KAESTLE BOOS
associates, inc

A D D E N D U M N O . 1

ROOF RPLMT | INSULATION | SPRINKLER |
INTERIOR WORK
TUTTLE BUILDING RENOVATIONS – PHASE I
Naugatuck, CT
KBA #15044.00

Date: September 14, 2016

The following changes to the Project Manual shall become a part of the Drawings, Specifications, Bidding Requirements and Contract Documents; superseding previously issued Drawings, Specifications, Bidding Requirements, Contract Documents and Addenda, to the extent modified by this Addendum.

CLARIFICATIONS
BID OPENING HAS BEEN EXTENDED TO WEDNESDAY, OCTOBER 5, 2016 AT 2:00 P.M.

LAST DAY TO RECEIVE RFIs – MONDAY, SEPTEMBER 26, 2016 – ALL REQUESTS FOR INFORMATION (RFI) – EMAILED OR FAXED TO THE ATTENTION OF AMY MORO AT AMORO@KBA-ARCHITECTS.COM

Mandatory Pre-Bid Conference Sign-In sheet, dated September 7, 2016.

CHANGES TO SPECIFICATIONS
BIDDING AND CONTRACT REQUIREMENTS
Invitation to Bid
Page 1, Paragraph 1
Bid Opening **Date change** to:
Wednesday, October 5, 2016 at 2:00 p.m.

Page 2, Paragraph 2
"All Requests for Information (RFI) are to be emailed or faxed to the attention of **Amy Moro** at **amoro@kba-architects.com** or faxed at (860) 229-5303 and James R. Stewart copied jstewart@naugatuck-ct.gov RFIs must be received by the Architect by **September 26, 2016 – Last day to receive RFIs."**

Instructions to Bidders, AIA Document A701
Article 3 – Bidding Documents
§ 3.2.2
Change the following to read:
"Bidders and Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a written request which must be received by the Architect **BY SEPTEMBER 26 2016 – LAST DAY TO RECEIVE REQUEST FOR INFORMATION (RFI'S).** Written requests shall be emailed or faxed to the attention of **Amy Moro at amoro@kba-architects.com** or faxed at (860) 229-5303 and James R. Stewart is to be copied jstewart@naugatuck-ct.gov"

Standard Form of Agreement Between Owner and Contractor, AIA Document A101
Article 3 – Date of Commencement and Substantial Completion
§ 3.1
Add the following:
90 calendar days, starting from Notice to Proceed.

A D D E N D U M N O . 1

ROOF RPLMT | INSULATION | SPRINKLER |
INTERIOR WORK
TUTTLE BUILDING RENOVATIONS – PHASE I
Naugatuck, CT
KBA #15044.00

Date: September 14, 2016

Form of Proposal
Delete in its entirety and replace with new "Form of Proposal", dated September 14, 2016 – Addendum No. 1, attached at the end of the Addendum.

TABLE OF CONTENTS
Add the following new Sections:
DIVISION 04 - MASONRY

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

DIVISION 01 – GENERAL REQUIREMENTS
Section 01 10 00 "Summary"
Paragraph 1.5, A.
Add subparagraph 1.

1. Substantial completion shall be 90 calendar days, starting from Notice to Proceed.

Section 01 23 00 "Alternates"
Paragraph 3.1
Add subparagraph D.

D. ADD Alternate No. 4: Slate Shingles.

1. Furnish and install slate shingles in lieu of asphalt shingles.
2. Delete asphalt shingle roofing material, plywood sheathing and 1 x 2 wood spacers, including Roof Type "C".
3. Furnish and install black slate shingles installed in the same proportion of straight edge and scalloped edge to match original existing slate design in accordance with Division 07 Section "Slate Shingles."
4. Delete pad style snow guards. Provide two rows of 3-bar brass snow guards with brackets at 30 inches on center, in accordance with Division 07 Section "Snow Guards."

DIVISION 04 – MASONRY
Add the following new Section in its entirety; attached at the end of this Addendum.
Section 04 01 20 "Maintenance of Unit Masonry"

Section 04 21 13 "Brick Masonry"
Delete Paragraph 1.2A.1 in its entirety.

Add the following new subparagraph 2 to Paragraph 1.2B:

2. Division 04 Section "Maintenance of Unit Masonry" for masonry repair, repointing and cleaning.

A D D E N D U M N O . 1

ROOF RPLMT | INSULATION | SPRINKLER |
INTERIOR WORK
TUTTLE BUILDING RENOVATIONS – PHASE I
Naugatuck, CT
KBA #15044.00

Date: September 14, 2016

DIVISION 06 – WOOD, PLASTICS AND COMPOSITES
Section 06 20 13 "Exterior Finish Carpentry"
Revise Paragraph 1.2A to read as follows:

A. This Section includes the following:

1. **Exterior wood trim and sills, including custom profiles at dormer windows.**
2. **Exterior wood trim at fascia and rakes, in custom profiles.**

Insert the following new Paragraph 1.3; renumber subsequent paragraphs accordingly:
1.3 UNIT PRICES

A. Work of this Section is affected by unit prices specified in Division 01 Section "Unit Prices."

1. Unit prices apply to additions to and deletions from Work as authorized by Change Orders.
2. Notify Architect weekly of extent of work performed that is attributable to unit prices.

DIVISION 07 – THERMAL AND MOISTURE PROTECTION
Add the following new Section in its entirety; attached at the end of this Addendum.
Section 07 31 26 "Slate Shingles"

Section 07 21 00 "Thermal Insulation"
Add the following new subparagraph 2 to Paragraph 1.2B:

2. **Division 01 Section "Alternates" for bidding requirements of this Section.**

Section 07 31 13 "Asphalt Shingles"
Add the following new subparagraph 1 to Paragraph 1.5A:

1. **Installer must have experience on at least one similar historic renovation / roofing project.**

Section 07 55 52 "Modified Bituminous Membrane Roofing"
Revise Paragraph 1.6A to read as follows:

A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty; **and has applied similar roofing systems on two or more projects which have been completed for more than five years**.

Section 07 72 53 "Snow Guards"
Delete Section in its entirety and replace with revised Section attached at the end of this Addendum.

DIVISION 08 – OPENINGS
Section 08 03 14 "Historic Treatment of Wood Doors"

A D D E N D U M N O . 1

ROOF RPLMT | INSULATION | SPRINKLER |
INTERIOR WORK
TUTTLE BUILDING RENOVATIONS – PHASE I
Naugatuck, CT
KBA #15044.00

Date: September 14, 2016

In Paragraph 1.2A, change the word "exterior" to "interior".

Section 08 11 13 "Hollow Metal Doors and Frames"
Add the following new subparagraph to Paragraph 1.2B:

3. Division 01 Section "Alternates" for bidding requirements of this Section.

Revise Paragraph 2.2B.3.b as follows:

a. Construction: **Knocked down.**

Section 08 14 33 "Stile and Rail Wood Doors"
Revise Paragraph 1.2A.1 to read as follows:

1. Exterior stile and rail wood door, **at basement**.

Delete the words "and interior" from Paragraph 2.1A.
Delete Paragraph 2.1A.1 in its entirety.
Revise Paragraph 2.3A to read as follows:

B. Exterior Stile and Rail Wood Doors: Exterior custom doors complying with the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards" and with other requirements specified.

1. Products: Subject to compliance with requirements, provide products by one of the following:

a. Artistic Doors and Windows, Inc.
b. Chautauqua Woods.
c. East Coast Custom Doors, subsidiary of Precision Millwork, Inc.
d. Upstate Door.

DIVISION 09 – FINISHES
Section 09 01 20.91 "Plaster Repair"
Add the following new subparagraph 2 to paragraph 1.2B:

2. Division 01 Section "Alternates" for bidding requirements of this Section.

Add the following new Paragraph D to Paragraph 1.5:

D. Qualification Data: For qualified installer with experience of at least one similar historic renovation project.

DIVISION 10 – SPECIALTIES
Section 10 28 00 "TOILET AND BATH ACCESSORIES"
Delete Paragraph 2.2C in its entirety.
Delete Paragraph 2.2G in its entirety.

KAESTLE BOOS
associates, inc

A D D E N D U M N O . 1

ROOF RPLMT | INSULATION | SPRINKLER |
INTERIOR WORK
TUTTLE BUILDING RENOVATIONS – PHASE I
Naugatuck, CT
KBA #15044.00

Date: September 14, 2016

CHANGES TO DRAWINGS

A0.00 OVERALL FLOOR PLANS
On 1/A0.00 revise note, "PROVIDE NEW DOOR TO FIT EXISTING OPENING. SEE 14/A4.01 FOR DOOR ELEVATION AND ADDITIONAL INFORMATION." to "PROVIDE NEW DOOR TO FIT EXISTING OPENING. SEE 14/A4.01 FOR DOOR ELEVATION AND ADDITIONAL INFORMATION. SEE HARDWARE SET B1."
On 1/A0.00 as Hardware Set B1, see sketch SKA-1.02
On 2/A0.00 move hatch for plaster repair, see SKA-1.01.

