

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7.0

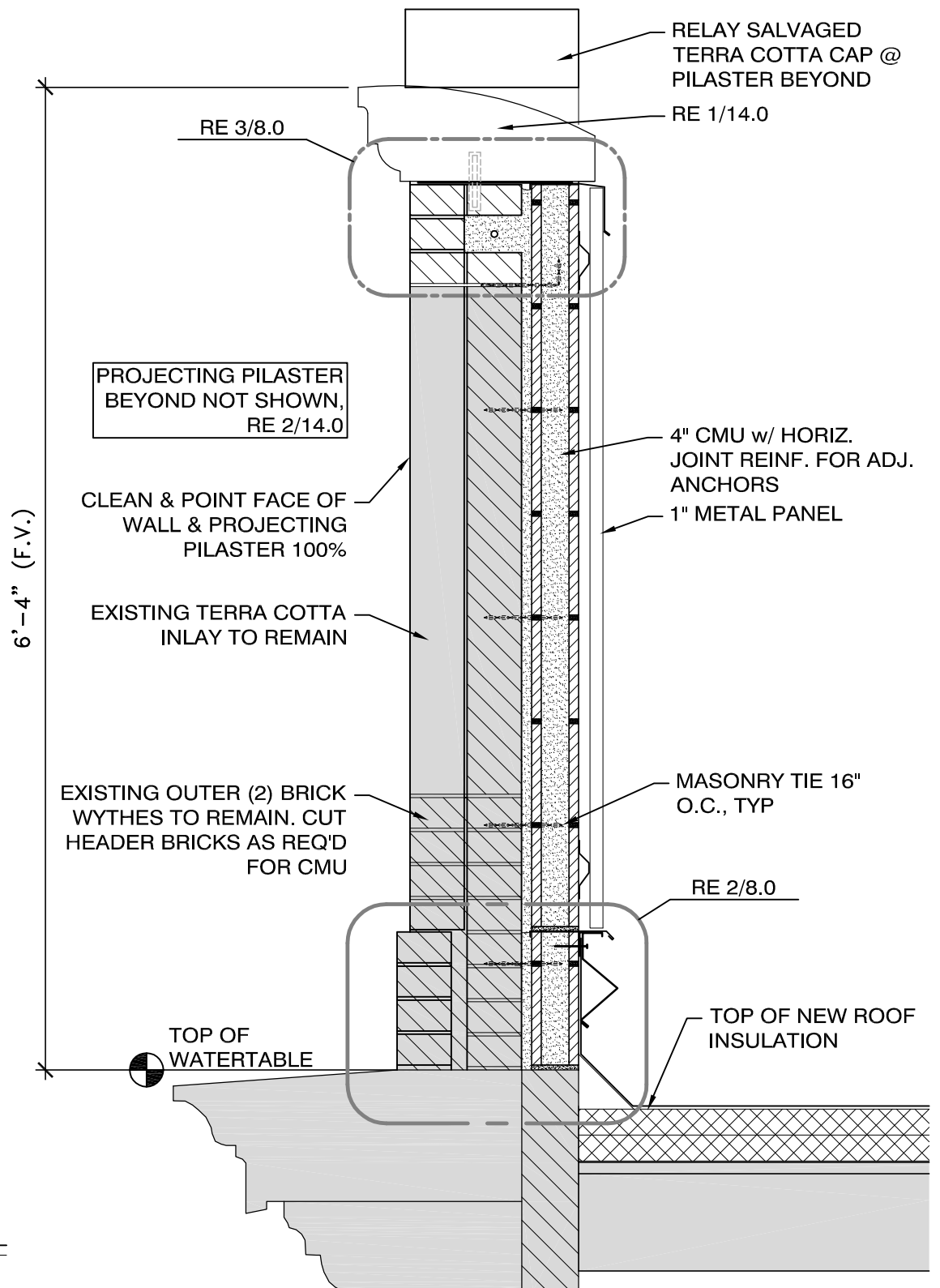


3 TOP OF HIGH PARAPET
3" = 1'-0"



2 BASE OF HIGH PARAPET
3" = 1'-0"

- HIGH PARAPET DEMO:**
1. DISMANTLE ROOF SIDE WYTHE OF PARAPET DOWN TO TOP OF TERRA COTTA WATERTABLE.
 2. REMOVE TOP (3) COURSES OF FACE BRICK & INNER WYTHE. SALVAGE FACE BRICK & CLEAN FOR REINSTALL.
 3. SALVAGE & CLEAN TERRA COTTA COPING & CAPS (RE SHEET 17.0).
 4. DISCARD EXISTING INTERIOR WYTHE BRICKS TO BE REPLACED w/ 4" CMU.



1 HIGH PARAPET SECTION
1" = 1'-0"

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HIGH PARAPET SECTIONS

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8.0

**THE CARNEGIE BUILDING
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LOW PARAPET SECTIONS

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9.0

REPLACE EXISTING DAMAGED CAST STONE COPING

FABRICATION

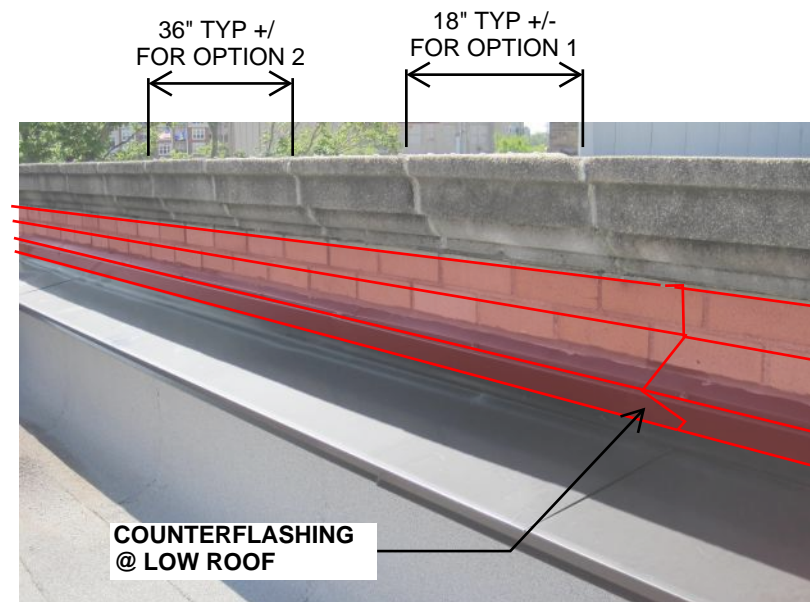
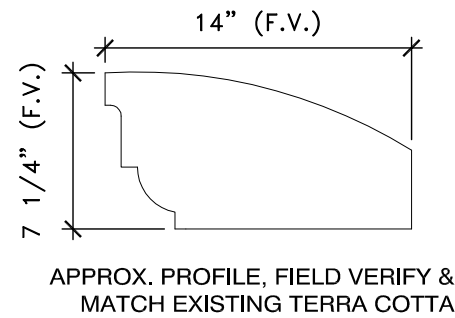
CONTRACTOR OPTION:

OPTION 1: FABRICATE CAST STONE AS INDIVIDUAL PIECES TO APPROX. MATCH EXISTING WIDTH (48 PIECES, F.V.)

OPTION 2: FABRICATE CAST STONE @ WIDTH EQUAL TO (2) EXISTING STONES & (1) MORTAR JOINT. PROVIDE 1/2" RELIEF (FAUX JOINT) AT MIDPOINT TO BE POINTED w/ MORTAR (24 PIECES, F.V.)

INSTALLATION

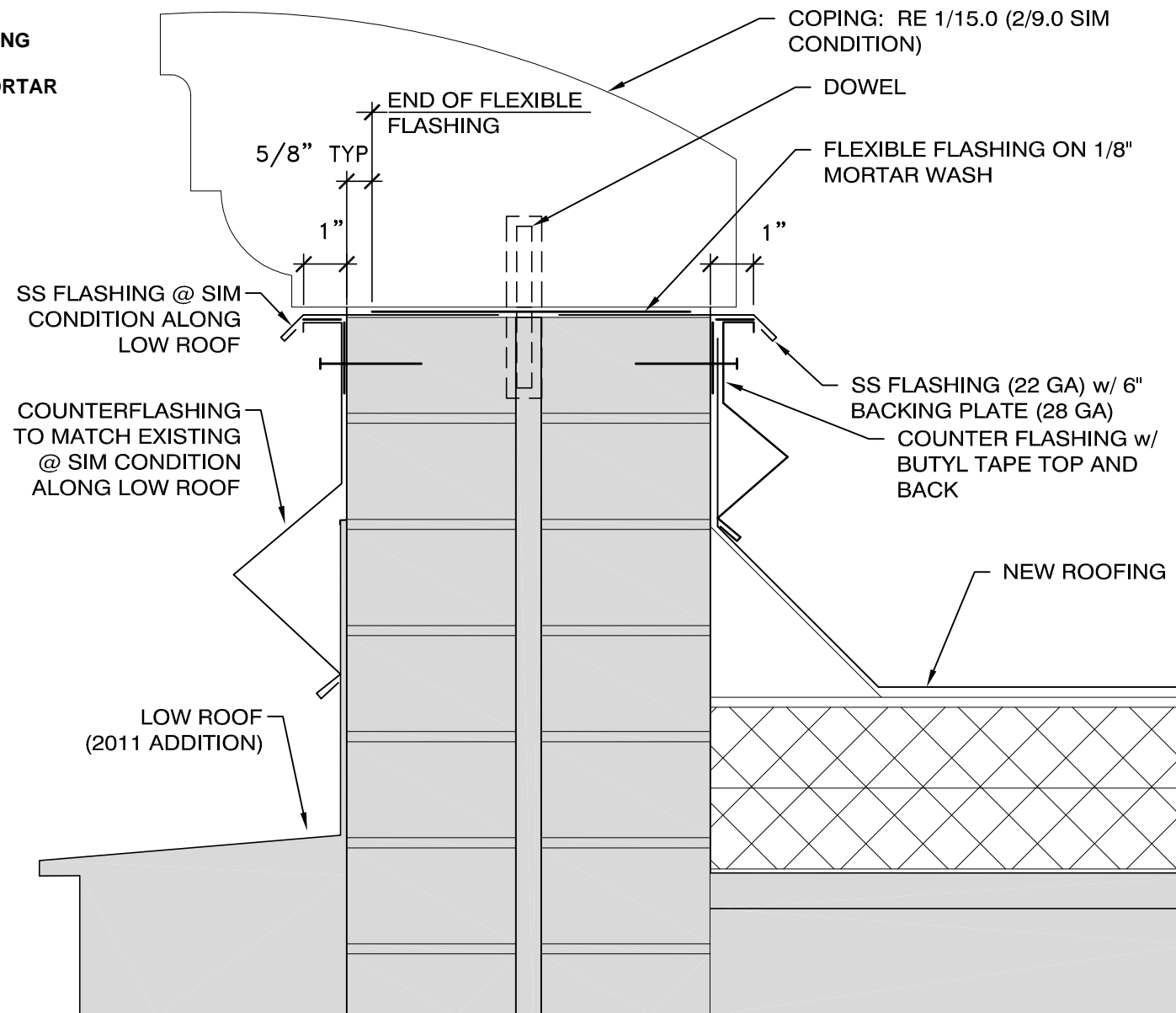
1. RE 1/9.0 SIM FOR FLASHING
2. INSTALL EACH STONE w/ (2) SS DOWELS 3/8"x4" (EITHER OPTION)
3. PROVIDE SOFT JOINTS AS NOTED AT CORNERS (RE 1/15.0 & 2/15.0)
4. PROVIDE (5) MORE SOFT JOINTS EQUALLY SPACED OVER NORTH WALL



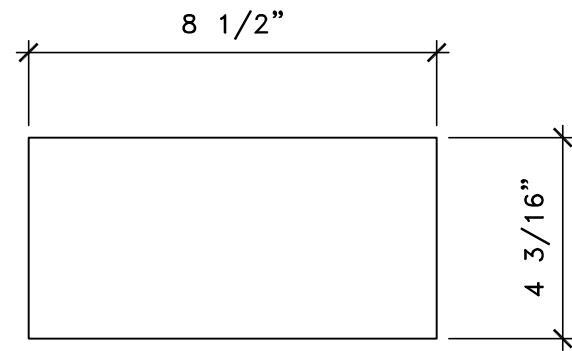
2 LOW PARAPET COPING: N WALL

LOW PARAPET DEMO:

1. REMOVE COPING
2. SALVAGE & CLEAN TERRA COTTA COPING @ EAST AND WEST WALLS (RE 17.0)
3. DISCARD CAST STONE COPING @ SIM CONDITION (NORTH WALL)



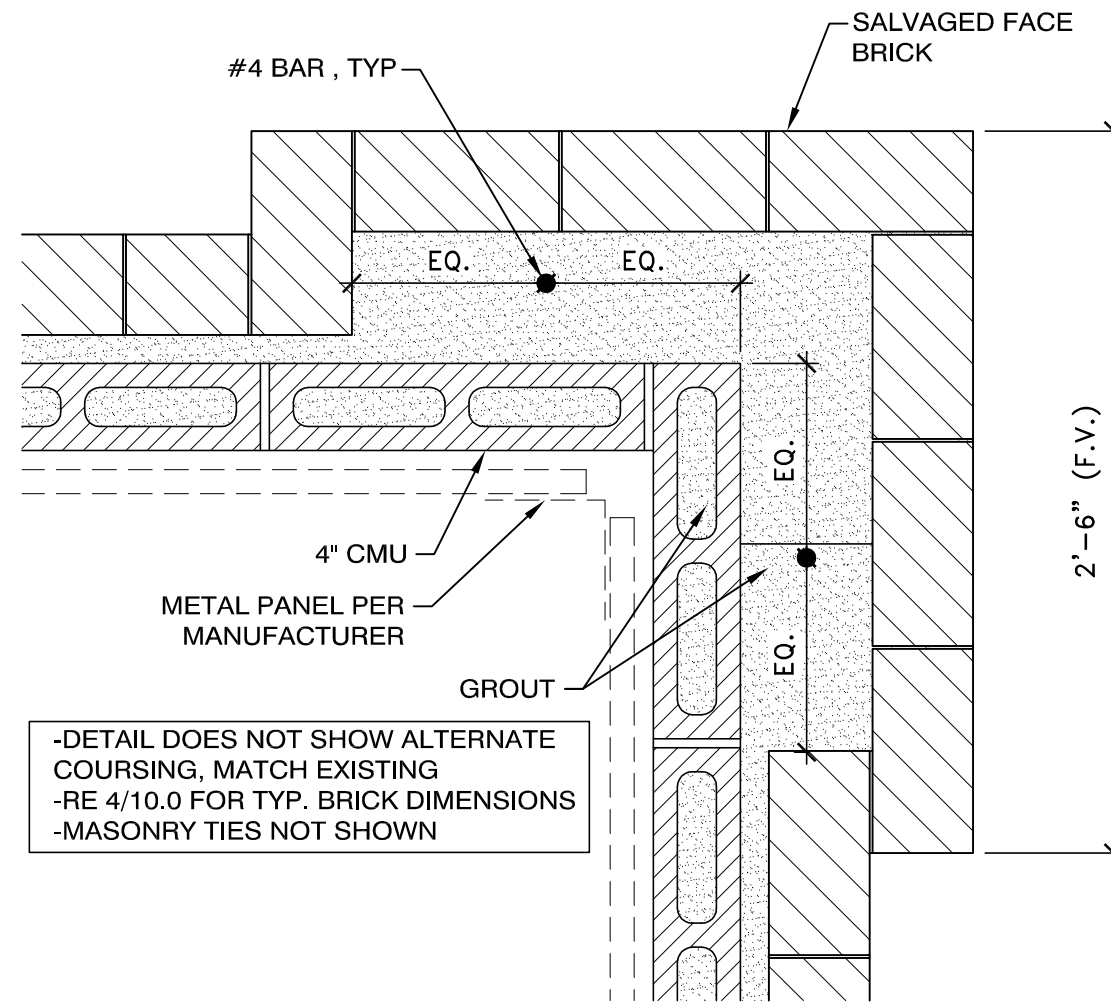
1 LOW PARAPET SECTION
 3" = 1'-0"



HEIGHT = 2 3/8"