A1.01 THIRD FLOOR INSULATION PLAN & EXISTING CONDITIONS ALTERNATE #1
On Third Floor Key Plan revise note, "REMOVE EXISTING DOOR FRAME AND INSTALL NEW INSULATED EXTERIOR DOOR AND FRAME W/ WEATHER STRIPPING & HARDWARE. (DIMENSIONS TO BE VERIFIED IN FIELD)" to "REMOVE EXISTING DOOR FRAME AND INSTALL NEW INSULATED EXTERIOR DOOR AND FRAME W/ WEATHER STRIPPING & HARDWARE, SEE HARDWARE SET T1. (DIMENSIONS TO BE VERIFIED IN FIELD)"
On Third Floor Key Plan add Hardware Set T1, see sketch SKA-1.02

A1.02 THIRD FLOOR INSULATION PLAN & EXISTING CONDITIONS ALTERNATE #1
On Third Floor Key Plan revise note, "REMOVE EXISTING DOOR FRAME AND INSTALL NEW INSULATED EXTERIOR DOOR AND FRAME W/ WEATHER STRIPPING & HARDWARE. (DIMENSIONS TO BE VERIFIED IN FIELD)" to "REMOVE EXISTING DOOR FRAME AND INSTALL NEW INSULATED EXTERIOR DOOR AND FRAME W/ WEATHER STRIPPING & HARDWARE, SEE HARDWARE SET T1. (DIMENSIONS TO BE VERIFIED IN FIELD)"
On Third Floor Key Plan add Hardware Set T1, see sketch SKA-1.02

A3.02 ROOF PLAN
On Roof Construction Type C revise note "MODIFIED BITUMEN ROLLED MEMEBRANE WITH GRANULATED CAP SHEET (COLOR TO MATCH NEW ASPHALT SHINGLES) ON ½" EXP-1 GRADE PLYWOOD ON AIRSPACE WITH NON-CONTINUOUS 1"x2"x3' MAX. WOOD SPACERS @ 12" O.C. ON EXISTING WOOD PLANK DECK TO REMAIN." to "MODIFIED BITUMEN ROLLED MEMEBRANE WITH GRANULATED CAP SHEET (COLOR TO MATCH NEW ASPHALT SHINGLES) ON ¼" PRIME DENS-DECK ON ½" EXP-1 GRADE PLYWOOD ON AIRSPACE WITH NON-CONTINUOUS 1"x2"x3' MAX. WOOD SPACERS @ 12" O.C. ON EXISTING WOOD PLANK DECK TO REMAIN."

A4.01 LARGE SCALE PLANS
On 4/A4.01 add note, "REPAIR EXISTING HINGES TO BE OPERATIONAL. PROVIDE TEMPORARY DOORS AS REQUIRED TO SECURE BUILDING. SEE HARDWARE SET M1."
On 4/A4.01 add Hardware Set M1, see sketch SKA-1.02
On 5/A4.01 revise note, "PROVIDE NEW LEVER HANDLE ON EXISTING DOOR." to "PROVIDE NEW LEVER HANDLE ON EXISTING DOOR, SEE HARDWARE SET M2."
On 5/A4.01 add Hardware Set M2, see sketch SKA-1.02

A D D E N D U M N O . 1

ROOF RPLMT | INSULATION | SPRINKLER |
INTERIOR WORK
TUTTLE BUILDING RENOVATIONS – PHASE I
Naugatuck, CT
KBA #15044.00

On 5/A4.01 add note, "NOTE: REMOVE, SALVAGE AND RE-INSTALL THE FOLLOWING TOILET ROOM ACCESSORIES, MIRROR, SOAP DISPENSER, AND PAPER TOWEL DISPENSER."
On 5/A4.01 revise note, "24" M.W.F." to "EXISTING M.W.F."
On 5/A4.01 revise note, "INSTALL NEW WATERCLOSEST" to "INSTALL NEW WATER CLOSET"
On 14/A4.01 revise note, "NOTE: MODIFY EXISTING TRIM AS REQUIRED TO RE-SWING NEW DOOR IN EXISTING FRAME INCLUDING BUT NOT LIMITED TO MODIFICATIONS NEEDED FOR THE STOPS AND THE STRIKE. CONTRACTOR TO SALAVAGE EXISTING DOOR TO MATCH STICKING/PANEL PATTERN TO BE REPLICATED IN NEW SOLID DOOR." to "NOTE: REMOVE EXISTING TRIM AND FRAME. CONTRACTOR TO SALAVAGE EXISTING DOOR TO MATCH STICKING/PANEL PATTERN TO BE REPLICATED IN NEW SOLID DOOR. REPAIR DAMAGED EXISTING FRAME AS REQUIRED TO INSTALL NEW DOOR. SEE DETAIL 17/A4.01 FOR MORE INFORMATION"
On A4.01 add detail 17, see sketch SKA-1.03
On Toilet Plan Legend revise note 1, "TOILET PAPER DISPENSER, PAPER TOWEL DISPENSER, AND SOAP DISPENSER SHALL BE FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR" to "UNLESS NOTED OTHERWISE, ALL TOILET ROOM ACCESSORIES ARE TO BE FURNISHED AND INSTALLED BY CONTRACTOR."

ATTACHMENTS
Bid Questions and Responses:
RRFI #1

Mandatory Pre-Bid Conference Sign-In sheet, dated September 7, 2016
Form of Proposal, dated September 14, 2016 – Addendum No. 1
SKA-1.01
SKA-1.02
SKA-1.03

Specifications:
Section 04 01 20 "Maintenance of Unit Masonry dated September 14, 2016, a total of 19 pages.
Section 07 31 26 "Slate Shingles" dated September 14, 2016, a total of 8 pages.
Section 07 72 53 "Snow Guards" dated September 14, 2016, a total of 3 pages.

RFI #1

From: GENNARINICONSTCO@aol.com [mailto:GENNARINICONSTCO@aol.com]
Sent: Wednesday, September 14, 2016 11:30 AM
To: rkirby@kba-architects.com
Cc: jstewart@naugatuck-ct.gov
Subject: Tuttle - RFI

Please clarify the following:

1. What is the project time frame - is there a completion date and/or specific duration?
2. What is the hardware that is required for the new doors?
3. What is the extent of the Toilet and Bath Accessories?

thank-you

Gennarini
Construction Company Inc.
25 Maple Street
Bridgeport, CT 06608
(203) 366-8957
(203) 333-0351 FAX
Affirmative Action / Equal Opportunity Employer

RESPONSES BY KBA:

1. PLEASE SEE ADDENDUM #1
2. PLEASE SEE ADDENDUM #1
3. PLEASE SEE ADDENDUM #1

(MANDATORY) PRE-BID CONFERENCE - 11:00 A.M. - Wednesday, September 7, 2016

TUTTLE BLDG. RENOVATIONS - PHASE I -| ROOF RPLMT| INSULATION |SPRINKLER | INTERIOR WORK | - NAUGATUCK CT

COMPANY NAME	(PLEASE PRINT) REPRESENTATIVE NAME	(PLEASE PRINT) COMPANY ADDRESS	(PLEASE PRINT) TELEPHONE NUMBER	(PLEASE PRINT) FAX NUMBER	(PLEASE PRINT) EMAIL
ALDEN BAILEY RESTORATION CORP	GLENN CROOKER SR	54 DANBURY RD RIDGEFIELD CT 06877	888 291 7126	SAME	GLENN SR @ ALDEN BAILEY. COM
Silltown Roofing	Voytek Florkiewicz	151 Water St Derby CT 06418	203 7350552	203 732 7649	Voytek @ silltownroofing.com
Greenwood Industries	Jim Ryan	86A Leonardo Dr North Haven, CT 06473	774-248-1059	-	jryan@greenwood-industries.com
A. Secondino and Son	Dave Secondino	21 Thorn Road Branford, CT 06471	203-481-3496	-	dave@asecondinoandson.com
G. DONOVAN	Scott DONOVAN	P.O. Box 247 Lebanon, CT 06249	860-642-0700 X30	860-642 7994	SCOTT@gdonovan.com
JOHN GENNARINI	GENNARINI CONST	25 MAPLE St. Bpt Ct 06608	203 366-8957	203 333-0351	GENNARINI CONST CO @ AOL.COM
American Integrity Bill Pacelia	Bill Pacelia American Integrity	60 Village #1 Glastonbury	860-657-2100		bpacelia @ lcallair.com
Brown Roofing	James McDermott	P.O. Box 1171 Naugatuck	203-723-1372	Same	brownroofingct@gmail.com
LEED CONSTRUCTION	JAMES BURNS	138 Long Hill Rd Wallingford, CT	203-631-8612	11	Leed construction @ comcast.Net.
FRANK ETTORE SHOEMAKER RESTORATION	FRANK	136 TYLER ST EAST HAVEN	203 627 7182	203 469 0100	Shoemakerrestoration@comcast.net
M-D-M Engineering	Robert MASON	244 Upton Rd COLCHESTER	608-450-8934	-	MDMENGINC@YAHOO.COM

(MANDATORY) PRE-BID CONFERENCE - 11:00 A.M. - Wednesday, September 7, 2016

TUTTLE BLDG. RENOVATIONS - PHASE I -| ROOF RPLMT| INSULATION |SPRINKLER | INTERIOR WORK | - NAUGATUCK CT

COMPANY NAME	(PLEASE PRINT) REPRESENTATIVE NAME	(PLEASE PRINT) COMPANY ADDRESS	(PLEASE PRINT) TELEPHONE NUMBER	(PLEASE PRINT) FAX NUMBER	(PLEASE PRINT) EMAIL
YOUNG DEVELOPERS	ROBERT REJNIN	42 CRESTWAY, SUITE A HAMDEN, CT 06514	860 966 1722	888-503-2508	ROBERTYDRS@YAHOO.COM
~~Hart~~ Tuttle Brothers	Ned Tuttle	66 New Britain, Rocky Hill CT 06067	860 563 9328	860 563 1509	Neda@Tuttlebrothers.Com

FORM OF PROPOSAL

TUTTLE BUILDING RENOVATIONS – PHASE I
ROOF REPLACEMENT, INSULATION, SPRINKLER, INTERIOR WORK
NAUGATUCK, CT

TO: Mr. James R. Stewart, P.E. – Director of Public Works
c/o Ms. Wendy Hozer, Purchasing Agent
Purchasing Office, Naugatuck Town Hall
229 Church Street
Naugatuck, CT 06770

Pursuant to and in compliance with your "Invitation to Bid" relating thereto, the undersigned,

_____
(Name of Firm)

having visited the site and carefully examined the Drawings, Bidding Documents and complete Specifications **dated August 30, 2016** together with all Addenda issued and received prior to scheduled closing time for recipient of Bids as prepared by the Architects, KAESTLE BOOS ASSOCIATES, INC., 416 Slater Road, New Britain, Connecticut, hereby offers and agrees as follows:

To provide all labor, materials, and all else whatsoever necessary to erect and properly finish all work in connection with the

TUTTLE BUILDING RENOVATIONS – PHASE I
ROOF REPLACEMENT, INSULATION, SPRINKLER, INTERIOR WORK
NAUGATUCK, CT

to the satisfaction of the Architect and Owner for the sum of:

_____($_____)

to provide all labor, materials, and all else whatsoever necessary to construct all improvements described in the specifications.

If awarded this Contract, we will execute a Contract with the **Borough of Naugatuck,** Owner of the property.

Prior to awarding of this Contract, the apparent low bidder will be required to submit the names of subcontractors for Roofing, Plaster Repair and Sprinkler System within 96 hours for Owner to review their qualifications. Any failure to provide this information will be grounds for disqualification.

UNIT PRICES

Should the amount of improvements required be increased or decreased due to special considerations found at the site or because of a request of the **Borough of Naugatuck,** the undersigned agrees that the following supplemental UNIT PRICES will be the basic price in place for computing the EXTRA or CREDIT.

Each UNIT PRICE shall include all equipment, tools, labor, permits, fees, etc., incidental to the installation and completion of the work involved.

The amounts shown are net changes to the Contract for additional work and include the Contractor's and any Subcontractor's amounts for overhead and profit. For deleted work, the net credit to the Contract shall be 10% less.

All work is to be accomplished in accordance with applicable Sections of the Specifications.

C.Y. = cubic yard	S.F. = square foot
S.Y. = square yard	V.F. = vertical foot
L.F. = linear foot	EA = Each

ITEMS

1. Roof Decking – Remove and replace wood plank roof deck to match existing. $_____/S.F.

2. Wood Trim – Remove and replace wood trim with profile and paint to match existing at roof edge. Detail A/A3.01. $_____/L.F.

3. Wood Fascia – Remove and replace wood fascia with profile to match existing at roof edge. Detail B/A3.01. $_____/L.F.

4. Masonry Restoration – Remove and replace damaged brick and mortar joints. $_____/S.F.

5. Clean Brick Joints and Repoint Mortar Joints – Clean brick joints and repoint mortar joints to match existing. $_____/S.F.

6. Historic Decorative Clay Ridge Caps – Furnish and install historic decorative clay ridge caps. Detail C/A3.01. $_____/L.F.

7. Attic/Third Floor Patching – Attic/Third Floor patching (similar to what is shown for patch openings). Detail 15/A4.01. $_____/S.F.

8. Patch Existing Plaster – Patch existing plaster (patch to match) on first floor ceilings. Paint patched area. $_____/S.F.

9. Floor Openings – Close floor openings with shaft wall construction. Details B/A1.03 – B/A1.04. $_____/S.F.

10. Sprinkler Heads – Provide and install additional sprinkler heads in concealed and or confined spaces including but not limited to piping, fittings, valves, etc. above that which is indicated on the drawings. $_____/EA.

11. Sprinkler Heads – Provide and install additional sprinkler heads throughout the building in non-concealed spaces but not limited to piping, fittings, valves, etc. above that which is indicated on the drawings. $_____/EA.

12. Open Junction Boxes – Provide and install junction box covers on existing open junction boxes throughout the building. The exact locations of existing open junction boxes shall be field verified. $_____/EA.

ALLOWANCES

1. Allowance No. 1: Remove and replace 600 square feet of wood plank roof deck to match existing. $_____

2. Allowance No. 2: Remove and replace 150 linear feet of wood trim with profile and paint to match existing at roof edge. Detail A/A3.01 $_____

3. Allowance No. 3: Remove and replace 150 linear feet of wood fascia with profile and paint to match existing at roof edge. Detail B/A3.01. $_____

4. Allowance No. 4: Remove and replace 10 square feet of damaged brick and mortar joints. $_____

5. Allowance No. 5: Clean 20 square feet of brick joints and repoint mortar joints to match existing. $_____

6. Allowance No. 6: Furnish and install 15 linear feet of historic decorative clay ridge caps. Detail C/A3.01. $_____

7. Allowance No. 7: 100 square feet for Attic/Third floor patching (Similar to what is shown for patch openings.) Detail 15/A4.01. $_____

8. Allowance No. 8: 100 square feet patch existing plaster (patch to match) on first floor ceilings. Paint patched area. $_____

9. Allowance No. 9: Five (5) openings – 4 square feet opening. Close floor openings with shaft wall construction. Details B/A1.03 – B/A1.04. $_____

10. Allowance No. 10: The contractor shall carry an allowance for providing and installing an additional five (5) sprinkler heads in concealed and or confined spaces including but not limited to piping, fittings, valves, etc. above that which is indicated on the drawings. $_____

11. Allowance No. 11: The Contractor shall carry an allowance for providing and installing an additional five (5) sprinkler heads throughout the building in non-concealed spaces but not limited to piping, fittings, valves, etc. above that which is indicated on the drawings. $_____

12. Allowance No. 12: The Contractor shall carry an allowance for providing and installing twelve (12) junction box covers to be installed on existing open junction boxes throughout the building. The exact locations of existing open junction boxes shall be field verified. $_____

ALTERNATES

The undersigned Bidder further proposed and agrees that should the following Alternates be accepted and included in the Contract, the amount of the Lump sump Bid, as heretofore stated, shall be adjusted by the amount of said Alternates. All materials and workmanship shall be in strict accordance with the Drawings and specification and shall be in place prices.

Alternate No. 1: Attic Insulation and Existing Conditions

1. Provide all work at Third Floor and Attic as indicated on Drawings A1.01, A1.02, A1.03 and A1.04.
2. Furnish and install blown-in cellulose insulation in attic areas indicated, in accordance with Division 07 Section "Thermal Insulation."

Add $_____

Alternate No. 2: Plaster Repair

1. Remove and repair damaged plaster ceiling in locations indicated on Main and Second Floors in accordance with Division 09 Section "Plaster Repair."

Add $_____

Alternate No. 3: Wood Windows

1. Remove and dispose of existing windows located in the third floor dormers, a total of four units, and replace with new double hung wood windows according to details and Division 08 Section "Wood Windows."

Add $_____

Alternate No. 4: Slate Shingles

1. Furnish and install slate shingles in lieu of asphalt shingles.
2. Delete asphalt shingle roofing material, plywood sheathing and 1 x 2 wood spacers, including Roof Type "C".
3. Furnish and install black slate shingles installed in the same proportion of straight edge and scalloped edge to match original existing slate design in accordance with Division 07 Section "Slate Shingles."
4. Delete pad style snow guards. Provide two rows of 3-bar brass snow guards with brackets at 30 inches on center, in accordance with Division 07 Section "Snow Guards."

Add $_____

CONTRACT TIME

The undersigned Bidder hereby certifies that Substantial Completion and Final Completion will be achieved in accordance with the time designated in the General Conditions of the Contract for Construction.