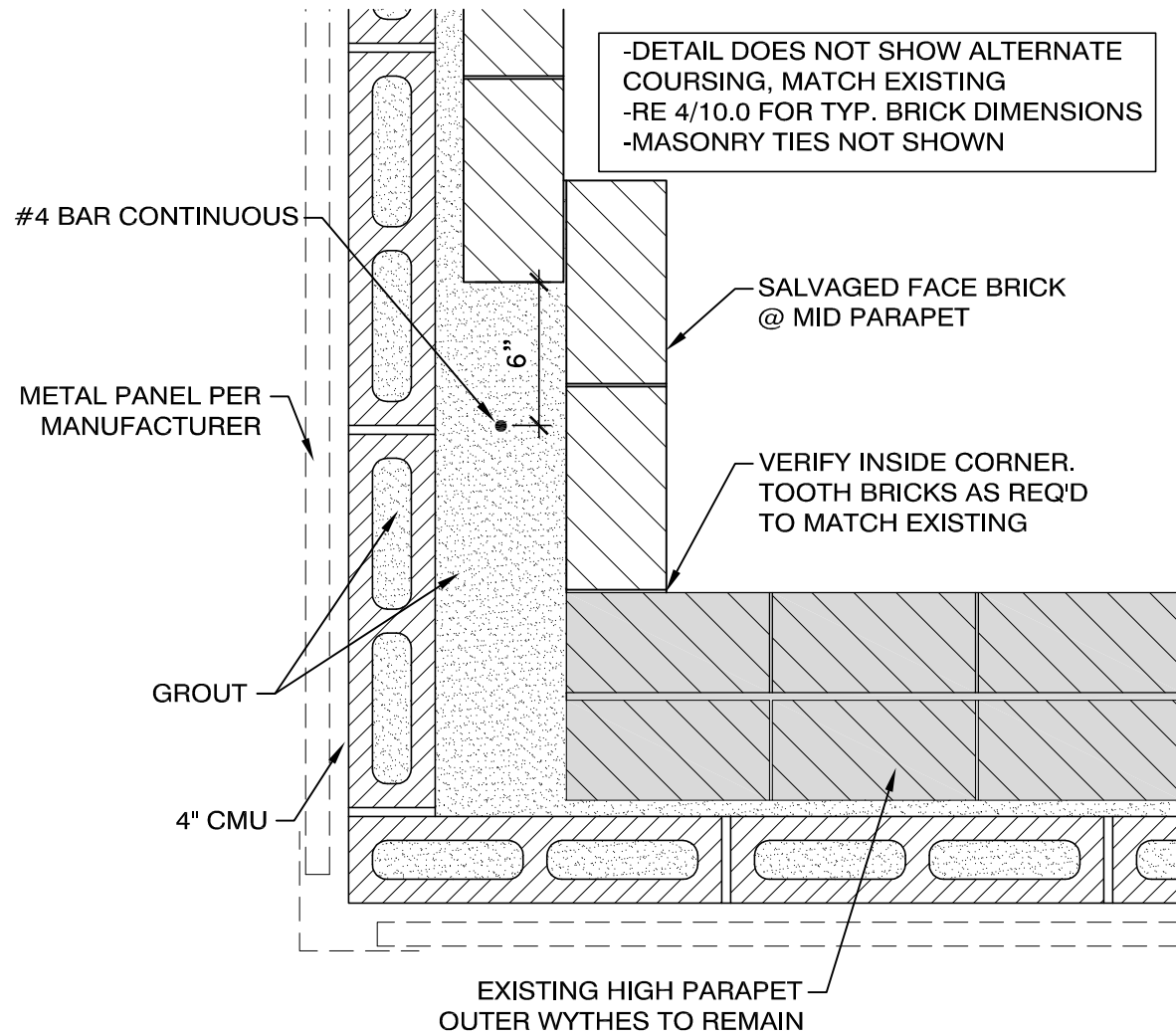
FIELD VERIFY ALL DIMENSIONS

4 TYP. FACE BRICK
3" = 1'-0"



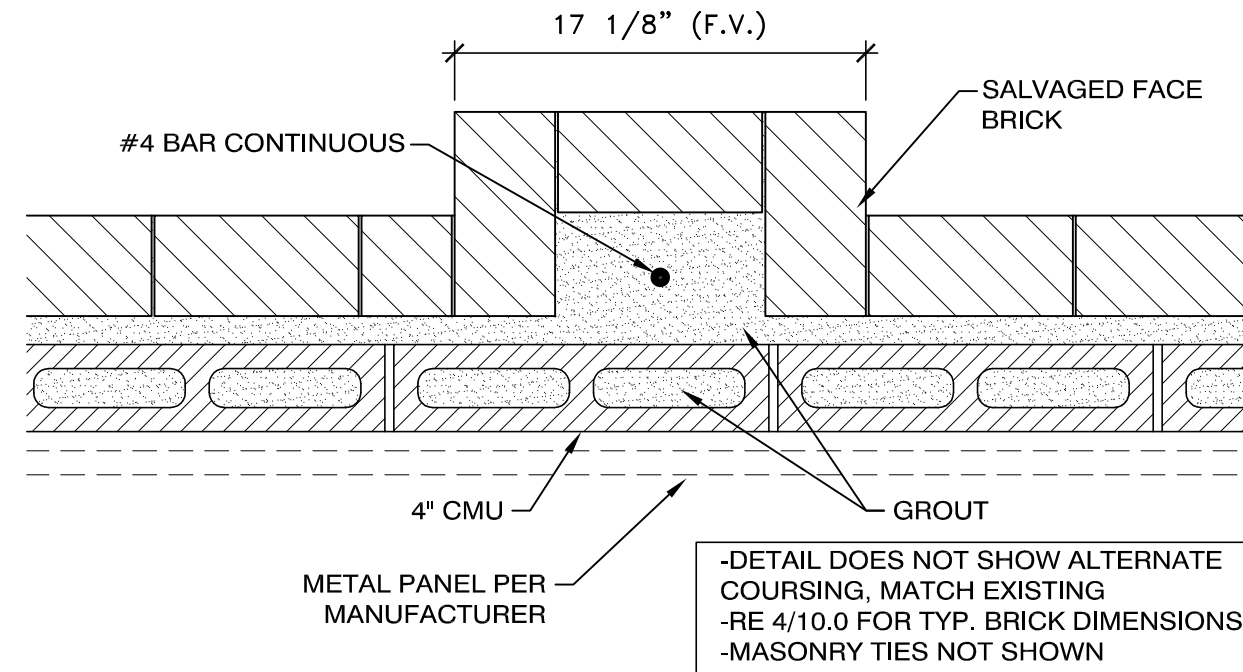
-DETAIL DOES NOT SHOW ALTERNATE COURSING, MATCH EXISTING
-RE 4/10.0 FOR TYP. BRICK DIMENSIONS
-MASONRY TIES NOT SHOWN

2 TYP CORNER PARAPET COURSING
1 1/2" = 1'-0"



-DETAIL DOES NOT SHOW ALTERNATE COURSING, MATCH EXISTING
-RE 4/10.0 FOR TYP. BRICK DIMENSIONS
-MASONRY TIES NOT SHOWN

3 MID/HIGH PARAPET COURSING
1 1/2" = 1'-0"



-DETAIL DOES NOT SHOW ALTERNATE COURSING, MATCH EXISTING
-RE 4/10.0 FOR TYP. BRICK DIMENSIONS
-MASONRY TIES NOT SHOWN

1 TYP MID PARAPET COURSING
1 1/2" = 1'-0"

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**THE CARNEGIE BUILDING
PARAPET WALL
REHABILITATION**

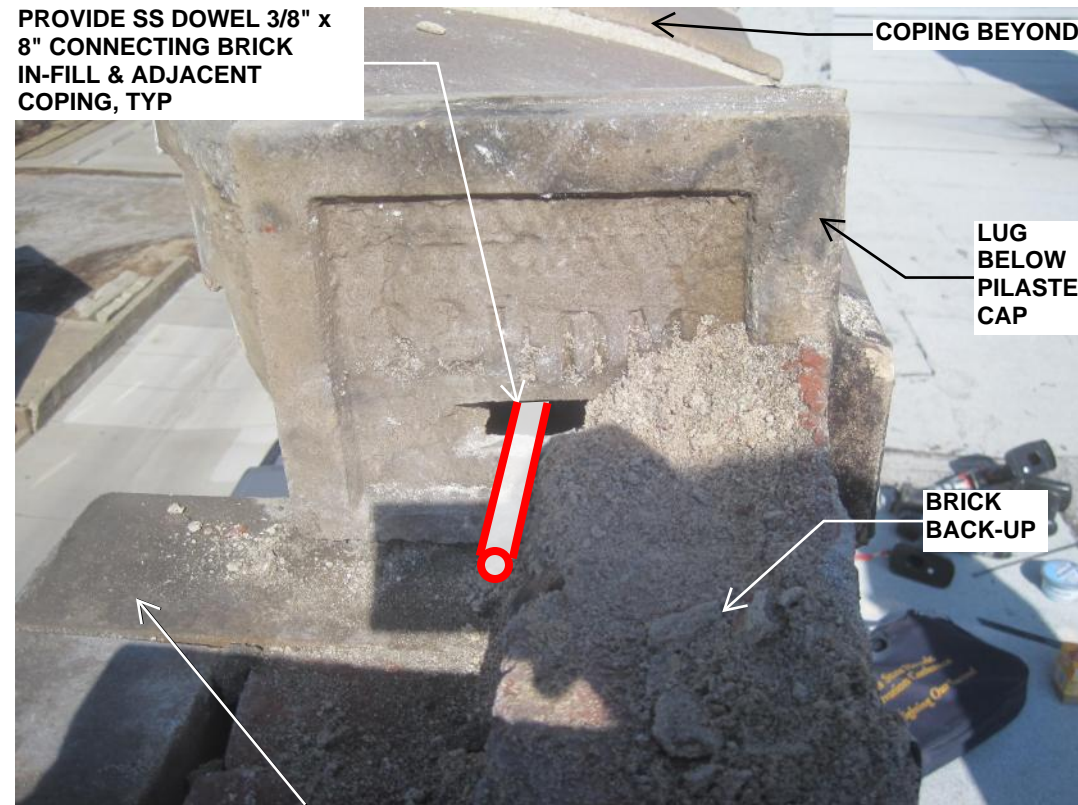
200 West 9th Street
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TYP. PILASTER DETAILS

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10.0

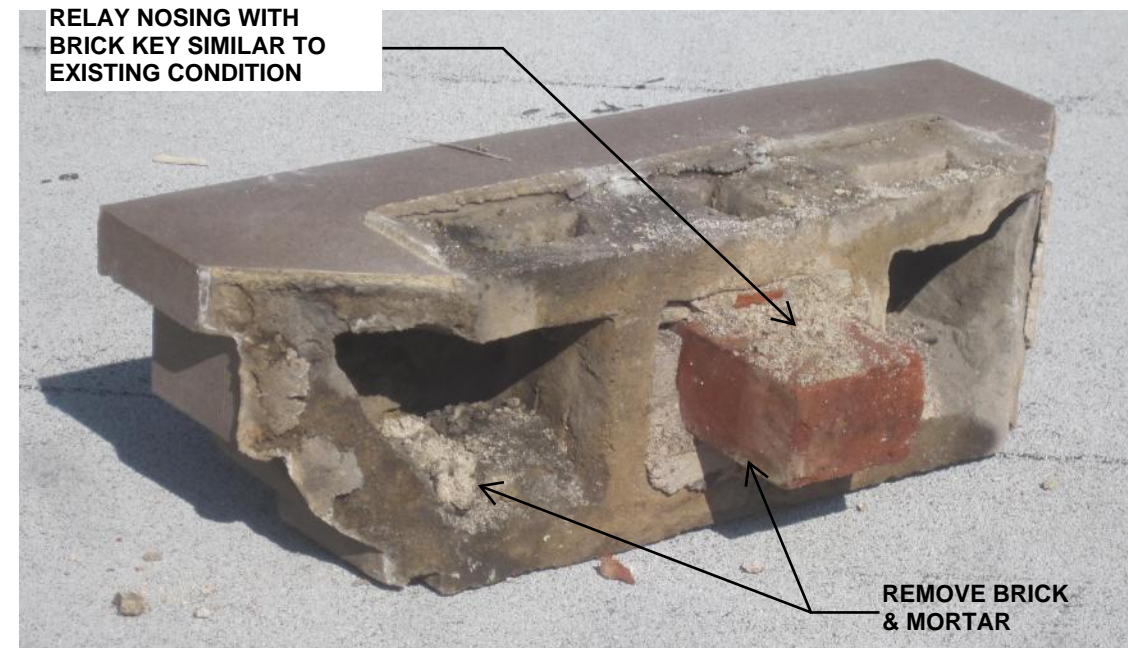
PROVIDE SS DOWEL 3/8" x 8" CONNECTING BRICK IN-FILL & ADJACENT COPING, TYP



BRICK PILASTER BELOW REMOVED PILASTER NOSING

4 COPING ADJ. TO PILASTER
PHOTO

RELAY NOSING WITH BRICK KEY SIMILAR TO EXISTING CONDITION



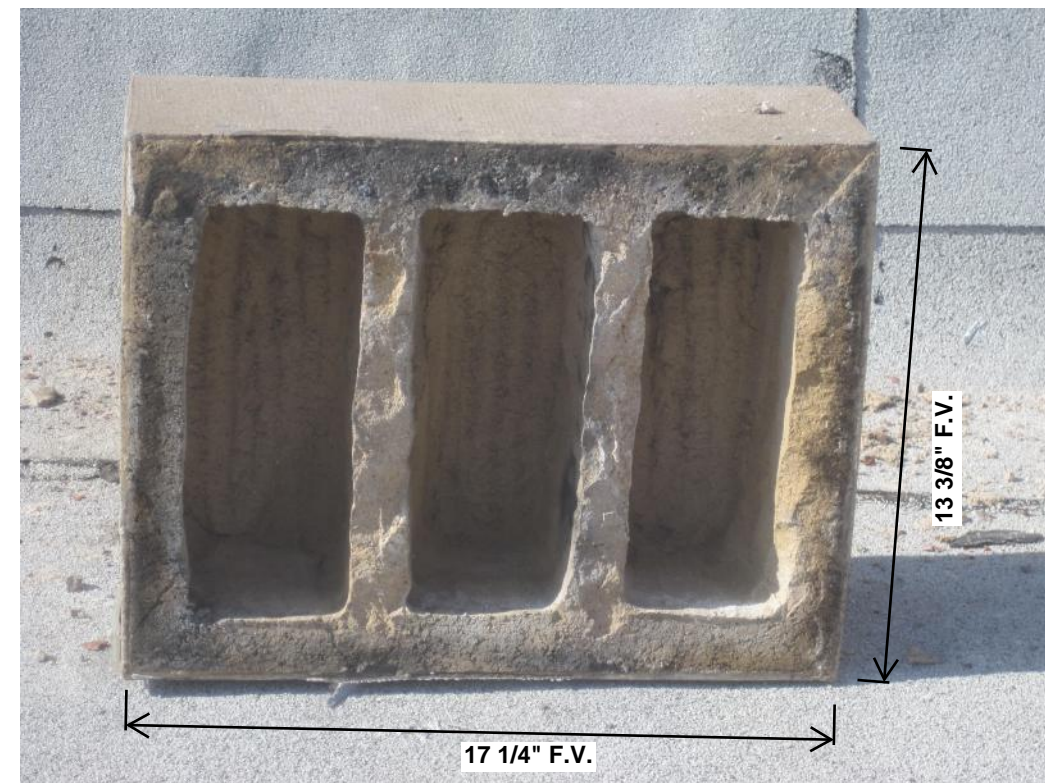
3 BACK OF PILASTER COPING
PHOTO

REMOVE MORTAR FROM DRIP, TYP



2 BOTTOM OF PILASTER NOSING
PHOTO

13 3/8" F.V.



1 PILASTER CAP
PHOTO

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**THE CARNEGIE BUILDING
PARAPET WALL
REHABILITATION**

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PILASTER COMPONENTS

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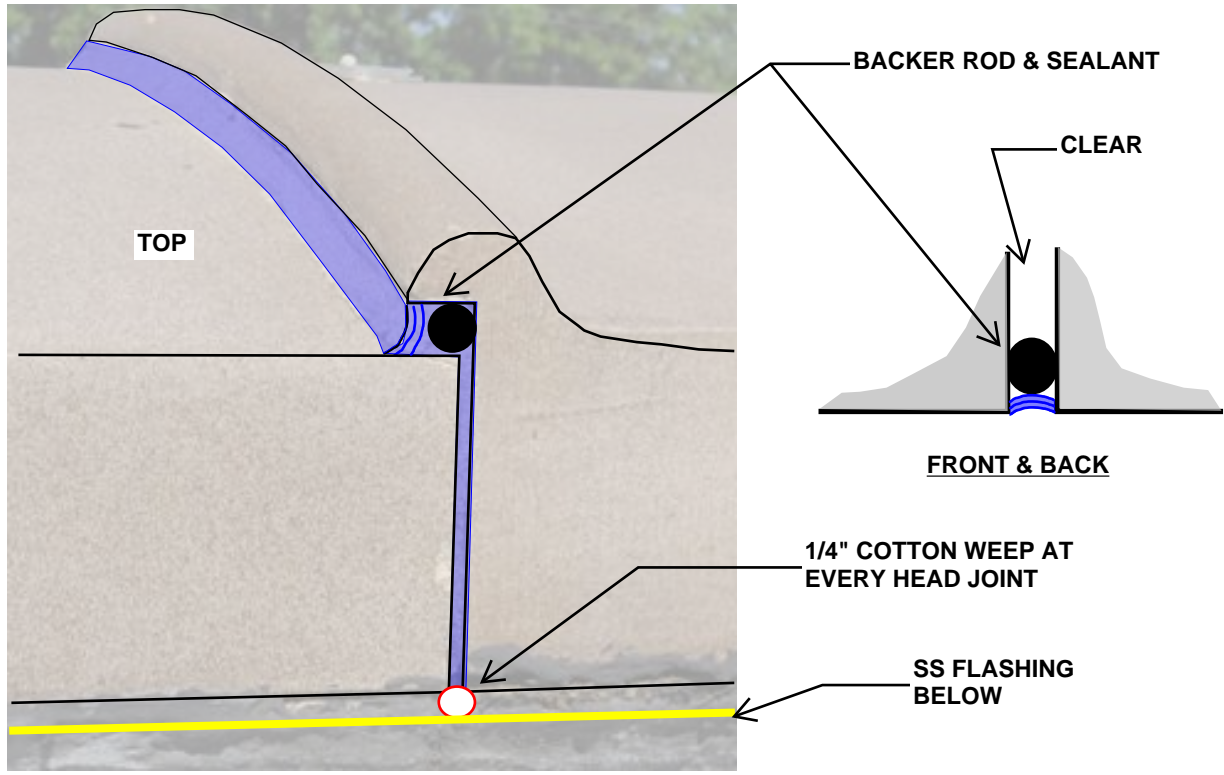
11.0

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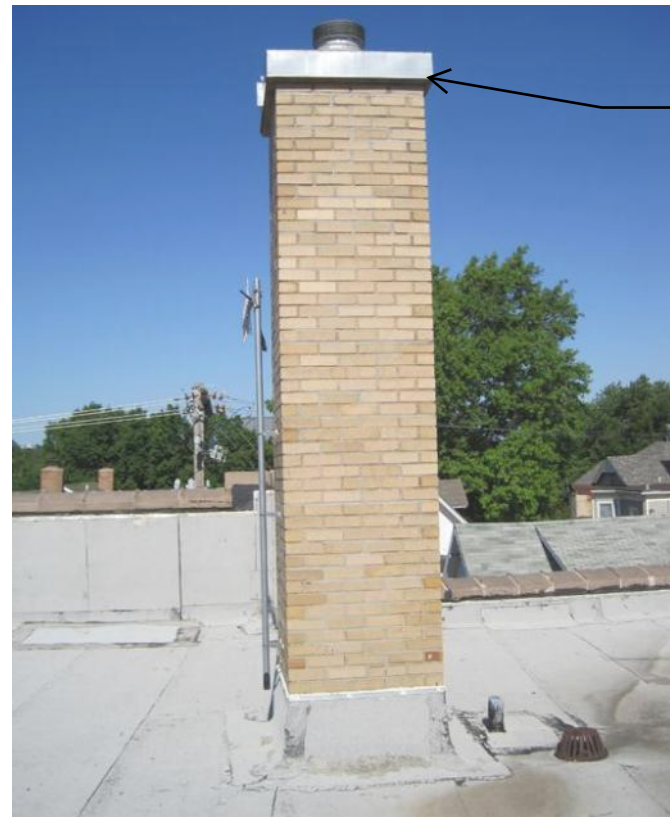
**THE CARNEGIE BUILDING
 PARAPET WALL
 REHABILITATION**
 200 West 9th Street
 Lawrence, KS 66044
CHIMNEY/ROOF

DATE:
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12.0

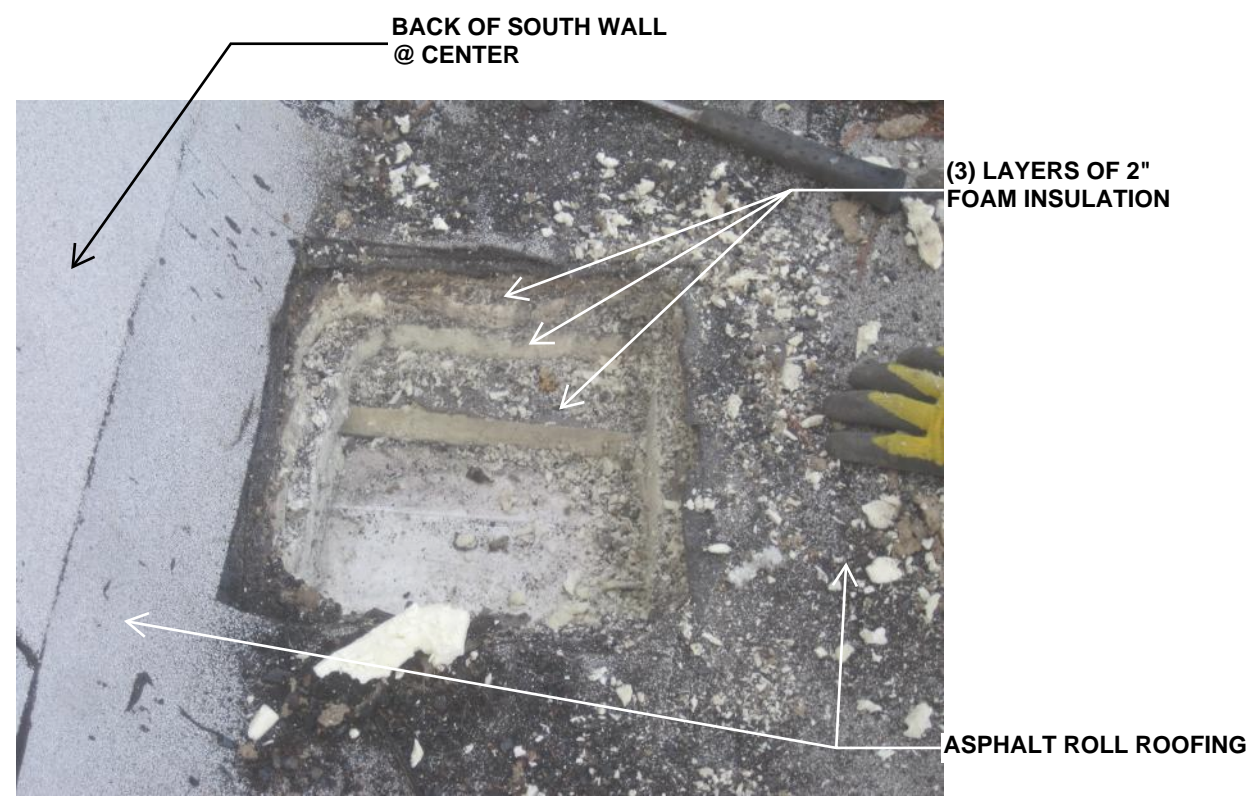


4 TYP. SOFT JOINT
 PHOTO



2 EAST FACE OF CHIMNEY
 PHOTO

POINT CHIMNEY
 -REPLACE ALL PREVIOUS POINTING WORK
 -POINT 10% OF REMAINING JOINTS

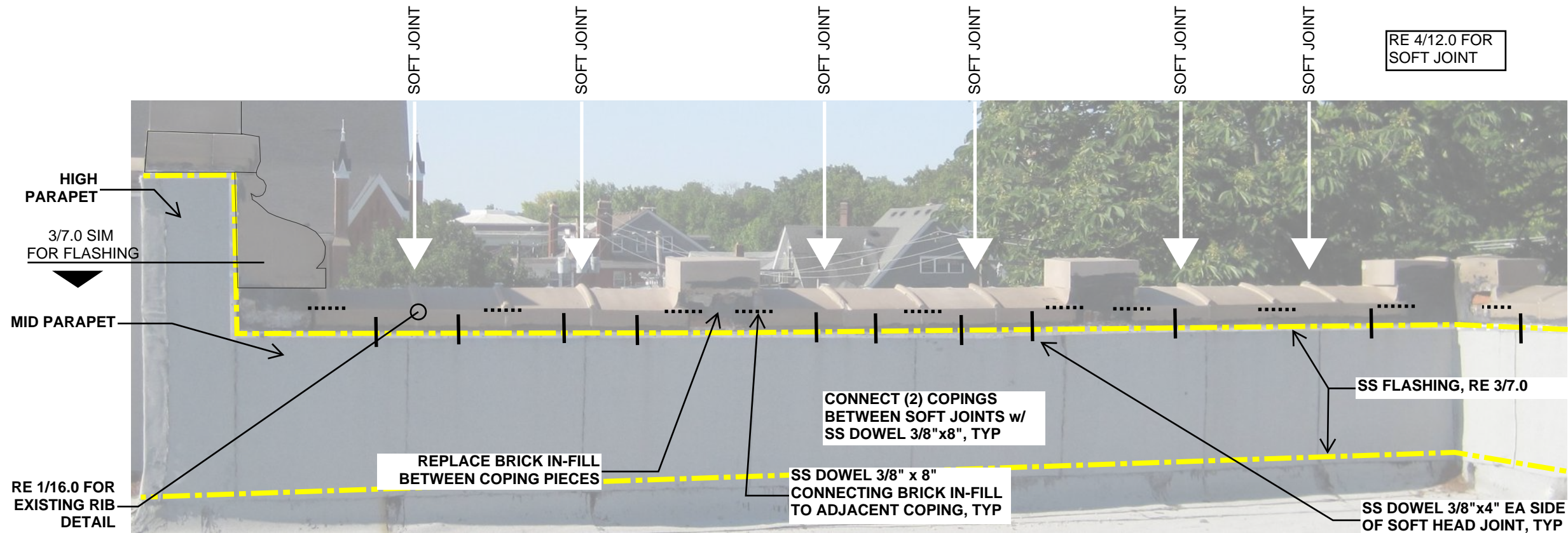


3 EXISTING ROOF
 PHOTO



1 SOUTH FACE OF CHIMNEY
 PHOTO

POINT CHIMNEY
 -REPLACE ALL PREVIOUS POINTING WORK
 -POINT 10% OF REMAINING JOINTS

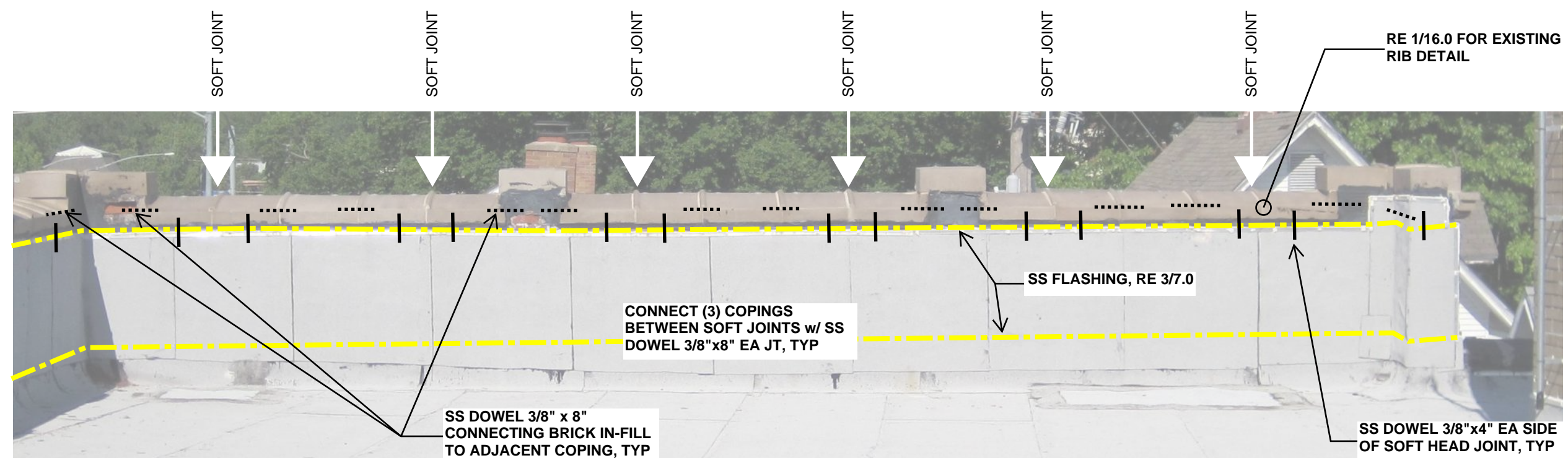


RE 1/7.0 FOR FURTHER INFORMATION

WEST PARAPET OF SOUTH WALL SHOWN, EAST PARAPET SIMILAR

2 MID PARAPET COPINGS - S WALL
 PHOTO

RE SHEET 11.0 FOR DISMANTLED PILASTER



RE 1/7.0 FOR FURTHER INFORMATION

1 MID PARAPET COPINGS - W WALL
 PHOTO E WALL SIM.

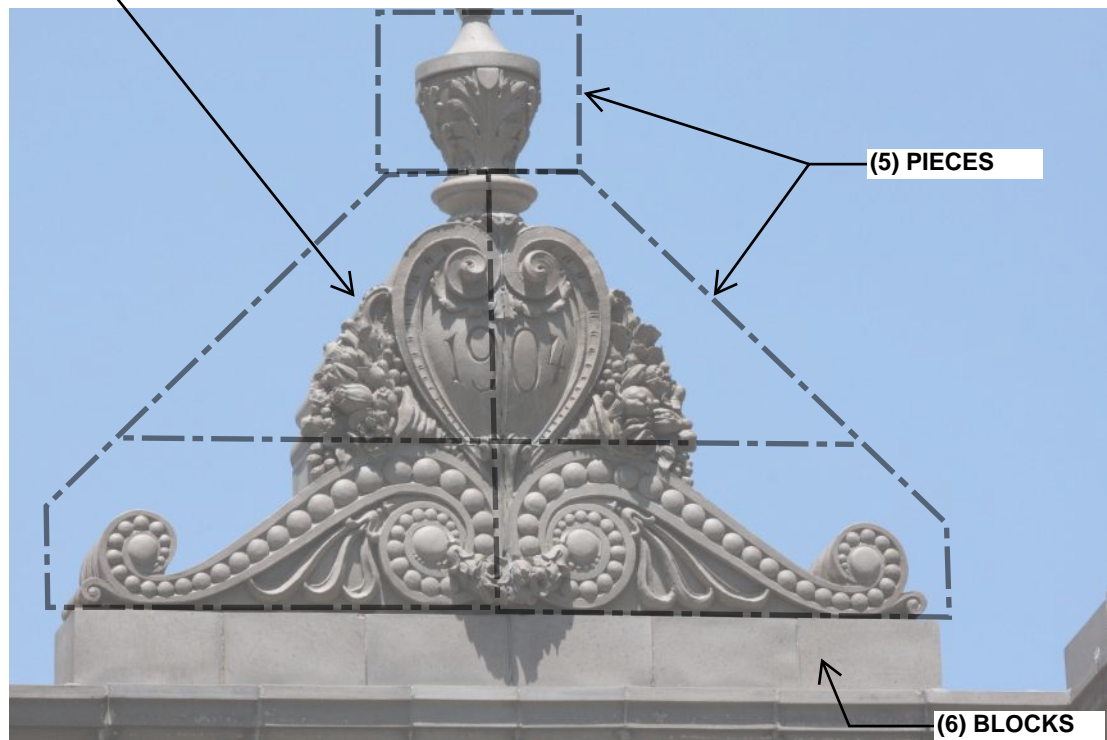
RE SHEET 11.0 FOR DISMANTLED PILASTER

**THE CARNEGIE BUILDING
 PARAPET WALL
 REHABILITATION**
 200 West 9th Street
 Lawrence, KS 66044
MID PARAPET COPING

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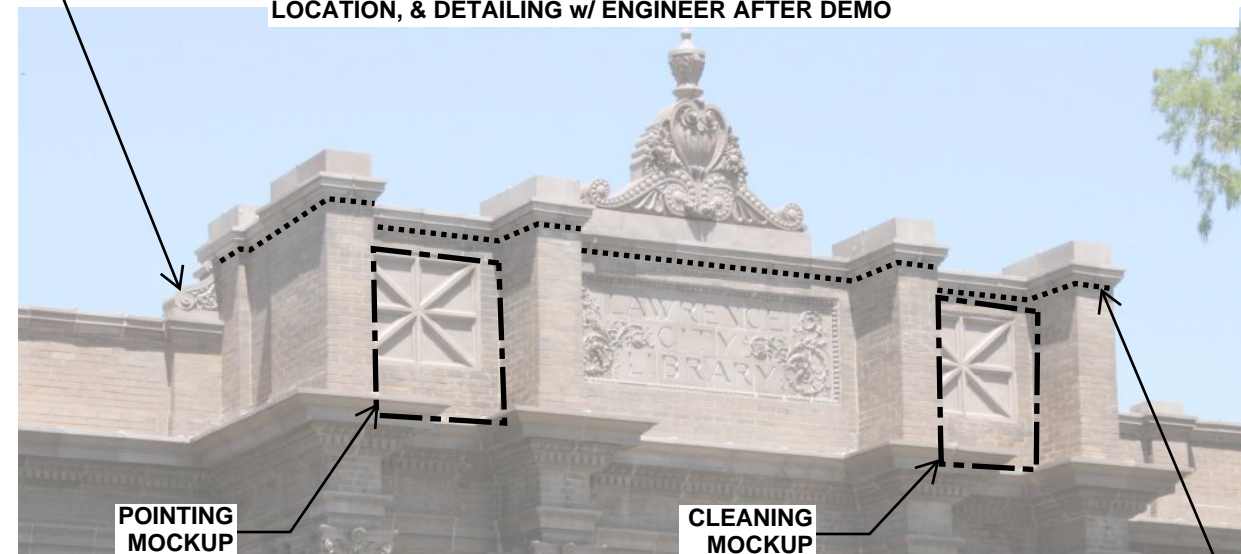
13.0