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work. The Bid includes Addenda listed below and they are hereby acknowledged:

Addendum No. # _____ Dated _____

Addendum No. # _____ Dated _____

Addendum No. # _____ Dated _____

ATTACHMENTS
Enclosed herewith, is the Bid Security which is in the form of:

Bid Bond ( ) Certified Check ( )

In the Amount of

$_____Dollars

SIGNATURE

_____
Contractor Firm

_____
Authorized Signature

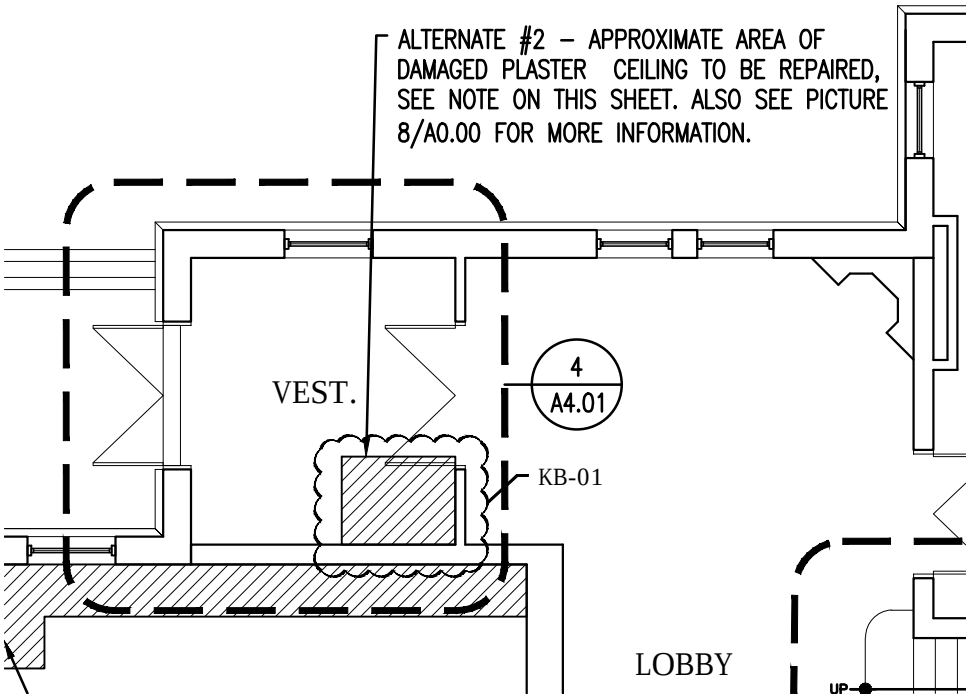
_____
Printed Name and Title

_____
Business Address

_____
City and State

_____
Telephone Number

_____
Telephone Fax Number



2 MAIN LEVEL FLOOR PLAN

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

KAESTLE BOOS associates, inc

416 Slater Road, P.O. Box 2590
New Britain, CT 06050-2590
Ph: 860-229-0361 ▲ F: 860-229-5303

325 Foxborough Boulevard, Suite 100
Foxborough, MA 02035
Ph: 508-549-9906 ▲ F: 508-549-9907

Email: kba@kba-architects.com
Web: www.kba-architects.com

CONSULTANT:

PROJECT:
TUTTLE BUILDING RENOVATIONS

THIS SKETCH TO BE READ IN CONJUNCTION WITH THE CONTRACT DOCUMENTS

SKETCH GENERATED FOR:

ADDENDUM	R.R.F.I.	A.S.I.	P.R.	C.C.D.
KB-01	-	-	-	-

REFERENCE DETAIL/SHEET: 2/A0.00

TITLE: MAIN LEVEL FLOOR PLAN
PLASTER REPAIR AREA

DATE: 9/12/16 | DRAWN: AMR | DRAWING NO.: SKA-1.01

SCALE: 1/8"=1'-0" | PROJECT NO.: 15044.00

HARDWARE SET B1:

3 Hinge, Ball Bearing	BB1199 x STEEPLE TIP – 4.5 x 4.5 – US10B – NRP	Hager
1 Lockset, Storeroom/Closet	ML2057 – NSA – 613– M17	Corbin–Russwin
1 Closer, Overhead Parallel Arm	UNI – 7500 – 689 (P. Stop 90 To 110 Degrees)	Norton
1 Weatherstrip	316AS – 42.5" x 80"	Pemko
1 Threshold	278x224BFGT x 42.5"	Pemko

1 1/A0.00

HARDWARE SET M1:
HEADING NOTES
REMOVE EXISTING HINGES, REFURBISH AND REINSTALL.
BALANCE OF EXISTING HARDWARE TO REMAIN.

2 4/A4.01

HARDWARE SET M2:
1 LOCKSET, PRIVACY CL3820 – NZD – 613 CORBIN–RUSSWIN
HEADING NOTES
REMOVE EXISTING LOCKSET, FURNISH AND INSTALL NEW LOCKSET, MODIFY DOOR AS REQUIRED TO ACCEPT NEW LOCK.
REFURBISH EXISTING FRAME INCLUDING MODIFYING STRIKE PLATE PREP. AND FILLING ALL EXISTING ORIGINAL HARDWARE PREPS.

3 5/A4.01

HARDWARE SET T1:

3 Hinge, Ball Bearing	BB1279 – 4.5 x 4.5 – US10A – NRP	Hager
1 Lockset, Storeroom/Closet	ML2057 – NSA – 613– M17	Corbin–Russwin
1 Closer, Overhead Parallel Arm	CLP–7500 – 689 – SN (Sex Bolt) (Set Stop Arm at 90 Degrees)	Norton
1 Weatherstrip	316AS – 42.5" x 80"	Pemko
1 Threshold	278x224AFGT x DOOR WIDTH "VIF"	Pemko

4 KEY PLAN/A1.01 & A1.02

KAESTLE BOOS associates, inc

416 Slater Road, P.O. Box 2590
New Britain, CT 06050-2590
Ph: 860-229-0361 ▲ F: 860-229-5303

325 Foxborough Boulevard, Suite 100
Foxborough, MA 02035
Ph: 508-549-9906 ▲ F: 508-549-9907

Email: kba@kba-architects.com
Web: www.kba-architects.com

CONSULTANT:

PROJECT:
TUTTLE BUILDING RENOVATIONS

THIS SKETCH TO BE READ IN CONJUNCTION WITH THE CONTRACT DOCUMENTS

SKETCH GENERATED FOR:

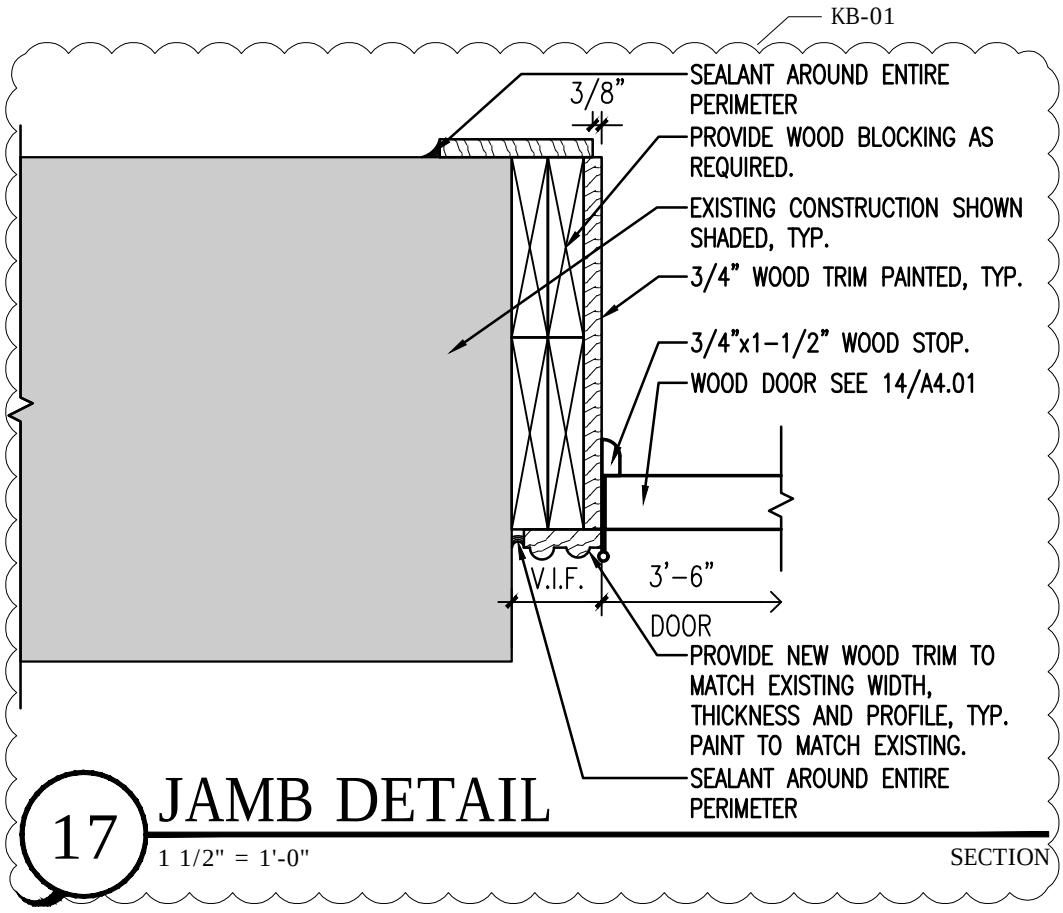
ADDENDUM	R.R.F.I.	A.S.I.	P.R.	C.C.D.
KB-01	-	-	-	-

REFERENCE DETAIL/SHEET: -

TITLE: DOOR HARDWARE SETS

DATE: 9/15/16 | DRAWN: AMR | DRAWING NO.: SKA-1.02

SCALE: NOT TO SCALE | PROJECT NO.: 15044.00



17 JAMB DETAIL

1 1/2" = 1'-0"

SECTION

KAESTLE BOOS associates, inc

416 Slater Road, P.O. Box 2590
New Britain, CT 06050-2590
Ph: 860-229-0361 ▲ F: 860-229-5303

325 Foxborough Boulevard, Suite 100
Foxborough, MA 02035
Ph: 508-549-9906 ▲ F: 508-549-9907

Email: kba@kba-architects.com
Web: www.kba-architects.com

CONSULTANT:

PROJECT:
TUTTLE BUILDING RENOVATIONS

THIS SKETCH TO BE READ IN CONJUNCTION WITH THE CONTRACT DOCUMENTS

SKETCH GENERATED FOR:

ADDENDUM	R.R.F.I.	A.S.I.	P.R.	C.C.D.
KB-01	-	-	-	-

REFERENCE DETAIL/SHEET: 17/A4.01

TITLE: JAMB DETAIL

DATE: 9/15/16 | DRAWN: AMR | DRAWING NO.: SKA-1.03

SCALE: 1-1/2"=1'-0" | PROJECT NO.: 15044.00

SECTION 04 01 20 – MAINTENANCE OF UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

A. This Section includes the following:

1. Maintenance of unit masonry consisting of brick masonry restoration and cleaning as follows:

    a. Repairing unit masonry, including replacing units.
    b. Rebuild areas of deteriorated brick, including reuse of existing salvaged brick.
    c. Repointing joints.
    d. Cleaning exposed unit masonry surfaces.