DEMO: REMOVE FINIAL & BLOCKS BELOW FOR COPING/FLASHING WORK (RE 1/8.0)
 INVESTIGATE: REVIEW PIECES w/ ENGINEER
 REINSTALL: PROVIDE SS DOWEL REINFORCEMENT. COORDINATE NUMBER, LOCATION, & DETAILING w/ ENGINEER AFTER DEMO



3 FINIAL @ HIGH PARAPET
 PHOTO

DEMO: REMOVE SCROLLED BRACKET (2 THUS) FOR COPING/FLASHING WORK (RE 1/7.0) @ TOP OF MID PARAPET
 INVESTIGATE: REVIEW PIECES w/ ENGINEER
 REINSTALL: PROVIDE SS DOWEL REINFORCEMENT. COORDINATE NUMBER, LOCATION, & DETAILING w/ ENGINEER AFTER DEMO



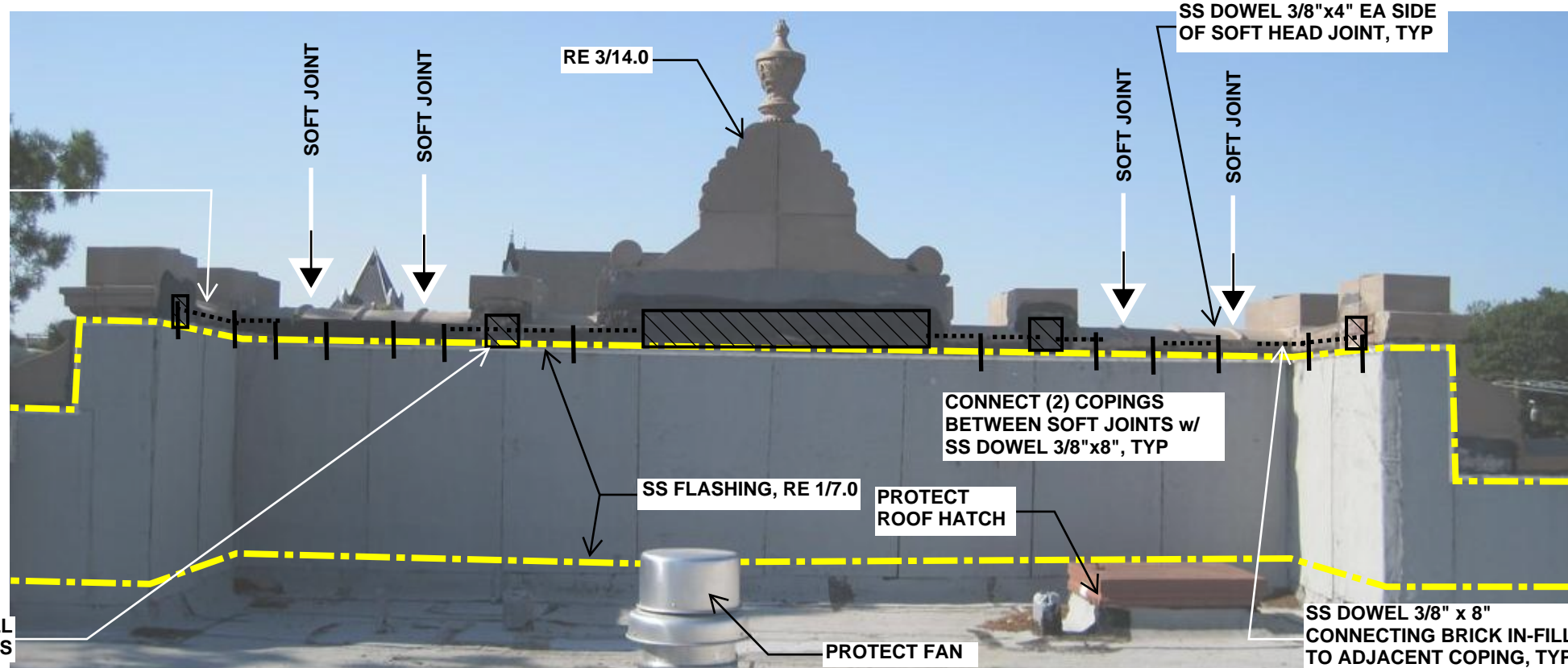
CLEAN & POINT HIGH PARAPET 100%

REMOVE CAPS & COPINGS @ PROJECTING PILASTERS, FLASH TOP OF EXISTING BRICK w/ FLEXIBLE FLASHING, SIM 3/8.0

2 HIGH PARAPET PILASTERS
 PHOTO

RE 1/8.0 FOR FURTHER INFORMATION

(2) COPING STONES ON E & W RETURNS (NOT SHOWN CLEARLY IN PHOTO): PROVIDE SOFT JOINT BETWEEN



RE 1/8.0 FOR FURTHER INFORMATION

1 HIGH PARAPET COPINGS
 PHOTO

RE SHEET 11.0 FOR DISMANTLED PILASTER

DGM Consultants, P.A.
 10251 Goddard St.
 Overland Park, KS 66214
 VOICE - 913-894-2048
 FAX - 913- 894-2225
 DGM PN - 2012014

**THE CARNEGIE BUILDING
 PARAPET WALL
 REHABILITATION**

200 West 9th Street
 Lawrence, KS 66044

HIGH PARAPET COPING

DATE:
 ISSUE FOR REV. 7/29/2013
 ISSUE FOR BIDS
 ISSUE FOR PERMIT
 REVISION #1
 REVISION #2
 REVISION #3

14.0

**THE CARNEGIE BUILDING
 PARAPET WALL
 REHABILITATION**

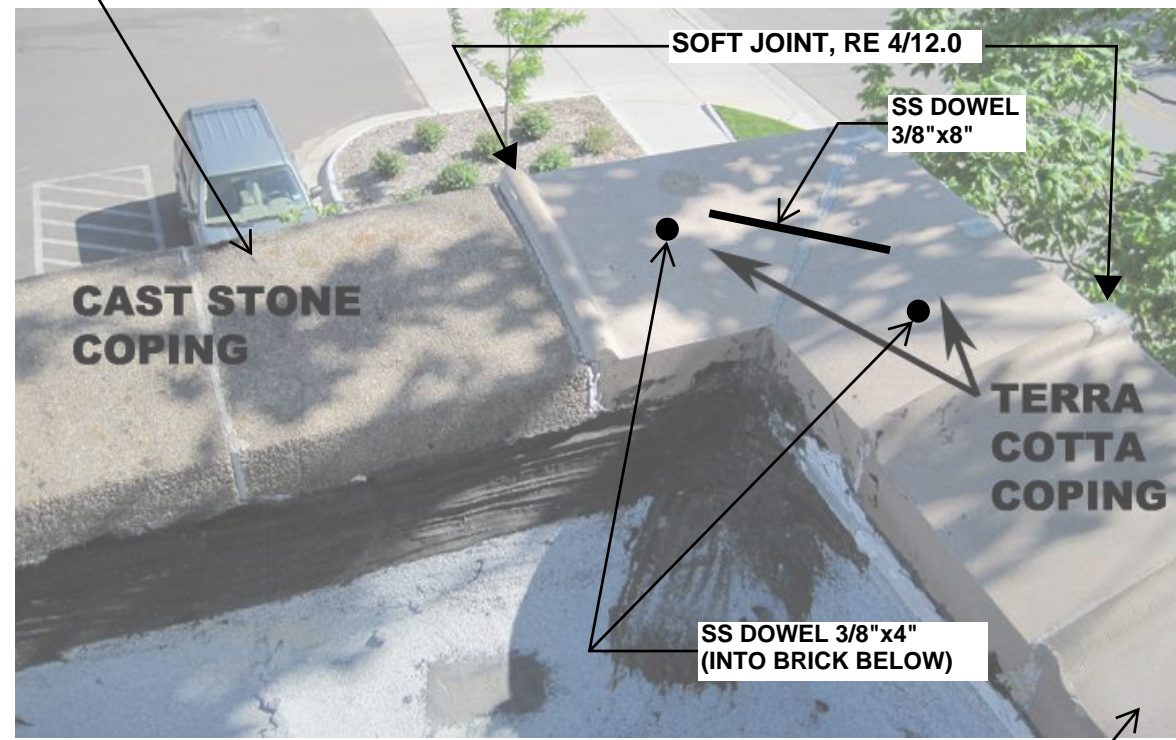
200 West 9th Street
 Lawrence, KS 66044

LOW PARAPET COPING

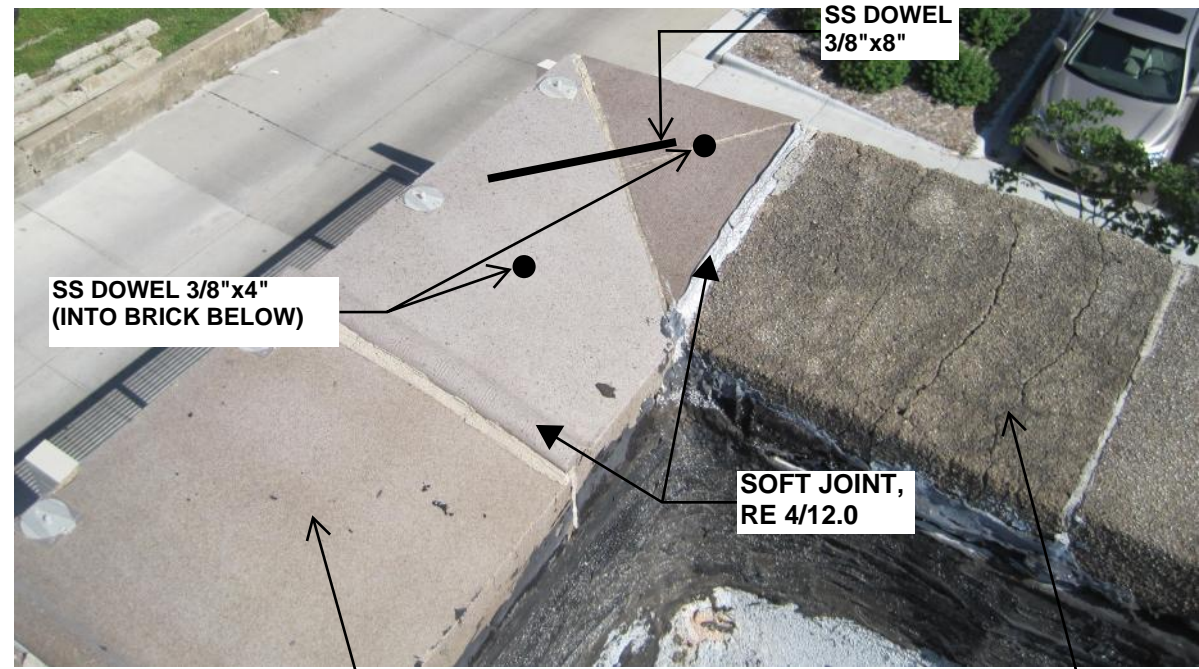
DATE:
 ISSUE FOR REV. 7/29/2013
 ISSUE FOR BIDS
 ISSUE FOR PERMIT
 REVISION #1
 REVISION #2
 REVISION #3

15.0

NEW CAST STONE COPINGS TO REPLACE ALL EXISTING (ALONG NORTH PARAPET), RE 1/9.0 SIM

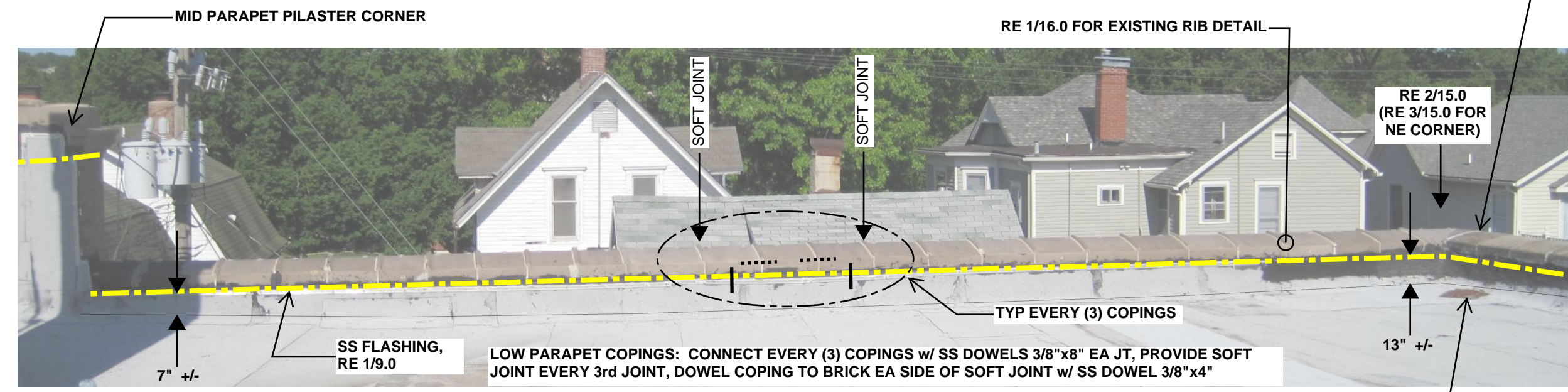


3 LOW PARAPET COPING - NE CORNER
 PHOTO



2 LOW PARAPET COPING - NW CORNER
 PHOTO

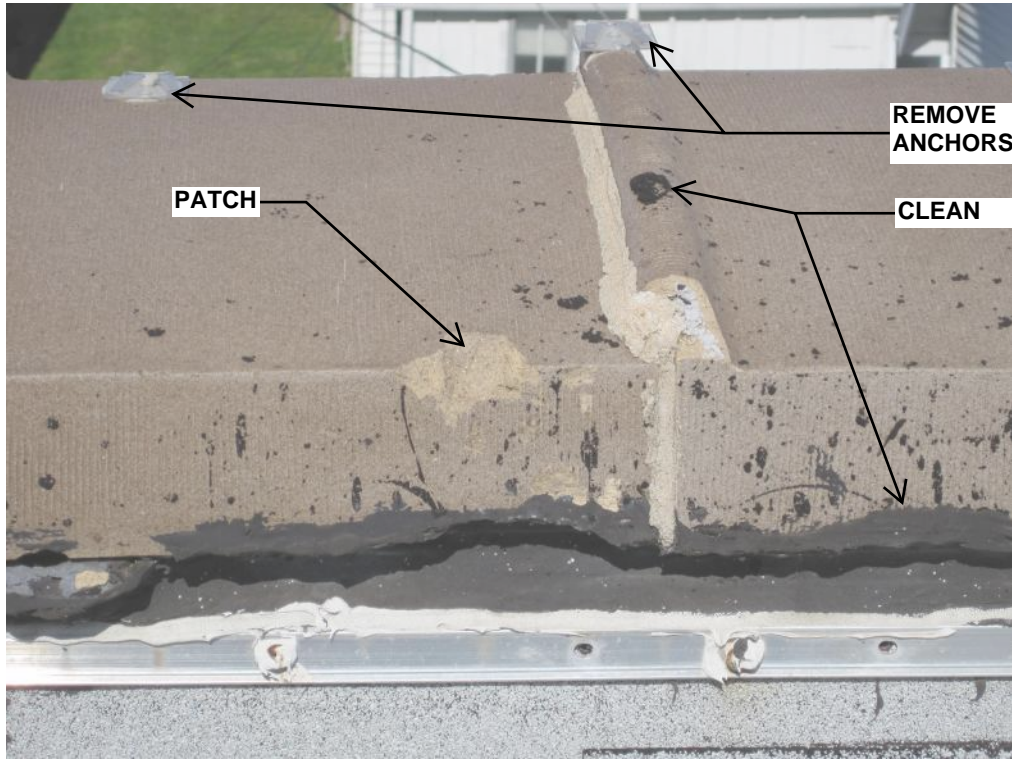
NEW CAST STONE COPINGS TO REPLACE ALL EXISTING (ALONG NORTH PARAPET), RE 2/9.0 SIM



LOW PARAPET COPINGS: CONNECT EVERY (3) COPINGS w/ SS DOWELS 3/8"x8" EA JT, PROVIDE SOFT JOINT EVERY 3rd JOINT, DOWEL COPING TO BRICK EA SIDE OF SOFT JOINT w/ SS DOWEL 3/8"x4"

RE 1/9.0 FOR FURTHER INFORMATION

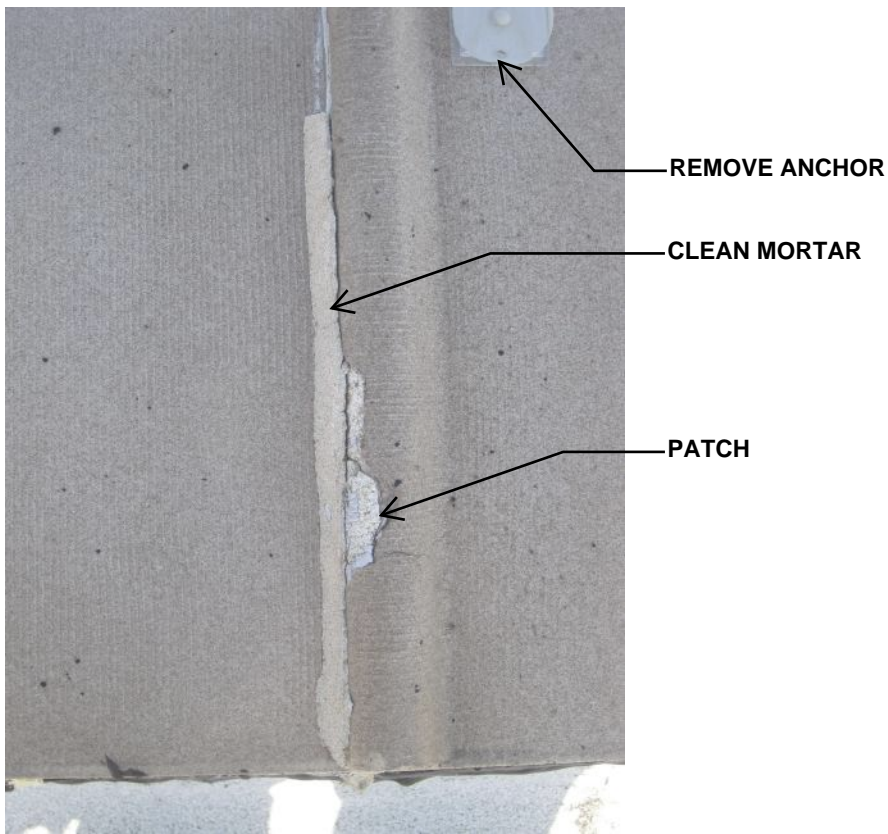
1 LOW PARAPET COPINGS- WEST WALL
 PHOTO EAST WALL SIM



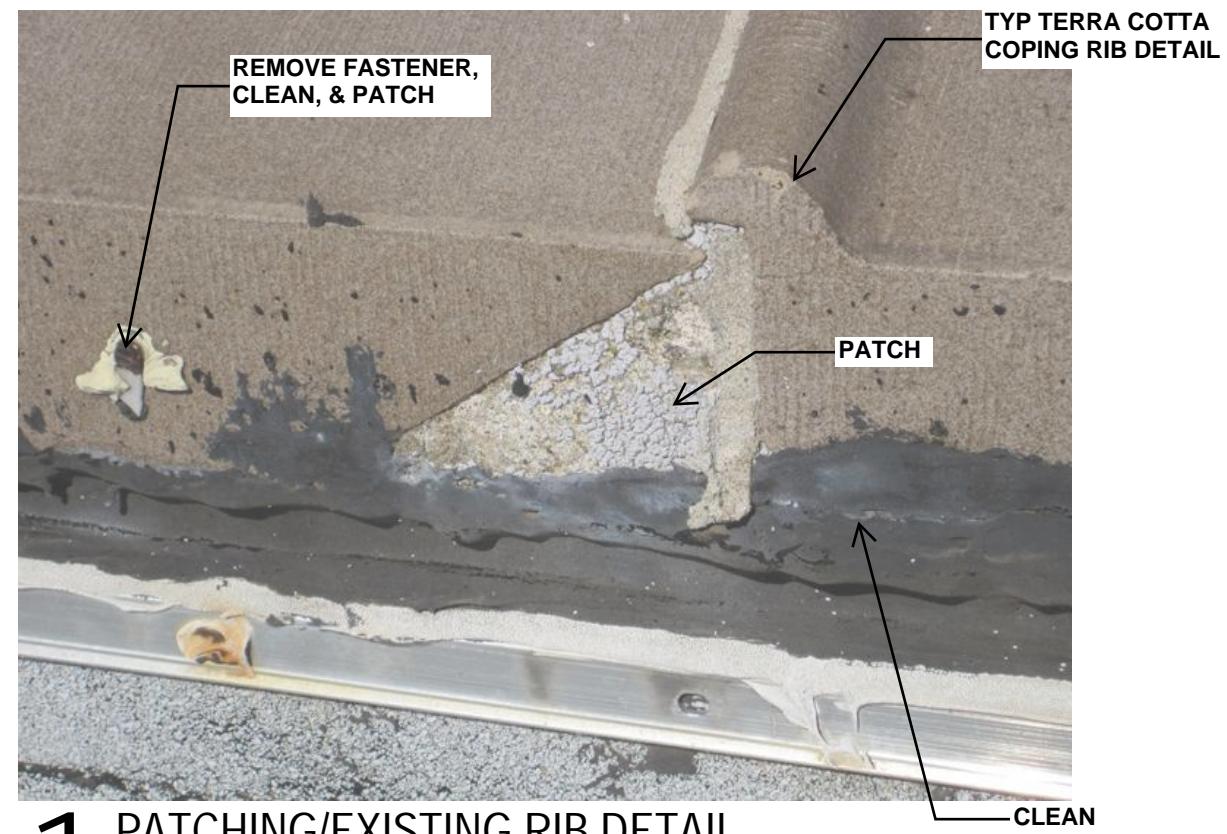
4 TERRA COTTA PATCH EXAMPLE
PHOTO



2 TERRA COTTA PATCH EXAMPLE
PHOTO



3 TERRA COTTA PATCH EXAMPLE
PHOTO



1 PATCHING/EXISTING RIB DETAIL
PHOTO

DAMAGE SHOWN ON SHEET IS NOT ALL INCLUSIVE, IT IS PROVIDED TO SHOW EXAMPLES OF THE TYPE OF DAMAGE ON THE TERRA COTTA COPINGS & CAPS

DGM Consultants, P.A.
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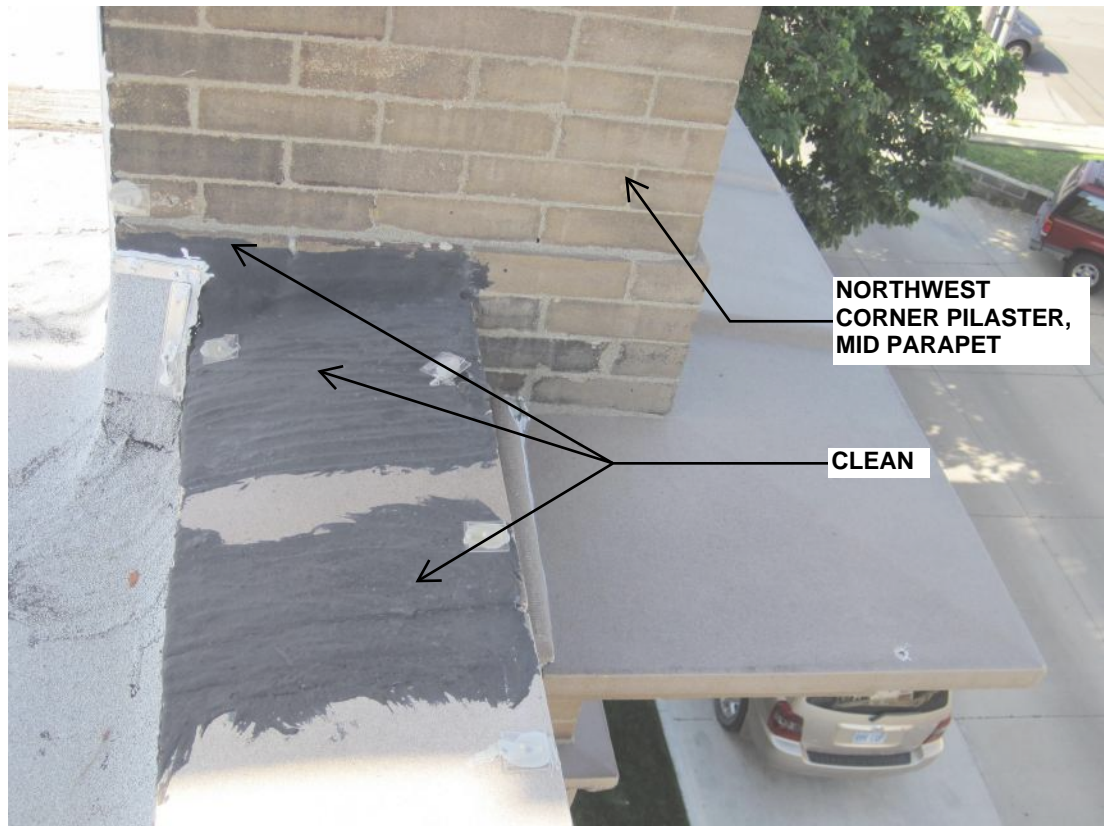
**THE CARNEGIE BUILDING
PARAPET WALL
REHABILITATION**

200 West 9th Street
Lawrence, KS 66044

TYP. TERRA COTTA REPAIR

DATE:
ISSUE FOR REV. 7/29/2013
ISSUE FOR BIDS
ISSUE FOR PERMIT
REVISION #1
REVISION #2
REVISION #3

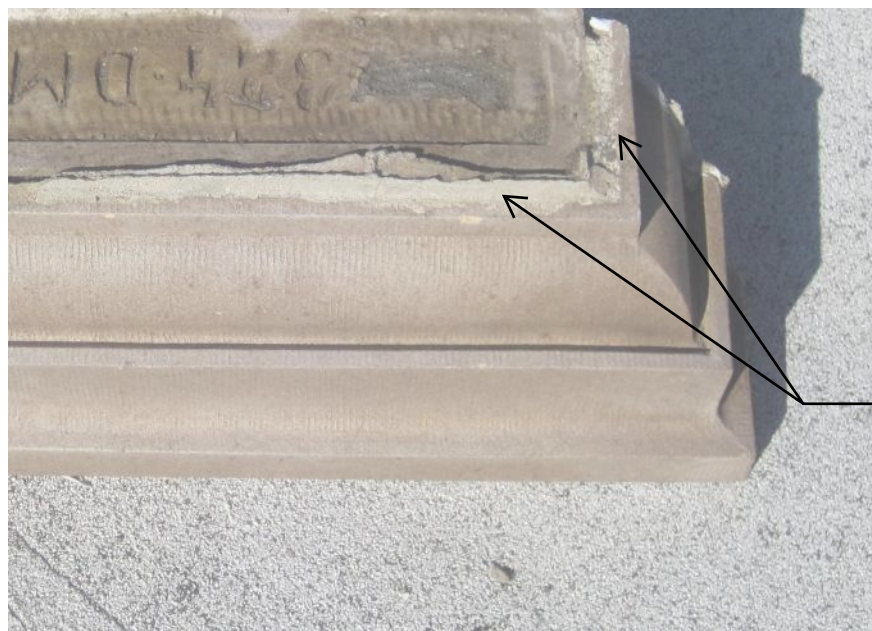
16.0



4 TOP OF COPINGS
PHOTO



2 BACK OF TYP PILASTER CORNER
PHOTO



3 MORTAR IN DRIP
PHOTO



1 BACK OF TYPICAL PILASTER
PHOTO

CLEANING SHOWN ON SHEET IS NOT ALL INCLUSIVE, IT IS PROVIDED TO SHOW EXAMPLES OF THE TYPE OF MATERIAL ON THE TERRA COTTA COPINGS & CAPS TO BE REMOVED

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FAX - 913- 894-2225
DGM PN - 2012014

**THE CARNEGIE BUILDING
PARAPET WALL
REHABILITATION**

200 West 9th Street
Lawrence, KS 66044

TYP. T. COTTA CLEANING

DATE:
ISSUE FOR REV. 7/29/2013
ISSUE FOR BIDS
ISSUE FOR PERMIT
REVISION #1
REVISION #2
REVISION #3

17.0

DGM Consultants, P.A.

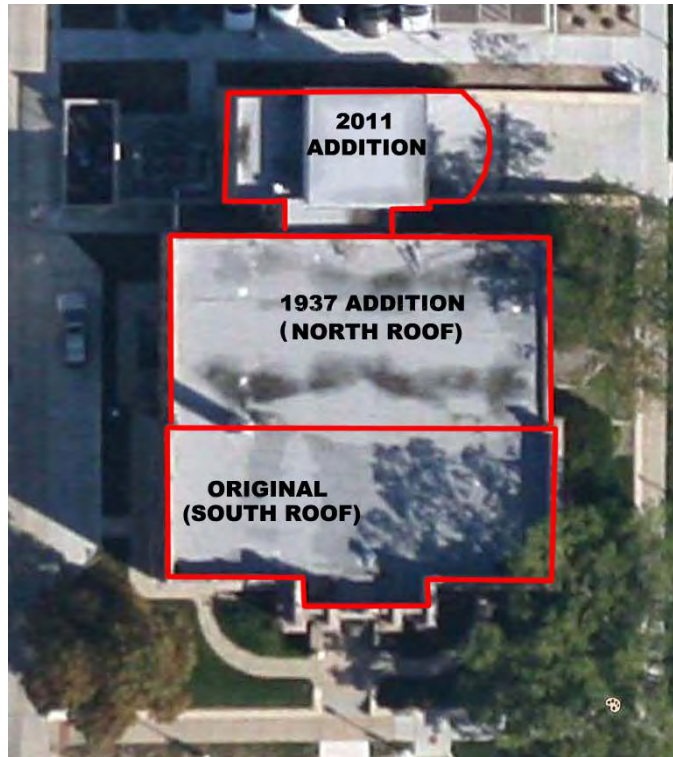
Structural Engineering and Masonry Consulting

FIELD REPORT #01

Project	Carnegie Library	Date	5/15/2012 DGM Project # 2012014
Location	9 th and Vermont Lawrence, Kansas 66044	Contractor	The Garland Company, Inc
To	Mr. Lynn Applegate , Bldg & Aquatics Sup City Of Lawrence 6 East 6th Street Lawrence, Kansas 66044	Owner	City of Lawrence
FAX		Weather	Sunny, 60-84°F
		Present	Greg Leslie Lynn Applegate
		PN	PO 005556

I. INTRODUCTION

- A. This site visit was a followup visit to the initial one made on 4/27/2012 with Greg Leslie.
- B. City of Lawrence issued a PO on 5/7/2012 as an initial step to:
1. Visit site, photograph conditions, review photos, and develop a summary of recommendations as a minimal effort toward getting a handle on all the repair types and the extent of repairs anticipated.
 2. Summary explanation of findings was given to staff (Lynn Applegate) during the second site visit.
- C. Some masonry repairs are necessary prior to reroofing the entire roof.
- D. History
1. 1904: The Carnegie building was constructed with a grant worth approximately \$27,000 from Andrew Carnegie.
 2. 1937: An addition was built. Building served as a public library until a new library was constructed in 1972.
 3. 1975: Building was added to the National Register of Historic Places as the "Old City Library"
 4. 1975-2002: The Lawrence Arts Center inhabited the building.
 5. 2000 - 2010 Three-phase rehabilitation design by Treanor Architects.
 6. 2011: Phase III renovation completed & Lawrence Parks and Recreation Department began operating the facility to make it available for public use.