B. Related Sections:

1. Division 04 Section "Brick Masonry" for new clay masonry construction.
2. Division 07 Section "Sheet Metal Flashing and Trim" for metal flashing installed in or on restored clay masonry.

1.3 UNIT PRICES

A. Work of this Section is affected by unit prices specified in Division 01 Section "Unit Prices."

1. Unit prices apply to additions to and deletions from Work as authorized by Change Orders.

1.4 DEFINITIONS

A. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm.

B. Medium-Pressure Spray: 400 to 800 psi; 4 to 6 gpm.

C. Saturation Coefficient: Ratio of the weight of water absorbed during immersion in cold water to weight absorbed during immersion in boiling water; used as an indication of resistance of masonry units to freezing and thawing.

1.5 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Owner will engage a qualified testing agency to perform preconstruction testing on masonry units as follows.

1. Provide test specimens as indicated and representative of proposed materials and construction.

1.6 SUBMITTALS

A. Product Data: For each type of product indicated. Include recommendations for application and use. Include test data substantiating that products comply with requirements.

B. Shop Drawings: For the following:

1. Provisions for expansion joints or other sealant joints.
2. Provisions for flashing and weep holes as required.
3. Replacement and repair anchors. Include details of anchors within individual masonry units, with locations of anchors and dimensions of holes and recesses in units required for anchors.

C. Samples for Initial Selection: For the following:

1. Pointing Mortar: Submit sets of mortar for pointing in the form of sample mortar strips, 6 inches long by 1/4-inch-wide, set in aluminum or plastic channels.

a. Have each set contain a close color range of at least three Samples of different mixes of colored sands and cements that produce a mortar matching the cleaned masonry when cured and dry.
b. Submit with precise measurements on ingredients, proportions, gradations, and sources of colored sands from which each Sample was made.

2. Patching Compound: Submit sets of patching compound Samples in the form of plugs (patches in drilled holes) in sample units of masonry representative of the range of masonry colors on the building.

a. Have each set contain a close color range of at least three Samples of different mixes of patching compound that matches the variations in existing masonry when cured and dry.

3. Sealant Materials: See Division 07 Section "Joint Sealants."
4. Include similar Samples of accessories involving color selection.

D. Samples for Verification: For the following:

1. Each type of masonry unit to be used for replacing existing units. Include sets of Samples as necessary to show the full range of shape, color, and texture to be expected.

a. For each brick type, provide straps or panels containing at least four bricks. Include multiple straps for brick with a wide range.

2. Each type of sand used for pointing mortar; minimum 1 lb of each in plastic screw-top jars.

a. For blended sands, provide Samples of each component and blend.
b. Identify sources, both supplier and quarry, of each type of sand.

3. Each type, color, and texture of pointing mortar in the form of sample mortar strips, 6 inches long by 1/4-inch-wide, set in aluminum or plastic channels.

a. Include with each Sample a list of ingredients with proportions of each. Identify sources, both supplier and quarry, of each type of sand and brand names of cementitious materials and pigments if any.

4. Each type of masonry patching compound in the form of briquettes, at least 3 inches long by 1-1/2 inches wide. Document each Sample with manufacturer and stock number or other information necessary to order additional material.
5. Sealant Materials: See Division 07 Section "Joint Sealants."
6. Accessories: Each type of anchor, accessory, and miscellaneous support.

E. Qualification Data: For restoration specialists, including field supervisors and restoration workers.

F. Preconstruction Test Reports: For existing and replacement masonry units.

G. Quality-Control Program.

H. Restoration Program.

I. Cleaning Program.

1.7 QUALITY ASSURANCE

A. Restoration Specialist Qualifications: Engage an experienced masonry restoration and cleaning firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of 5 years of successful in-service performance. Experience installing standard unit masonry is not sufficient experience for masonry restoration work.

1. At Contractor's option, work may be divided between two specialist firms: one for cleaning work and one for repair work.
2. Field Supervision: Restoration specialist firms shall maintain experienced full-time supervisors on Project site during times that clay masonry restoration and cleaning work is in progress. Supervisors shall not be changed during Project except for causes beyond the control of restoration specialist firm.

3. Restoration Worker Qualifications: Persons who are experienced and specialize in restoration work of types they will be performing. When masonry units are being patched, assign at least one worker among those performing patching work who is trained and certified by manufacturer of patching compound to apply its products.

B. Source Limitations: Obtain each type of material for masonry restoration (face brick, cement, sand, etc.) from one source with resources to provide materials of consistent quality in appearance and physical properties.

C. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage due to worker fatigue.

D. 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.

1. Include methods for keeping pointing mortar damp during curing period.
2. If materials and methods other than those indicated are proposed for any phase of restoration work, add to the Quality-Control Program 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.

E. Cleaning Program: Prepare a written cleaning program that describes cleaning process in detail, including materials, methods, and equipment to be used, protection of surrounding materials, and control of runoff during operations.

1. Provide a cleaning program for red brick.
2. If materials and methods other than those indicated are proposed for any phase of restoration work, add to the Quality-Control Program 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.

F. Cleaning and Repair Appearance Standard: Cleaned and repaired surfaces are to have a uniform appearance as viewed from 20 feet away by Architect. Perform additional paint and stain removal, general cleaning, and spot cleaning of small areas that are noticeably different, so that surface blends smoothly into surrounding areas.

G. Mockups: Prepare mockups of restoration and cleaning to demonstrate aesthetic effects and set quality standards for materials and execution and for fabrication and installation.

1. Masonry Repair: Prepare sample areas for each type of masonry material indicated to have repair work performed. If not otherwise indicated, size each mockup not smaller than 2 adjacent whole units or approximately 48 inches in least dimension. Erect sample areas in existing walls unless otherwise indicated, to demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:

a. Replacement:

1) Twenty (20) red brick (rebuild) units replaced.

b. Patching: Three small holes at least 1 inch in diameter for each type of masonry material indicated to be patched, so as to leave no evidence of repair.

2. Repointing: Rake out joints in 2 separate areas, each approximately 36 inches high by 48 inches wide for each type of repointing required and repoint one of the areas.
3. Cleaning: Clean an area approximately 25 sq. ft. for each type of masonry and surface condition.

a. Test cleaners and methods on samples of adjacent materials for possible adverse reactions. Do not use cleaners and methods known to have deleterious effect.
b. 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.

4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
5. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

H. Mockups: Prepare mockups of anchoring system at existing masonry veneer walls to demonstrate installation standard and to perform pull tests.

1. Perform pull test for a load of 305 lbs. at a minimum rate of 5 percent of helical wall ties installed.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Approved mockups may become part of the completed work upon acceptance of pull tests.

I. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to masonry restoration and cleaning including, but not limited to, the following:

a. Construction schedule. Verify availability of materials, Restoration Specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
b. Materials, material application, sequencing, tolerances, and required clearances.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver masonry units to Project site strapped together in suitable packs or pallets or in heavy-duty cartons.

B. Deliver other materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.

C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

D. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.

E. Store lime putty covered with water in sealed containers.

F. Store sand where grading and other required characteristics can be maintained and contamination avoided.

1.9 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit masonry restoration and cleaning work to be performed according to manufacturers' written instructions and specified requirements.

B. Repair masonry units and repoint mortar joints only when air temperature is between 40 and 90 deg F and is predicted to remain so for at least 7 days after completion of the Work unless otherwise indicated.

C. Cold-Weather Requirements: Masonry restoration is not permitted when the air temperature falls below 40 deg F.

D. Hot-Weather Requirements: Protect masonry repair and mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and wind breaks and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F and above unless otherwise indicated.

E. For manufactured repair materials, perform work within the environmental limits set by each manufacturer.

F. Clean masonry surfaces only when air temperature is 40 deg F and above and is predicted to remain so for at least 7 days after completion of cleaning.

1.10 COORDINATION

A. Coordinate masonry restoration and cleaning with public circulation patterns at Project site. Some work is near 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.

1.11 SEQUENCING AND SCHEDULING

A. Order replacement materials at earliest possible date to avoid delaying completion of the Work.

B. Order sand for pointing mortar immediately after approval of mockups. Take delivery of and store at Project site a sufficient quantity to complete Project.

C. Perform masonry restoration work in the following sequence:

1. Remove plant growth.
2. Rake out mortar from joints surrounding masonry to be replaced and from joints adjacent to masonry repairs along joints.
3. Repair masonry, including replacing existing masonry with new masonry materials.
4. Rake out mortar from joints to be repointed.
5. Point mortar joints.
6. After repairs and repointing have been completed and cured, perform a final cleaning to remove residues from this work.
7. Inspect for open mortar joints and repair before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
8. Remove paint.
9. Clean masonry surfaces.

D. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in masonry units to comply with "Masonry Unit Patching" Article. Patch holes in mortar joints to comply with "Repointing Masonry" Article.

PART 2 - PRODUCTS

2.1 MASONRY MATERIALS

A. Face Brick: Comply with Division 04 Section “Brick Masonry.”

B. Salvaged Brick: Obtain salvaged brick from Owner from locations shown on Drawings. Clean off residual mortar.

1. Remove and reinstall existing brick in all areas of red brick to be rebuilt.
2. Provide supplement units matching existing to replace damaged units.
3. Install face brick according to original use.

2.2 MORTAR MATERIALS

A. Portland Cement: ASTM C 150, Type I or Type II, white or gray or both where required for color matching of exposed mortar.

1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.

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

C. Mortar Sand: ASTM C 144 unless otherwise indicated.

1. Color: Provide natural sand of color necessary to produce required mortar color.
2. For pointing mortar, provide sand with rounded edges.
3. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.

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

E. Water: Potable.

2.3 MANUFACTURED REPAIR MATERIALS

A. Masonry Patching Compound: Factory-mixed cementitious product that is custom manufactured for patching masonry. Provide compatible coating from the same manufacturer to replicate gloss and color of glazed units.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Cathedral Stone Products, Inc.; Jahn M100 Terra Cotta and Brick Repair Mortar.
b. Conproco Corporation; Matrix.
c. Edison Coatings, Inc.; Custom System 45.

2. 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.
3. Use formulation having working qualities and retardation control to permit forming and sculpturing where necessary.
4. Formulate patching compound used for patching brick in colors and textures to match each masonry unit being patched. Provide not less than three colors to enable matching the color, texture, and variation of each unit.

2.4 CLEANING MATERIALS

A. Water: Potable.

B. Hot Water: Water heated to a temperature of 140 to 160 deg F.

C. Job-Mixed Mold, Mildew, and Algae Remover: Solution prepared by mixing 2 cups of tetrasodium polyphosphate, 5 quarts of 5 percent sodium hypochlorite (bleach), and 15 quarts of hot water for every 5 gal. of solution required.

D. Mild Acidic Cleaner: Manufacturer's standard mildly acidic cleaner containing no muriatic (hydrochloric), hydrofluoric, or sulfuric acid; or ammonium bifluoride or chlorine bleaches.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Diedrich Technologies Inc.; Envirorestore 100.
b. Dominion Restoration Products, Inc.; DR-60 Stone and Masonry Cleaner.
c. PROSOCO; Enviro Klean BioWash.

E. Acidic Cleaner: Manufacturer's standard acidic masonry cleaner composed of hydrofluoric acid or ammonium bifluoride blended with other acids, detergents, wetting agents, and inhibitors.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Diedrich Technologies Inc.; Diedrich 101 Masonry Restorer or Diedrich 101G Granite, Terra Cotta, and Brick Cleaner.
b. Dumond Chemicals, Inc.; Safe n' Easy Ultimate Stone and Masonry Cleaner or Safe n' Easy Heavy Duty Restoration Cleaner.
c. PROSOCO; Sure Klean Restoration Cleaner or Sure Klean Heavy-Duty Restoration Cleaner.

2.5 ACCESSORY MATERIALS

A. 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.

1. Products: Subject to compliance with requirements, provide one of the following:

a. ABR Products, Inc.; Rubber Mask.
b. Price Research, Ltd.; Price Mask.
c. PROSOCO; Sure Klean Strippable Masking.

B. Sealant Materials:

1. Provide manufacturer's standard chemically curing, elastomeric sealant(s) of base polymer and characteristics indicated below that comply with applicable requirements in Division 07 Section "Joint Sealants."
2. Colors: Provide colors of exposed sealants to match colors of masonry adjoining installed sealant unless otherwise indicated.

C. Joint-Sealant Backing:

1. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

2. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where acceptable.

D. Setting Buttons: Resilient plastic buttons, nonstaining to masonry, sized to suit joint thicknesses and bed depths of masonry units without intruding into required depths of pointing materials.

E. Masking Tape: Nonstaining, nonabsorbent material, compatible with pointing mortar, joint primers, sealants, and surfaces adjacent to joints; that will easily come off entirely, including adhesive.

F. Miscellaneous Products: Select materials and methods of use based on the following, subject to approval of a mockup:

1. Previous effectiveness in performing the work involved.
2. Little possibility of damaging exposed surfaces.
3. Consistency of each application.
4. Uniformity of the resulting overall appearance.
5. Do not use products or tools that could do the following:

a. Remove, alter, or in any way harm the present condition or future preservation of existing surfaces, including surrounding surfaces not in contract.
b. Leave a residue on surfaces.

2.6 MORTAR MIXES

A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.

B. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.

1. Mortar Pigments: Where mortar pigments are indicated, do not exceed a pigment-to-cement ratio of 1:10 by weight.

C. Do not use admixtures in mortar unless otherwise indicated.

D. Mortar Proportions: Mix mortar materials in the following proportions:

1. Pointing Mortar for Red Brick: Type O by proportion; 1 part white Portland cement, 2 parts lime, and 8 parts sand.

a. Add mortar pigments to produce mortar colors required.

2. Rebuilding (Setting) Mortar: Same as pointing mortar, except mortar pigments are not required.

2.7 CHEMICAL CLEANING SOLUTIONS

A. Acidic Cleaner Solution for Brick: Dilute with water to produce hydrofluoric acid content of 3 percent or less, but not greater than that recommended by chemical-cleaner manufacturer.

PART 3 - EXECUTION

3.1 PROTECTION

A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.

1. 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. 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.

1. 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.
2. Keep wall wet below area being cleaned to prevent streaking from runoff.
3. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
4. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
5. Dispose of runoff from cleaning operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

C. Prevent mortar from staining face of surrounding masonry and other surfaces.

1. Cover sills, ledges, and projections to protect from mortar droppings.
2. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.
3. Immediately remove mortar in contact with exposed masonry and other surfaces.
4. Clean mortar splatters from scaffolding at end of each day.

D. Remove gutters and downspouts adjacent to masonry during masonry restoration and cleaning.

1. Provide temporary rain drainage during work to direct water away from building.

3.2 UNUSED ANCHOR REMOVAL

A. Remove masonry anchors, brackets, wood nailers, and other extraneous items no longer in use unless identified as historically significant or indicated to remain.

1. Remove items carefully to avoid spalling or cracking masonry.
2. Where directed, if an item cannot be removed without damaging surrounding masonry, do the following:

    a. Cut or grind off item approximately 3/4 inch beneath surface and core drill a recess of same depth in surrounding masonry as close around item as practical.
    b. Immediately paint exposed end of item with two coats of antirust coating, following coating manufacturer's written instructions and without exceeding manufacturer's recommended dry film thickness per coat. Keep paint off sides of recess.

3. Patch the hole where each item was removed unless directed to remove and replace the masonry unit.

3.3 BRICK REMOVAL AND REPLACEMENT

A. At locations indicated, remove bricks that are damaged, loose, displaced, spalled, or deteriorated or are to be reused. Carefully demolish or remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.

1. When removing single bricks, remove material from center of brick and work toward outside edges.

B. At locations indicated for installation of new through wall flashing, remove bricks as follows:

1. Remove middle course of bricks first, then remove courses above and below without damaging courses to remain in place.
2. Remove a maximum width of 3 feet, leave 2 feet in place and remove 3 more feet. Install through wall flashing.
3. Replace remaining 2 feet and remove remaining brick after mortar has set.

C. Support and protect remaining masonry that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.

D. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.

E. Remove in an undamaged condition as many whole bricks as possible.

1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
2. Remove sealants by cutting close to brick with utility knife and cleaning with solvents.
3. Store brick for reuse. Store off ground, on skids, and protected from weather.
4. Deliver cleaned brick not required for reuse to Owner unless otherwise indicated.

F. Clean bricks surrounding removal areas by removing mortar, dust, and loose particles in preparation for replacement.

G. Replace removed damaged brick with other removed brick and 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.

H. Install replacement brick into bonding and coursing pattern of existing brick. If cutting is required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.

1. Maintain joint width for replacement units to match existing joints.
2. Use setting buttons or shims to set units accurately spaced with uniform joints.

I. Lay replacement brick with completely filled bed, head, and collar 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.

1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.
2. Rake out mortar used for laying brick before mortar sets and point new mortar joints in repaired area to comply with requirements for repointing existing masonry, and at same time as repointing of surrounding area.
3. When mortar is sufficiently hard to support units, remove shims and other devices interfering with pointing of joints.

3.4 MASONRY UNIT PATCHING

A. Patch the following masonry units unless another type of replacement or repair is indicated:

1. Units indicated to be patched.
2. Units with holes.
3. Units with chipped edges or corners.
4. Units with small areas of deep deterioration.

B. Remove and replace existing patches unless otherwise indicated or approved by Architect.

3.5 CLEANING MASONRY, GENERAL

A. Proceed with cleaning in an orderly manner; work from top to bottom of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water will not wash over cleaned, dry surfaces.

1. Cleaning of masonry must be accomplished with the gentlest of materials and lowest concentration which provides acceptable results.