II. ITEMS DISCUSSED

A. 4/27/2012 Site Visit

1. Coping stones have open head joints that allow water to enter the top of wall.
2. Masonry, directly below the coping stones, is severely deteriorated and exposed above the roofing termination.
3. The backs of the parapet walls have been covered so they can no longer breath and dry out rom the back side.
4. Masonry behind the roofing covering installed on the roof side of the parapet walls is unattached and I suspect that the masonry wall behind the roofing is severely deteriorated.
5. The south facing parapet walls appear to be leaning inward at the top and may not be structural adequate in their present condition.
6. Open head joints at watertables are another location for moisture infiltration.
7. Moisture infiltration is accelerating the deterioration of the masonry walls.

B. 5/15/2012 Site Survey

1. Scope of investigation
 - a. 393 digital photos to document finding.
 - b. Reviewed seven original drawings.
 - c. Reviewed eleven sheets for 1937 Addition.
 - d. Reviewed information available online to develop history section.
2. Original building's parapet walls (from south roof)

a. General

- (1) Noted lengths of wall segments "(xx'-x")" is based on length of wall at first floor from the drawings reviewed.
- (2) Parapet walls extend about 4 feet above the roofing surface (based on measurements taken along the south wall) to the top of the terra cotta caps. The higher center portion is 6 feet to the bottom of the caps.
- (3) The back side of the parapet wall is typically covered with roofing that is not fully adhered, but appears to be hung, in some locations, from the termination bar.

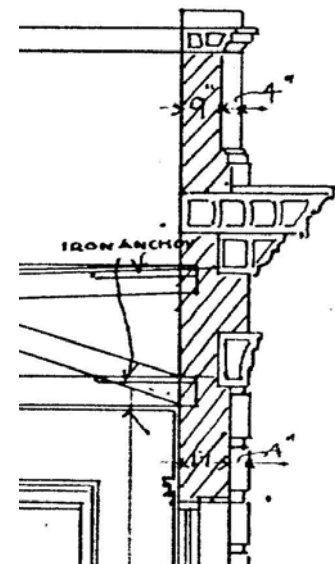
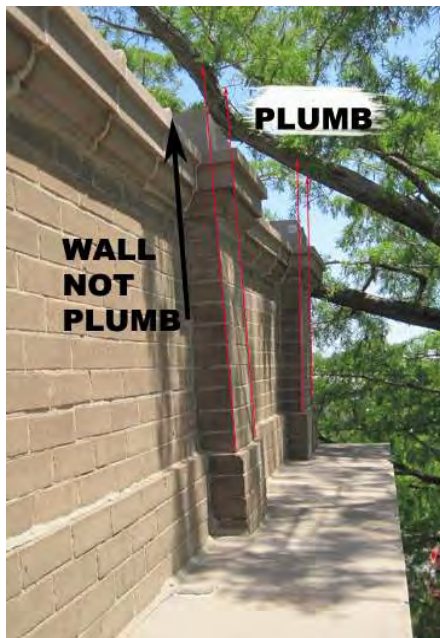
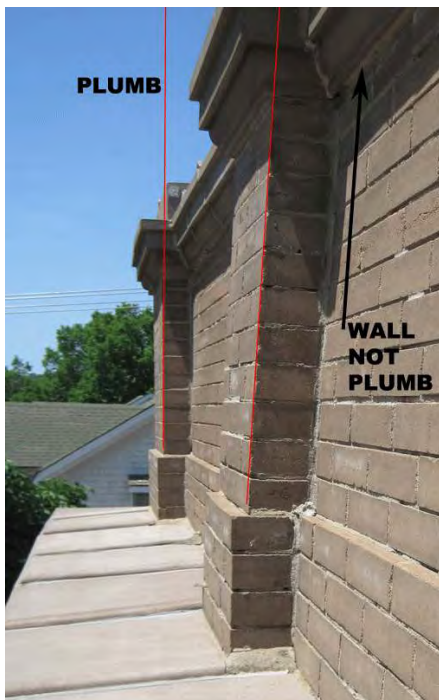


- (4) Lynn recalled photos from the period of the reroofing project that showed the back sides of the walls sealed with an asphalt coating prior to the present cap sheet. Some of this membrane is still exposed above the termination bar, as documented in later photographs.

- b. Inward leaning south parapet walls
- (1) The most concerning condition is the two inward leaning parapet walls along the south wall.
 - (2) We pulled a string line along the left section (east) and measured the intermediate conditions to get a relative offset measurement (repeated at west section). We determined that both parapet walls were leaning inward about 2.625".



- (3) We later accessed the exterior south face of the south parapet walls, that flank each side of the area above the south porch. Both sections were noticeably out of plumb. (Portion of original drawing #5 below).



- (4) The original drawing shows the extent of the terra cotta cornice (watertable) as extending all the way through the wall. This was not verified.
- (5) The remainder of our findings, along the south wall, will be discussed in the next section.

c. Tops of walls

(1) The second most concerning condition is the masonry deterioration and open joint conditions noted near the top of walls.

(2) South parapet wall (76'-6")

(a) This portion of the building has three sections that were first viewed from the roof.

(b) The east and west sections are similar. They are constructed with a corner section and two intermediate pilasters. The pilasters are capped with a terra cotta cap stone that sets



above the rest of the cap stones. The back of the pilasters are brick between the upturned terra cotta cap stone edges. The brick is partially exposed from behind an asphalt coating that was applied over the masonry. The bricks are deteriorated to varying degrees. West parapet series of pilaster caps shown below.

The back of the pilasters are brick between the upturned terra cotta cap stone edges. The brick is partially exposed from behind an asphalt coating that was applied over the masonry. The bricks are deteriorated to varying degrees. West parapet series of pilaster caps shown below.



Eastern parapet's series of pilaster caps shown below.



(c) The center section (27'-8") above the south entrance is taller and consists of a west wall, a south wall, and an east wall.



- i) The west wall was surveyed first. Most vertical joints between stones are open and the previously covered brick is deteriorated.



The original mortar joints are severely deteriorated or open and the previous pointing is failing.

- ii) The south wall was looked at next.

Back side is covered with a weathered asphalt coating above the termination bar to “seal” the exposed brick. The joints above in the back of the terra cotta finial are displaced and open. One crack was noted along the vertical joint.



East of the center section, similar conditions were noted.



- iii) East wall, at the inside corner, did not appear to be as deteriorated as the opposite condition at the west wall, but joints were noted as being partially open.



- iv) From the south face, the terra cotta finial on top of the wall looks to be in good condition, except for numerous open joint lines and a few cracks (highlighted in red).



- (d) East parapet wall (31'-4")
 - i) Starting at the north end of this wall we noted a slight inward lean (bow) in this wall.
 - ii) The north end of the wall has similar covered brick issues and gaps above the



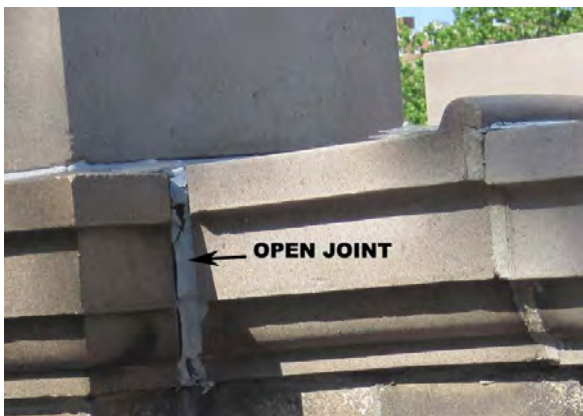
termination bar.

- (3) West parapet wall (31'-4"): The deteriorated conditions along this wall are

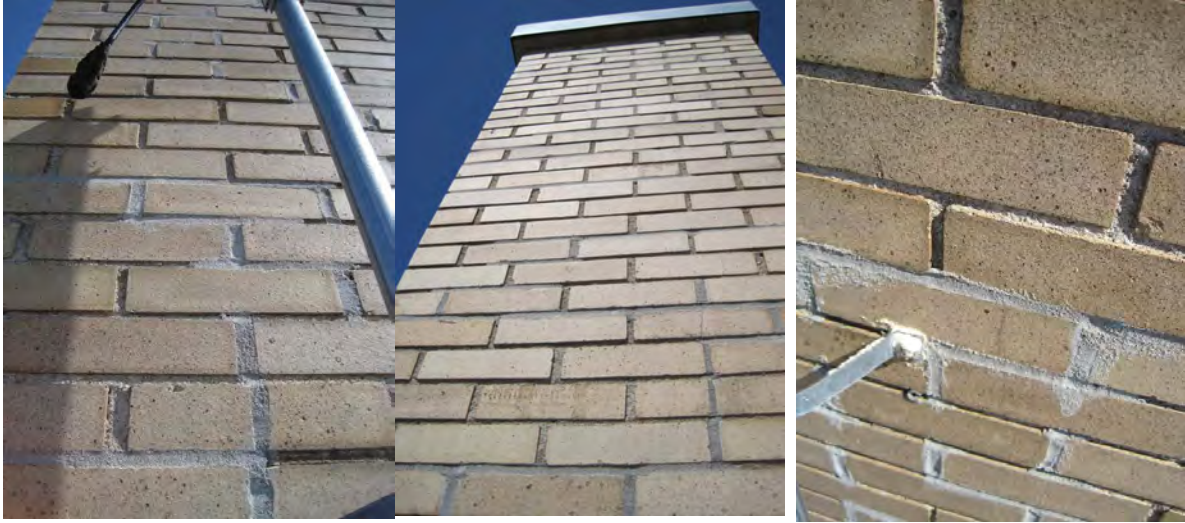


similar to the other walls.

- (4) Terra cotta coping: Copings appear to be a very durable material, based on the noted condition in most locations. We noted several chips, open joints, and gaps under the coping. Several of the open joints noted were a direct result of the leaning walls. Refer to pictures on next page.



- d. Chimney: The original chimney extends above the roof quite a ways. The mortar joints are weathered and some joints appear to have been pointed, but others not at all. Pointing appeared to be improper at several locations.



- e. South parapet wall investigation: We opened up two sections of roofing that had been applied to the back of the parapet wall (with the assistance of Greg Leslie).

- (1) The first was at the center section. After folding the roofing down we noted the wall to be visibly wet from the glistening surface moisture. The brick backup wall had been coated with an asphalt coating subsequent to some pointing and the bricks were spalling.



- (2) The second was the east parapet section.
- (3) The mortar original mortar joints were wider than the exterior joints and they were severely deteriorated. Previous pointing attempts appeared to be just shallow joint fills that were not



bonded to the brick well or deep enough.



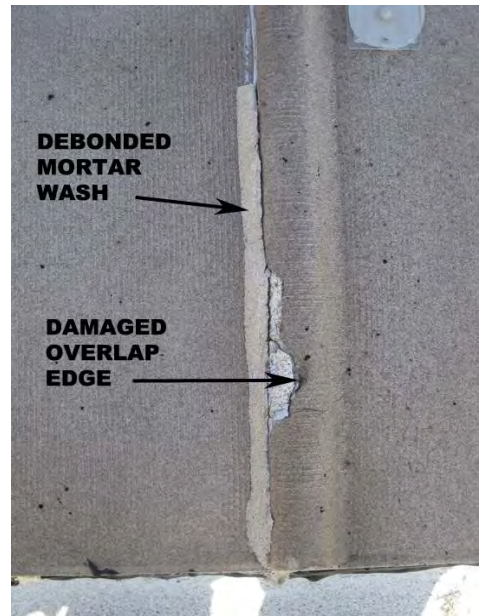
3. 1937 Addition's parapet walls (from north roof)
 - a. This addition has three sides and is centered along the north remaining portion of the original building. The parapet walls are much shorter than the original building.
 - b. East wall (36'-5"): Wall is capped with 24 terra cotta coping units salvaged from the original building, that was replaced by this addition. These terra cotta coping units are in good condition.



- (1) At the end of the original return wall we noted some open mortar joints in the brick.



- c. West wall (36'-5"): Wall is capped with 25 terra cotta coping units, plus three pieces at the corner, from the original building that was replaced by this addition. These terra cotta coping units are in good condition, except for several chipped units and open joints.



The coping at the northwest corner has been made by mitering three original pieces.

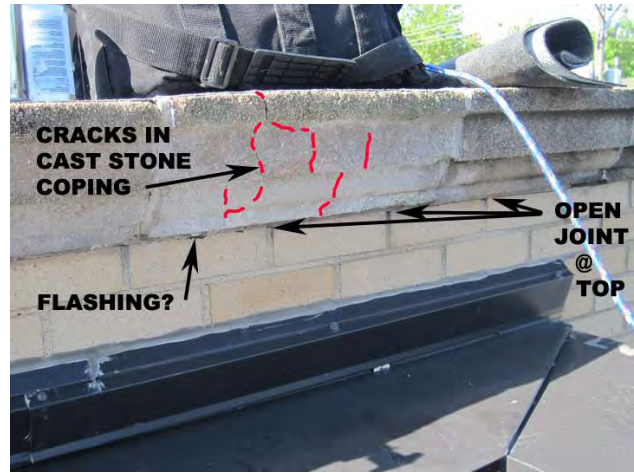
d. North wall (72'-8")

(1) The copings on the north wall are cast stone units that are of a similar cross section as the original, but 24 of the 47 units are severely deteriorated and joints are cracked.



(2) The north face of this coping wall was reviewed from the 2011 Addition roof. Cracked units and gaps in brick wall below were noted.

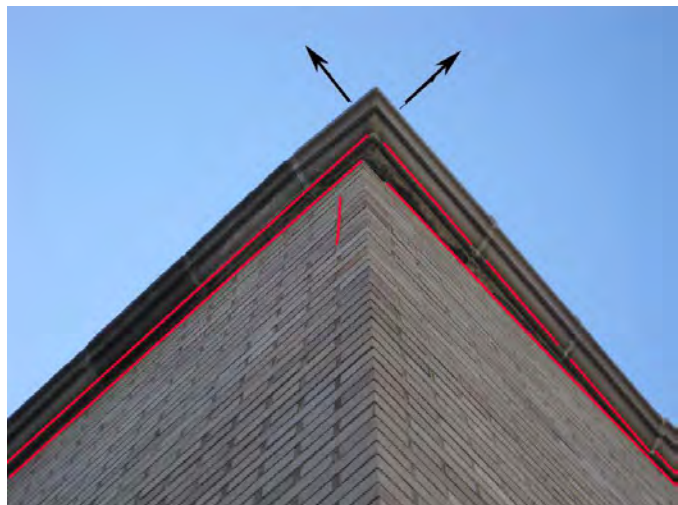
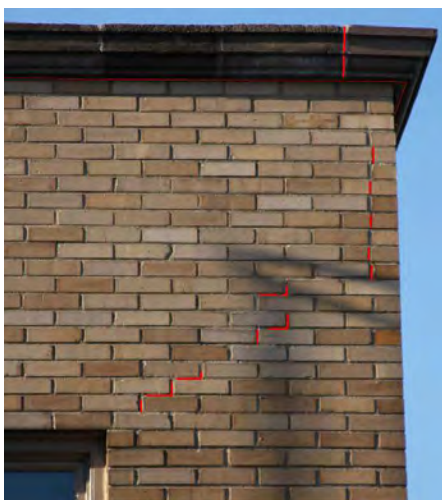




Flashing appears to be projecting from under the coping. The 1937 drawings show a “fabric waterproofing” sheet under the coping. The cracked mortar joints allow moisture to enter the wall.