B. Use only those cleaning methods indicated for each masonry material and location.

1. 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.
2. Use spray equipment that provides controlled application at volume and pressure indicated, measured at spray tip. Adjust pressure and volume to ensure that cleaning methods do not damage masonry.

a. Equip units with pressure gages.

3. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with cone-shaped spray tip.
4. For water-spray application, use fan-shaped spray tip that disperses water at an angle of 25 to 50 degrees.
5. For high-pressure water-spray application, use fan-shaped spray tip that disperses water at an angle of at least 40 degrees.
6. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F at flow rates indicated.

C. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.

D. Water Application Methods:

1. Water-Soak Application: Soak masonry surfaces by applying water continuously and uniformly to limited area for time indicated. Apply water at low pressures and low volumes in multiple fine sprays using perforated hoses or multiple spray nozzles. Erect a protective enclosure constructed of polyethylene sheeting to cover area being sprayed.
2. 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.

E. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces to comply with chemical-cleaner manufacturer's written instructions; use brush or spray application. Do not spray apply at pressures exceeding 50 psi. Do not allow chemicals to remain on surface for periods longer than those indicated or recommended by manufacturer.

F. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.

1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.

G. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

3.6 PRELIMINARY CLEANING

A. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, calking, asphalt, and tar.

1. Carefully remove heavy accumulations of material from surface of masonry with a sharp chisel. Do not scratch or chip masonry surface.
2. Remove paint and caulking with alkaline paint remover.

    a. Comply with requirements in "Paint Removal" Article.
    b. Repeat application up to two times if needed.

3. Remove asphalt and tar with solvent-type paint remover.

    a. Comply with requirements in "Paint Removal" Article.
    b. Apply paint remover only to asphalt and tar by brush without prewetting.
    c. Allow paint remover to remain on surface for 10 to 30 minutes.
    d. Repeat application if needed.

3.7 CLEANING BRICKWORK

A. Cold-Water Wash: Use cold water applied by medium-pressure spray.

B. Detergent Cleaning:

1. Wet masonry with cold water applied by low-pressure spray.
2. Scrub masonry with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that masonry surface remains wet.
3. Rinse with cold water applied by medium-pressure spray to remove detergent solution and soil.

4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

C. Mild Acidic or Acidic Chemical Cleaning:

1. Wet masonry with cold water applied by low-pressure spray.
2. Apply cleaner to masonry by brush or low-pressure spray. Let cleaner remain on surface for period indicated below:

    a. As recommended by chemical-cleaner manufacturer.

3. Rinse with cold water applied by medium-pressure spray to remove chemicals and soil.
4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use a steam cleaning.

3.8 REPOINTING MASONRY

A. Rake out and repoint joints to the following extent:

1. All joints in areas indicated.
2. Deteriorated joints, under Allowance, as directed by the Architect in the field.

B. Do not rake out and repoint joints where not required.

C. Rake out joints as follows, according to procedures demonstrated in approved mockup:

1. Remove mortar from joints to depth of 2-1/2 times joint width, but not less than 1/2 inch or not less than that required to expose sound, unweathered mortar.
2. 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.
3. Do not spall edges of masonry units or widen joints. Replace or patch damaged masonry units as directed by Architect.

    a. Cut out mortar by hand with chisel and resilient mallet. Do not use power-operated grinders without Architect's written approval based on approved quality-control program.
    b. Cut out center of mortar bed 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.

D. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.

E. Pointing with Mortar:

1. 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.
2. 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.
3. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 3/8 inch. Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
4. 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.
5. Cure mortar by maintaining in thoroughly damp condition for at least 48 consecutive hours including weekends and holidays.

    a. 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.
    b. Adjust curing methods to ensure that pointing mortar is damp throughout its depth without eroding surface mortar.

6. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

F. Pointing with Sealant:

1. After raking out, keep joints dry and free of mortar and debris.
2. Clean and prepare joint surfaces according to Division 7 Section "Joint Sealants." Prime joint surfaces unless sealant manufacturer recommends against priming. Do not allow primer to spill or migrate onto adjoining surfaces.
3. Fill sealant joints with specified joint sealant according to Division 7 Section "Joint Sealants" and the following:

    a. Install cylindrical sealant backing beneath the sealant, except where space is insufficient. There, install bond-breaker tape.
    b. Install sealant using only proven installation techniques that will ensure that sealant will be deposited in a uniform, continuous ribbon, without gaps or air pockets, and with complete wetting of the joint bond surfaces equally on both sides. Fill joint flush with surrounding masonry and matching the contour of adjoining mortar joints.
    c. Install sealant as recommended by sealant manufacturer but within the following general limitations, measured at the center (thin) section of the bead:

1) Fill joints to a depth equal to joint width, but not more than 1/2 inch deep or less than 1/4 inch deep.

d. Immediately after first tooling, apply ground-mortar aggregate to sealant, gently pushing aggregate into the surface of sealant. Retool sealant to form smooth, uniform beads, slightly concave. Remove excess sealant and aggregate from surfaces adjacent to joint.

e. Do not allow sealant to overflow or spill onto adjoining surfaces, or to migrate into the voids of adjoining surfaces, particularly rough textures. Remove excess and spillage of sealant promptly as the work progresses. Clean adjoining surfaces by the means necessary to eliminate evidence of spillage, without damage to adjoining surfaces or finishes, as demonstrated in an approved mockup.

4. Cure sealant according to Division 07 Section "Joint Sealants."

G. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.9 FINAL CLEANING

A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water, spray applied at low pressure.

1. Do not use metal scrapers or brushes.
2. Do not use acidic or alkaline cleaners.

B. Wash adjacent woodwork and other nonmasonry surfaces. Use detergent and soft brushes or cloths.

C. Clean mortar and debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.

D. Sweep and rake adjacent pavement and grounds to remove mortar and debris. Where necessary, pressure wash pavement surfaces to remove mortar, dust, dirt, and stains.

3.10 MASONRY WASTE DISPOSAL

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

3.11 FIELD QUALITY CONTROL

A. Inspectors: Owner will engage qualified independent inspectors to perform inspections and prepare test reports. Allow inspectors use of lift devices and scaffolding, as needed, to perform inspections.

B. Architect's Project Representatives: Architect will assign Project representatives to help carry out Architect's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Architect's Project representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.

C. Notify inspectors, Architect, and Project Manager in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until inspectors, Project Manager, and Architect's Project representatives have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

END OF SECTION 04 01 20

SECTION 07 31 26 - SLATE SHINGLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section “Summary.”

1.2 SUMMARY

A. Section Includes:

1. Slate shingles.
2. Underlayment and self-adhering sheet underlayment.
3. All hoisting and scaffolding necessary for the completion of the roof work.
4. Waste disposal.

B. Related Sections:

1. Division 01 Section “Alternates” for bidding requirements of this Section.
2. Division 06 Section “Miscellaneous Rough Carpentry” for wood blocking.
3. Division 06 Section “Sheathing” for plywood roof sheathing.
4. Division 06 Section “Exterior Finish Carpentry” for wood trim.
5. Division 07 Section “Sheet Metal Flashing and Trim” for metal valley flashing, step flashing, drip edges, gutters, downspouts, and other sheet metal work.
6. Division 07 Section “Snow Guards” for snow guards installed with slate shingles.

1.3 DEFINITIONS

A. Roofing Terminology: See ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

1.4 ACTION SUBMITTALS

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

B. Samples for Initial Selection: Of each color, size, texture, and shape.

1. Include similar Samples of trim and accessories involving color selection.

C. Samples for Verification: For the following products, of sizes indicated, to verify color selected:

1. Slate Shingle: Full size, of each color, size, texture, and shape.
2. Fasteners: Three fasteners of each type, length, and finish.
3. Exposed Valley Lining: 12 inches square.

1.5 INFORMATIONAL SUBMITTALS

A. Material Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each slate variety.

B. Warranty: Sample of special warranty.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Slate Shingles: 100 sq. ft. of each type and color, in unbroken bundles.

1.7 QUALITY ASSURANCE

A. Source Limitations: Obtain each color of slate shingle from single quarry capable of producing slate of consistent quality in appearance and physical properties.

B. Installer must have experience on at least one similar historic renovation / roofing project.

C. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockups for slate shingles including related roofing materials.

a. Size: 48 inches long by 48 inches wide.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store underlayment rolls on end, on pallets or other raised surfaces. Do not double stack rolls.

1. Handle, store, and place roofing materials in a manner to avoid significant or permanent damage to roof deck or structural supporting members.

B. Protect unused underlayment from weather, sunlight, and moisture when left overnight or when roofing work is not in progress.

C. Handle, store, and place roofing materials in a manner to prevent damage to roof deck or structural supporting members.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Proceed with installation of self-adhering sheet underlayment only within the range of ambient and substrate temperatures recommended by manufacturer.

1.10 WARRANTY

A. Special Warranty: Standard form in which roofing Installer agrees to repair or replace slate roofing that fails in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SLATE SHINGLES

A. Slate Shingles: ASTM C 406, Grade S1; hard, dense, and sound; chamfered edges, with nail holes machine punched or drilled and countersunk. No broken or cracked slates, no broken exposed corners, and no broken corners on covered ends that could sacrifice nailing strength or laying of a watertight roof.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or equal:

a. Evergreen Slate Company.
b. Greenstone Slate Company, Inc.
c. New England Slate Company (The).
d. Newmont Slate Company.
e. Vermont Structural Slate Company, Inc.