- (3) At the northwest corner (from the ground), we noted that the coping was being pushed off the wall in both direction but more toward the west since the north wall is twice as long. The expansion toward the west has also cracked the brick wall below.



4. Review of exterior elevations.

a. General

- (1) Review of exterior elevations was made from the ground and from a ladder at three locations.
- (2) The elevations will be divided between the original building, the 1937 Addition, and the 2011 Addition.

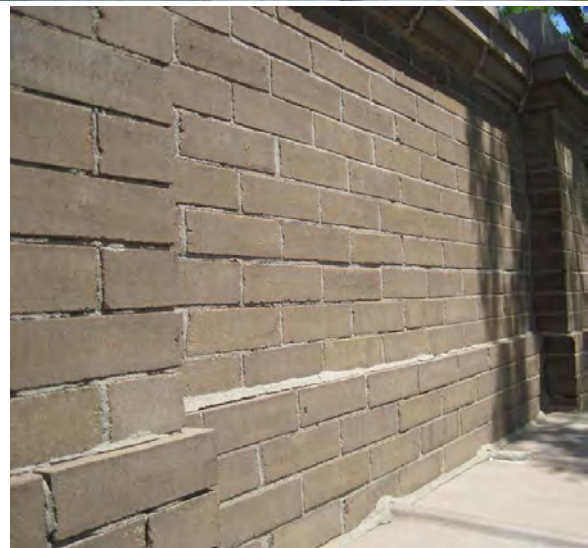
b. South elevation

- (1) General: This elevation is the front of the original building. Discussions will include the east and west portions of the entrance.



- (2) Parapets

- (a) Some parapets were accessed with a ladder
- (b) Eastern
 - i) Accessed with a ladder.
 - ii) Narrow mortar joints are weathered. Some pointing has failed. Watertable is in good condition, but some open joints were noted.



- iii) Pointing at base of parapet wall (at watertable) appears to be installed



improperly and holes were noted in mortar joints.



At top of wall (east central portion), open joints were noted from ladder.

- (c) Center section: Masonry appears to be in good condition, except for some open joints between the bricks and the inlaid panels and mortar joints.



- (d) Western parapet
 - i) Accessed with a ladder
 - ii) Narrow mortar joints are weathered.



Some pointing has failed. Watertable is in good condition, but some open joints were noted. Pointing at base of parapet wall (at watertable) appears to be installed improperly and holes were noted in mortar joints.



- iii) Displaced units were noted near the top of wall (photo right).



- iv) At top of wall (west central portion), open joints were noted from ladder (photo left).

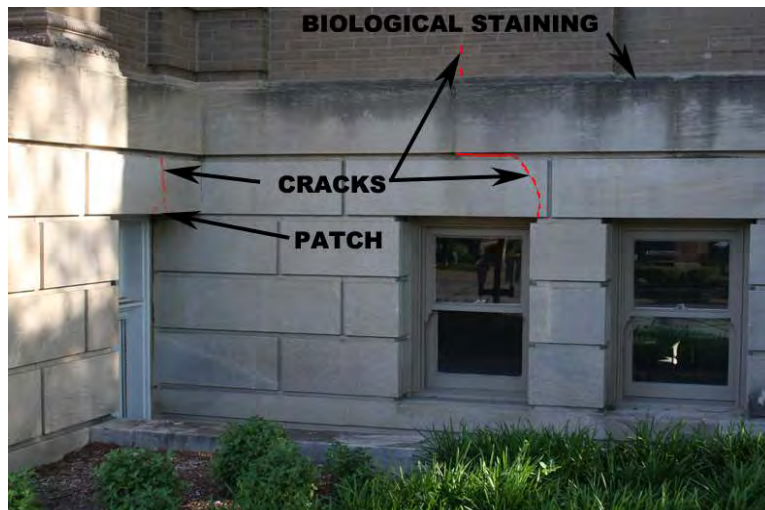


- (3) Eastern wall
 - (a) Looks relatively good, except for some biological staining below the window and along the top of the foundation wall. Some joint discoloration was

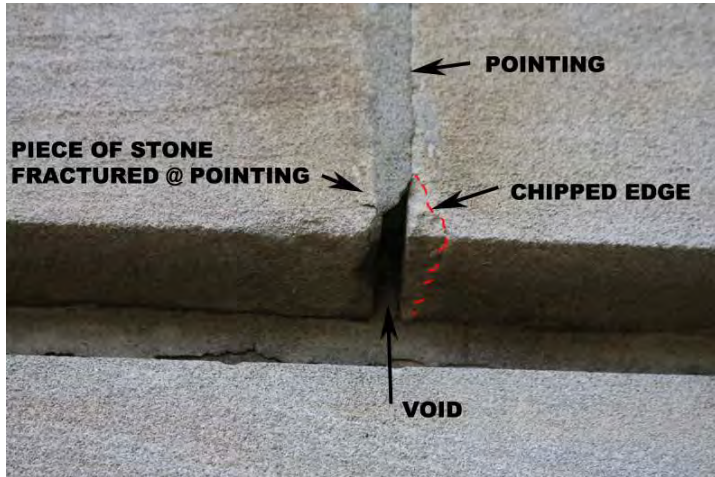


noted at upper left of window, suggesting a leak.

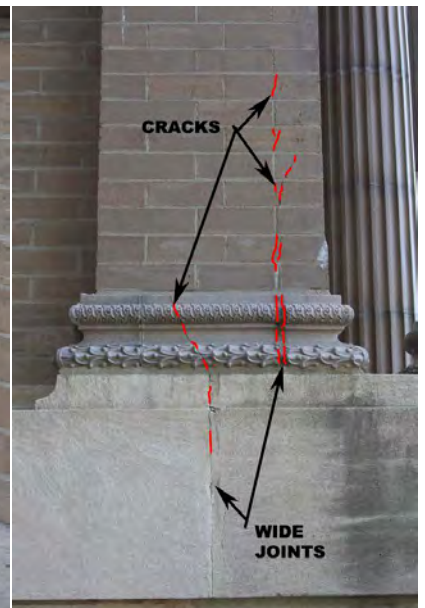
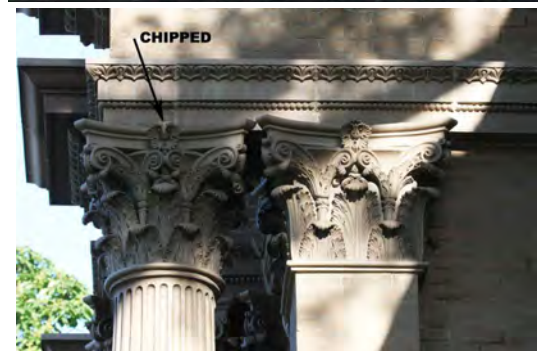
- (b) Signs of moisture coming through terra cotta joints were noted at the inside corner below the watertable.
- (c) Cracked lintels were noted at two basement openings. One crack extends up into the brick wall. Previous pointing and crack repairs,



near this location, are a concern. The pointing repair seems to be too shallow and as a result the edges of the stone foundation wall are cracked and chipped. Reference photos at the top of the next page. No guardrail at lower level stairwell.



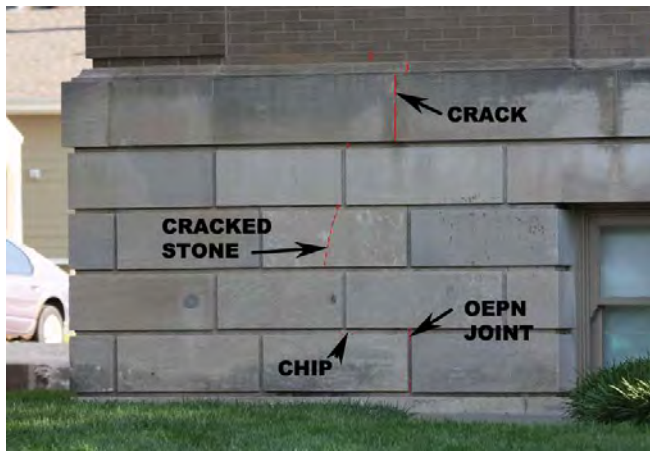
- (4) South Entrance
 - (a) The right terra cotta column capitals appear to be in excellent condition. One slightly chipped detail was noted.
 - (b) The base of the left wall corner is cracked on the west and south faces. Previous repairs have addressed the older cracks, but some cracks appear to be newer than the last repairs.



(c) The sills are also in good condition, except for a few broken terra cotta joint laps.

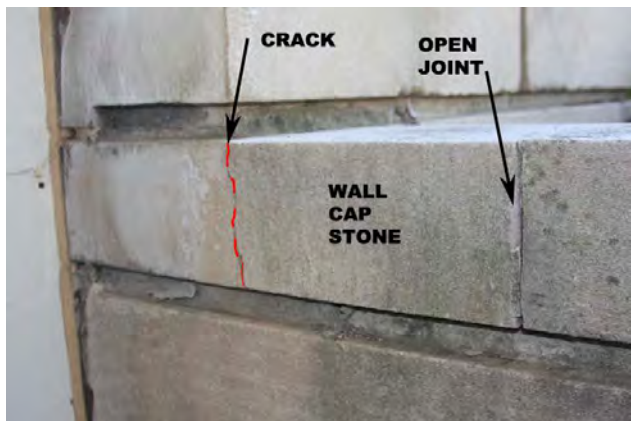


(5) Western wall
(a) Noted a few cracked joints and

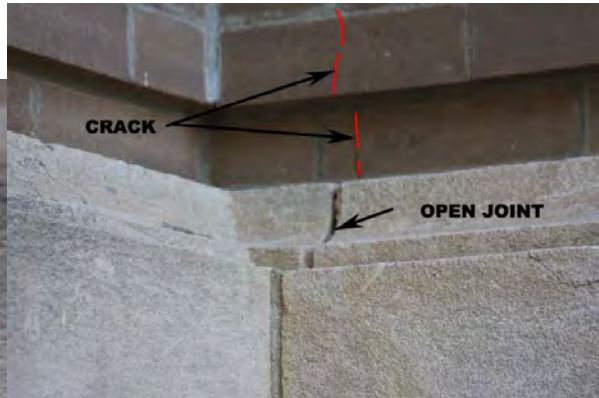


cracked stones in the foundation wall. Biological staining was also noted along the top of the foundation wall.

(b) Abandoned stairwell on the west side of the entrance has a bowed foundation wall. The top two courses are displaced and cracked. No guardrail at lower level stairwell.



(c) Cracks and open



joints were noted at the inside corner.

c. West elevation

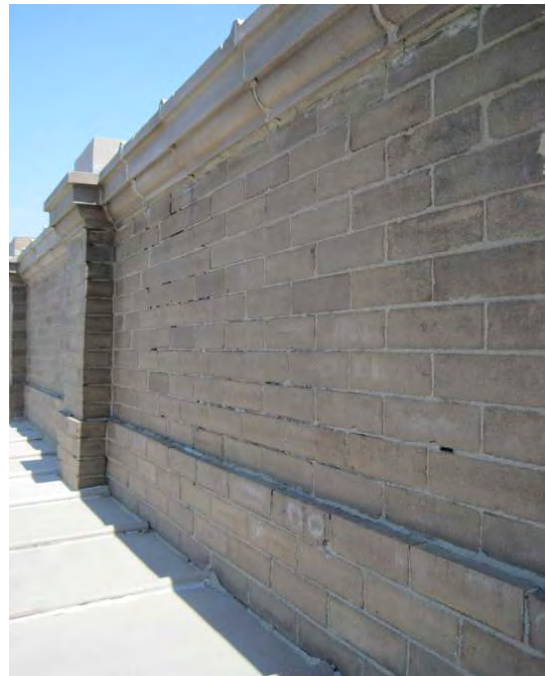
(1) General

(a) This elevation is left side of remaining original building and the west elevation of the 1937 Addition.

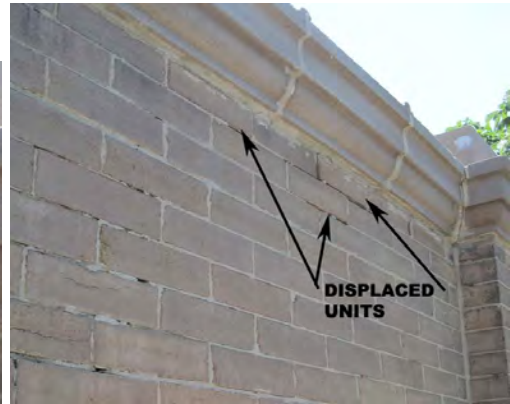
(b) Repaired movement cracks were noted.

(2) Original building parapet

(a) The parapet was accessed with a ladder
(b) Mortar joints appears to be deteriorated in several locations.

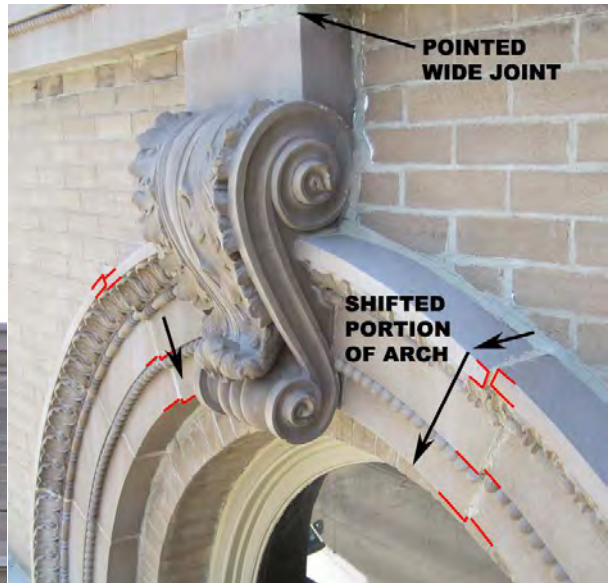


(c) Displaced bricks were



noted at another location.

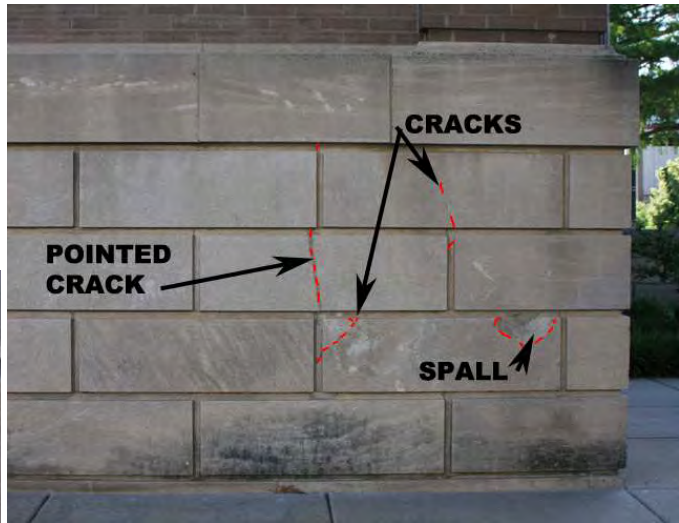
- (3) Original building foundation settlement:
(a) Displacement of arch stones at window head.
(b) Repaired crack at top of wall.



(c) Repaired crack in brick wall below window.



- (d) Cracks in foundation wall near corner and at basement window.



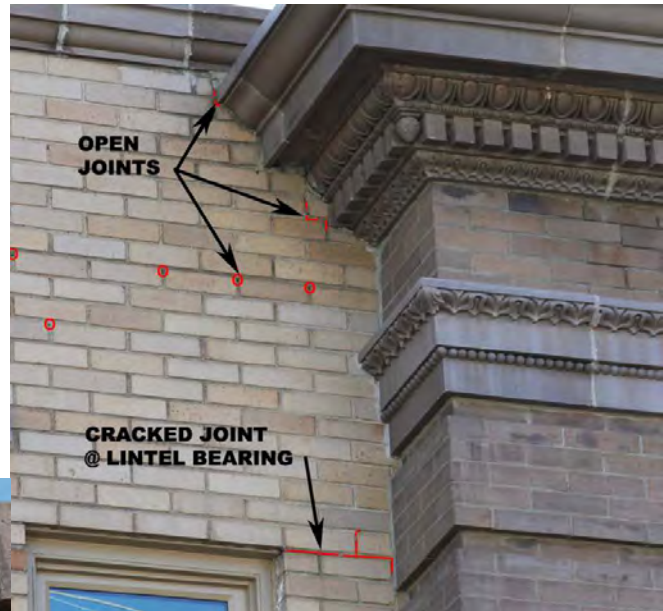
(4) 1937 Addition



- (a) Cracks noted at northwest corner
(b) Foundation was made with cast stone units. Two cast stone lintels are cracked and one of them sounds hollow (noted in photo).



- (c) Open mortar joints were noted in brick wall near original building's northwest corner. The mortar joint, at the lintel bearing, is cracked.
- (d) Deteriorated



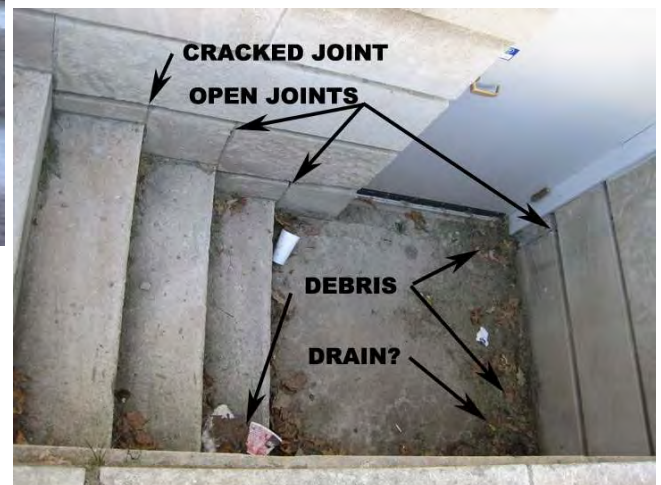
rowlock window sill and cracked joint at jamb were noted.

- (e) Cracked cast stone sill, at head of basement stair, is cracked
- (f) A stones in the stairwell

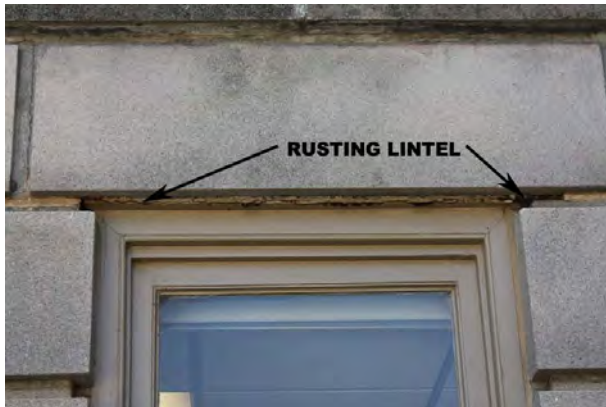


foundation wall is severely deteriorated.

- (g) Deterioration at base of stairwell was noted.



- d. North elevation
 - (1) 1937 Addition
 - (a) Western portion of elevation is partially visible from the northwest. Noted concerns were previously discussed.
 - (b) Eastern portion of north elevation is more visible from the northeast. Lintels were noted to be rusted along this elevation.



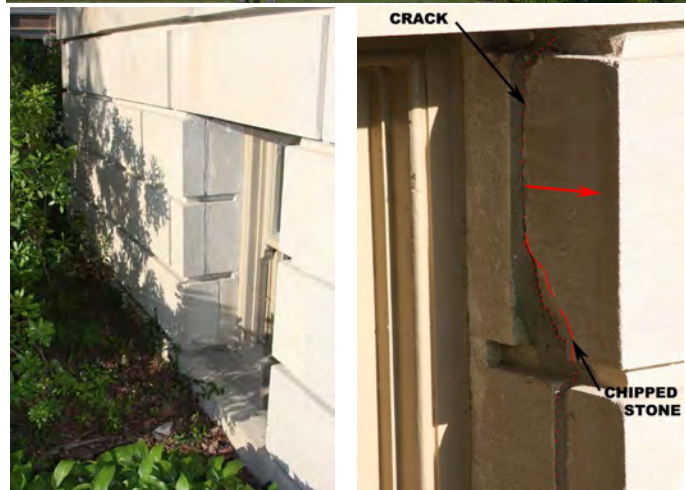
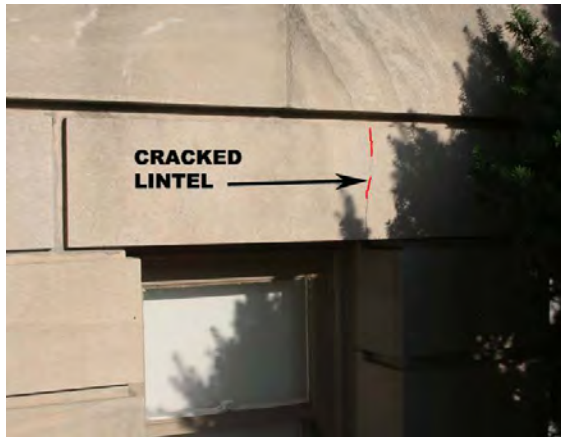
- (2) 2011 Addition: The foundation waterproofing has been improperly terminated above grade. This material will degrade with UV exposure.



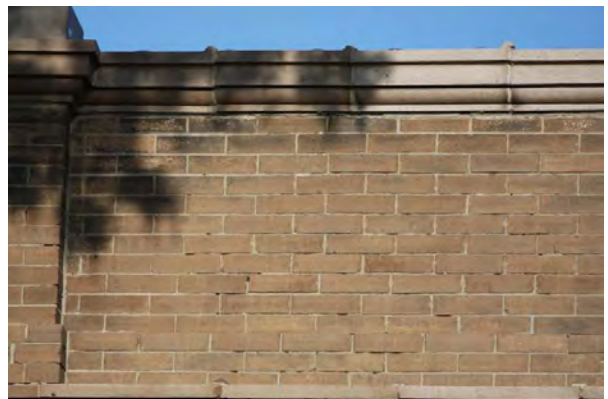
- e. East Elevation
 - (1) General: This elevation is right side of the remaining original building and the east elevation of the 1937 Addition.



- (2) Original building
 - (a) Cracked lintel was noted in the stone foundation wall.



- (b) Repaired jamb conditions were reviewed and previous repairs are cracked.
 - (c) Parapet wall is like the others, except only open mortar joints were noted.



- (d) Signs of moisture coming through terra cotta joints were noted at the inside corner below the watertable. Joints above need to be reviewed and repaired.



- (3) 1937 Addition: Deteriorated mortar joints at rowlock window sills and a cracked joint next to jamb were noted.



5. Site conditions

- a. Original south entrance stair walls: Some stones are cracked and deteriorated.



- b. Stone wall along walk at southeast corner.
(1) The wall extends a long ways to the corners beyond. No movement joints were noted, except for a resulting crack at the southeast corner.



- (2) South entrance stair walls: Some stones are deteriorated.



- c. Trees: The original building has two trees at the south elevation. The trees are located just off of the two corners about 16 to 17 feet (at about a 45 degree angle). The southeast tree is about 36 inches in diameter and the southwest tree is about 24 inches in diameter.



III. CONCLUSIONS AND RECOMMENDATIONS:

- A. Reroofing Project:** We understand that the relatively new roofing system has failed already and is scheduled to be replaced with a better roofing system. DGM Consultants has not evaluated the roofing. The following recommendations assume that this roofing project will be coordinated with the selected masonry repairs.

B. Leaning South Parapet Walls

1. These walls are leaning considerably. Without dismantling the walls completely one cannot be certain of what has caused these walls to lean backwards toward the roof. In our opinion, we suspect that the mortar joints on the roof side are severely deteriorated and have allowed the thicker joints to lose their ability to support the back of the wall. As the walls try to span to the corners horizontally, the joints open in the coping corners

as the walls lean.

2. Repair options
 - a. The long term solution:
 - (1) Dismantle these two leaning walls down to the top of the watertable. Salvage face brick and copings. Clean asphalt coating off of copings.
 - (2) Below watertable replace deteriorated masonry and point remaining joints on the roof side.
 - (3) Install flashing at the top of the watertable to receive counter flashing at the roofing base flashing.
 - (4) Rebuild the parapet walls with new backup bricks and salvaged face brick, including reinforcing and grout to strengthen the wall
 - (5) Flash the top of walls below the copings and include a stainless steel drip flashing on the roof side.
 - (6) Reinstall terra cotta copings.
 - (7) Leave the backs side of the new walls exposed so they can dry out from both sides.
 - b. Short term solution
 - (1) Remove roofing from back side of wall.
 - (2) Rake all mortar joints to the proper depth and point the joints properly.
 - (3) Remove asphalt coating from the face of wall and copings as best as possible.
 - (4) Remove deteriorated bricks from the top of wall and relay to provide a good base for the work above.
 - (5) Flash the top of walls below the copings and include a stainless steel drip flashing on the roof side.
 - (6) Reinstall terra cotta copings.
 - (7) Install a breathable metal panel system to deflect rain, but allow the masonry wall to dry out. This should be properly detailed to tie into the replaced roofing

C. Parapet Walls

1. Remaining parapet walls also need to be exposed on the back sides to allow the walls to dry out to reduce further damage. Based on the condition of the two south areas opened up, we assume that the backs of all walls are deteriorated and should be pointed. The tops of walls are also deteriorated based on the exposed portions and need to be rebuilt so that the top of wall can be flashed and the copings be reinstalled. The slight curvature of these walls is similar to that of the south walls, but is not expected to be as deteriorated. All walls should be reviewed to establish the full extent of the required repairs.
2. Repair options: The two options presented for the severely leaning walls could also be applied to all original building walls to produce the best solution for these severely exposed walls.

D. Copings

1. The original terra cotta coping material is in excellent condition. The finial pieces above the south entrance are in good conditions, but appear to be unstable as a result of joint deterioration.
2. The 1937 cast stone copings have not fared as well. About 50 percent of the 47 units are deteriorated as a result of freeze-thaw cycles. The cast stone units have lasted about 75 years and all units should be replaced.

3. Repairs
 - a. All terra cotta units: Carefully removed, cleaned, and salvaged for reinstallation. This included the finial pieces above the south entrance.
 - b. Cast stone units
 - (1) Option 1
 - (a) Replace all units with wet-cast air-entrained coping units that match the original profile. The top of the coping units should be treated with a clear breathable water-repellant every 10 years.
 - (b) Install units with movement joints every 10 feet and caulk all head joints with non-staining silicone sealant.
 - (2) Option 2
 - (a) Replace all units with Indiana limestone units milled to match the original profile. The top of the coping units should be treated with a clear breathable water-repellant every 10 years.
 - (b) Install units with movement joints every 10 feet and caulk all head joints with non-staining silicone sealant.
 - (3) Option 3
 - (a) Remove deteriorated units and install blocking, metal coping, and counter flashing to cover the brick wall above the adjacent 23 feet wide 2011 Addition connection roof.

E. Mortar Joints

1. The original building mortar joints are thin and have weathered the 108 plus years of exposure well. The severely weathered locations (especially the parapet walls) allow moisture to enter the walls and contribute to further deterioration of the masonry walls and possibly interior finishes.
2. The 1937 Addition has a few areas that need to be pointed to address holes and weathered joints.
3. Repairs: Point all deteriorated or improperly pointed mortar joints with the appropriate mortar according to Preservation Brief No. 2.

F. Cracked Lintels

1. Stone lintels in the original building that are cracked should be properly repaired and patched. Some cracked lintels have been repaired, but the method used has not been evaluated. The patching used at previous repairs may not be done with an appropriate material. Since these units are responsible for carrying a portion of the masonry wall above the opening they need to be structurally repaired and properly patched to help seal the crack.
2. Repair
 - a. Original building: Pin the stone to improve the structural capacity of the units, grout the crack, and patch the surface of the joint to keep moisture out of the wall.
 - b. 1937 Addition: Replace cracked units if they cannot be restored. Further investigation is needed to determine the cause of the spalling.

G. Cracked Masonry Walls

1. There are a few cracks in the masonry walls of both buildings. Most of the cracking appears to be a result of foundation movement or cracked lintels. Cracks in the masonry walls that are open will allow moisture to enter the wall and cause further deterioration.
 - a. The most severe crack is in the west wall of the original building and previous

- repair efforts have filled this crack. No subsequent movement was noted, but the displaced arch units above the window needs to be monitored.
- b. The crack at the northwest corner of the 1937 Addition appears to be the result of brick expansion and the lack of sufficient movement joints. This crack is presently open and should be addressed.
 - c. Other cracks noted in sills, jambs, and other localized conditions should be stabilized and repaired so that moisture cannot enter the wall through the cracks.
2. Repairs
 - a. Minor cracks in walls should be repaired after the cause of the movement has been addressed. Repairs include replacing the cracked masonry units and anchoring units that are not adequately anchored in the wall.
 - b. Original building: The previous repairs should be evaluated and necessary additional repairs made.
 - c. 1937 Addition: Install expansion joint to control movement near the corner and repair cracked corner.

H. Rusted Lintels

1. The rusted lintels on the 1937 Addition cannot be easily corrected without opening the wall up and replacing the lintel, which is not necessary now. The mortar at the lintel bearing conditions should be removed and the joint sealed to keep water out of the wall.
2. Repair
 - a. Remove mortar from in front of steel lintels, clean and prime steel, then caulk joint with a non-staining silicone sealant.
 - b. Clean, prime and paint all exposed portions of steel lintels.

I. Exposed Foundation Waterproofing

1. 2011 Addition: Review foundation waterproofing along the north wall of this addition and address the improperly terminated foundation waterproofing and ensure that it is not exposed to UV rays.
2. Repair
 - a. Adjust elevations of termination so it will be below grade and below the existing flashing and weeps.
 - b. Properly terminate rubberized asphalt membrane with a termination bar and seal the top of the termination bar with mastic.
 - c. Regrade mulch to adequately cover foundation waterproofing system.

J. Foundation Settlement

1. The two large trees on the south side of the building are likely desiccating the soil (drying it out) deep below the surface and even under the building beyond the tree's drip line. This in turn causes the soil to shrink and expand depending on the soil moisture content. The type of cracking on the west wall of the original building indicates that the corner of the building near the tree has settled enough to cause the southwest corner of the building to rotate southward, cracking the top of wall, opening the width of the window opening enough that the arch has partially failed, and cracking the wall below the window.
2. Repair
 - a. Option 1: Maintain consistent moisture content especially around trees.
 - b. Option 2: Remove trees

K. Stone Site Walls

1. The use of deicing salts has likely caused the stone deterioration at stone walls adjacent to site steps. The lack of movement joints in the long site walls at the southeast corner force the horizontal expansion in the wall to accumulate at the corner and crack the stones.
2. Repairs:
 - a. Stairwells: Replace deteriorated stone units and minimize the usage of deicing salts during the cold months.
 - b. Site walls: Install movement joints in the site wall and replace cracked units.

L. Guardrails at Stairwells: The stairwells may need new guardrails to protect these three locations. The two original stair wells along the south wall have not guardrails. Another option might be to install bushes to provide some protection. The north stairwell at the 1937 Addition provides some protection, but may need to be modified to infill large openings.

IV. PRIORITIES

A. Short Term

1. Remove unstable decorative finial units at the top of the south entrance wall and reinstall when wall below is repaired.
2. Prior to reroofing
 - a. Repair leaning walls.
 - b. Rebuild tops of all walls and reinstall terra cotta copings units and new cast units.
 - c. Coordinate flashing with flashing work proposed in roofing project.
3. Repair cracked lintels and cracked masonry walls.
4. Address foundation waterproofing exposure/termination concerns at north wall of 2011 Addition.

B. Long Term Repairs

1. Repair cracked lintels, sills, and cracked masonry walls.
2. Point parapet walls.
3. Point rest of building.
4. Evaluate south foundation movement and implement approved moisture stabilization plan then monitor foundation.
5. Repair site stone walls.
6. Review exterior lower level stairwells and repair cracked, deteriorated, and displaced stone units.
7. Review the stairwells and evaluate guardrail needs.

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Signed Donald G. McMican

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