2. Thickness: Nominal 1/4 to 3/8 inch, to match existing.
3. Surface Texture: To match existing.
4. Length: 18 inches.

5. Width: 10 inches.
6. Nail Holes: Two per shingle.
7. Butt Shape: Standard square cut and scallop to match existing.
8. Color: Black, to match existing.

B. Starter Slate: Slate shingles with chamfered nail holes front-side punched.

1. Length: Exposure of slate shingle plus head lap.

C. Ridge Slate: Slate shingles fabricated with vertical grain orientation.

2.2 UNDERLAYMENT MATERIALS

A. Synthetic Underlayment: Meeting the physical requirements of ASTM D 226 or ASTM D 4869, UV stabilized polypropylene, breathable non-woven construction.

1. Obtain felt underlayment from same manufacturer of asphalt shingles, or equal product approved in writing by manufacturer, as required to maintain specified warranty of system.
2. Products: Subject to compliance with requirements, provide the following or equal:

a. CertainTeed; DiamondDeck High-Performance Synthetic Underlayment.
b. GAF; Tiger Paw.
c. Owens Corning; Deck Defense.

B. Self-Adhering Sheet Underlayment, Polyethylene Faced: ASTM D 1970, minimum of 40-mil-thick, slip-resisting, polyethylene-film-reinforced top surface laminated to SBS-modified asphalt adhesive, with release paper backing; cold applied.

1. Products: Subject to compliance with requirements, provide one of the following:

a. CertainTeed; WinterGuard HT.
b. GCP Applied Technologies; Grace Ice and Water Shield.
c. Johns Manville International, Inc.; Roof Defender.
d. Owens Corning; WeatherLock M.
e. Polyguard Products, Inc.; Polyguard Deck Guard.

2.3 ACCESSORIES

A. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied.

B. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in slate-shingle roofing and remain watertight.

C. Slating Nails: ASTM F 1667, copper or stainless-steel, smooth shanked, wire nails; 0.135-inch minimum thickness; sharp pointed; with 3/8-inch- minimum diameter flat head; of sufficient length to penetrate a minimum of 3/4 inch into sheathing.

1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.

D. Felt Underlayment Nails: Aluminum, stainless-steel, or hot-dip galvanized-steel wire nails with low-profile capped heads or disc caps, 1-inch minimum diameter.

E. Wood Blocking: Comply with requirements in Division 06 Section "Miscellaneous Rough Carpentry."

2.4 METAL FLASHING AND TRIM

A. General: Comply with requirements in Division 07 Section "Sheet Metal Flashing and Trim."

B. Fabricate sheet metal flashing and trim to comply with recommendations that apply to design, dimensions, metal, and other characteristics of the item in SMACNA's "Architectural Sheet Metal Manual."

1. Step Flashings: Fabricate with a head lap of 3 inches and a minimum extension of 4 inches both horizontally and vertically.
2. Open-Valley Flashings: Fabricate in lengths not exceeding 10 feet with 1-inch- high, inverted-V profile at center of valley and equal flange widths of 12 inches.
3. Drip Edges: Fabricate in lengths not exceeding 10 feet with 2-inch roof-deck flange and 1-1/2-inch fascia flange with 3/8-inch drip at lower edge.

C. Vent-Pipe Flashings: ASTM B 749, Type L51121, at least 1/16 inch thick. Provide lead sleeve sized to slip over and turn down into pipe, soldered to skirt at slope of roof and extending at least 4 inches from pipe onto roof.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored and that provision has been made for flashings and penetrations through roofing.

B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

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

3.2 UNDERLAYMENT INSTALLATION

A. General: Comply with underlayment manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.

B. Synthetic Underlayment: Install on roof deck parallel with and starting at the eaves. Lap sides and ends and treat laps as recommended in writing by manufacturer but not less than 4 inches for side laps and 8 inches for end laps. Stagger end laps between succeeding courses at interval recommended in writing by manufacturer. Fasten with underlayment nails according to manufacturer's written instructions. Cover underlayment within period recommended in writing by manufacturer.

1. Install in double layer.
2. Install fasteners at no more than 12 inches o.c. between side laps and 6-inch spacing at side laps.

C. Self-Adhering Sheet Underlayment: Install, wrinkle free, on roof deck. Comply with low-temperature installation restrictions of underlayment manufacturer if applicable. Install at locations indicated on Drawings, lapped in direction to shed water. Lap sides not less than 3-1/2 inches. Lap ends not less than 6 inches, staggered 24 inches between courses. Roll laps with roller. Cover underlayment within seven days.

1. Eaves: Extend from edges of eaves 36 inches beyond interior face of exterior wall.
2. Rakes: Extend from edges of rakes 36 inches beyond interior face of exterior wall.
3. Valleys: Extend from lowest to highest point 18 inches on each side.
4. Hips: Extend 18 inches on each side.
5. Ridges: Extend 36 inches on each side.
6. Sidewalls: Extend 18 inches beyond sidewalls and return vertically against sidewalls not less than 4 inches.
7. Dormers, Chimneys, Skylights, and Other Roof-Penetrating Elements: Extend 18 inches beyond penetrating elements and return vertically against penetrating elements not less than 4 inches.
8. Roof-Slope Transitions: Extend 18 inches on each roof slope.

D. Metal-Flashed, Open-Valley Underlayment: Install two layers of 36-inch- wide felt underlayment centered in valley. Stagger end laps between layers at least 72 inches. Lap ends of each layer at least 12 inches in direction to shed water, and seal with asphalt roofing cement. Fasten each layer to roof deck with felt underlayment nails.

1. Lap roof-deck felt underlayment over first layer of valley felt underlayment at least 6 inches.

3.3 METAL FLASHING INSTALLATION

A. General: Install metal flashings according to recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

B. Apron Flashings: Extend lower flange over and beyond each side of downslope slate shingles and up the vertical surface.

C. Step Flashings: Install with a head lap of 3 inches and extend both horizontally and vertically. Install with lower edge of flashing just upslope of, and concealed by, butt of overlying slate shingle. Fasten to roof deck only.

D. Hip Flashings: Install centrally over hip with lower edge of flashing concealed by butt of overlying slate shingle. Fasten to roof deck.

E. Open-Valley Flashings: Install centrally in valleys, lapping ends at least 8 inches in direction to shed water. Fasten upper end of each length to roof deck beneath overlap.

1. Secure hemmed flange edges into metal cleats spaced 12 inches apart and fastened to roof deck.
2. Install 10 inch wide strips of self-adhering membrane over valley metal edges 3 inches from valley center. Make sure underlayment covers all fasteners.

F. Rake Drip Edges: Install over underlayment and fasten to roof deck.

G. Eave Drip Edges: Install beneath underlayment and fasten to roof deck.

H. Pipe Flashings: Form flashing around pipe penetrations and slate shingles. Fasten and seal to slate shingles.

3.4 SLATE-SHINGLE INSTALLATION

A. General: Beginning at eaves, install slate shingles according to manufacturer's written instructions and to details and recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

1. Install wood nailer strip cant at eave edges.
2. Install shingle starter course chamfered face down.

B. Install first and succeeding shingle courses with chamfered face up. Install full-width first course at rake edge.

1. Offset joints of uniform-width slate shingles by half the shingle width in succeeding courses.
2. Offset joints of random-width slate shingles a minimum of 3 inches in succeeding courses.

C. Maintain a 4-inch- minimum head lap between succeeding shingle courses.

D. Maintain uniform exposure of shingle courses between eaves and ridge.

E. Extend shingle starter course and first course 1 inch over fasciae at eaves.

F. Extend shingle starter course and succeeding courses 1 inch over fasciae at rakes.

G. Cut and fit slate neatly around roof vents, pipes, ventilators, and other projections through roof.

H. Hang slate with two slating nails for each shingle with nail heads lightly touching slate. Do not drive nails home drawing slates downward or leave nail head protruding enough to interfere with overlapping shingle above.

I. Ridges: Install ridge slate in saddle configuration.

1. Install and anchor wood nailer strips of thicknesses to match abutting courses of slate shingles, terminating nailer strip 3 to 4 inches from the eave. Cover with felt underlayment strip, extending to underlying slate but concealed by ridge slate.
2. Lay ridge slate in bed of butyl sealant.
3. Anchor ridge slate to supporting wood nailer strip with four nails for each slate shingle without nails penetrating underlying slate.
4. Cover heads of exposed nails at final ridge shingle with butyl sealant.

J. Hips: Install and anchor slate hips in saddle configuration.

1. Install and anchor wood nailer strips of thickness to match abutting courses of slate shingles. Cover nailer strip with underlayment strip, extending on to underlying slate but concealed by hip slate. Anchor hip slate to nailer strip with two nails located in upper third of hip-slate length.
2. Notch starter shingle and first shingle course at hip to fit around nailer strips so no wood is exposed at ridge eave.
3. Lay hip slate in bed of butyl sealant.
4. Seal hip centerline joint with elastomeric sealant.

K. Open Valleys: Cut slate shingles to form straight lines at open valleys, trimming upper concealed corners of shingles. Maintain uniform width of exposed open valley from highest to lowest point.

1. Do not nail shingles to valley metal flashings.

3.5 ADJUSTING AND CLEANING

A. Remove and replace damaged or broken slate shingles.

B. Remove excess slate and debris from Project site.

END OF SECTION 073126

SECTION 07 72 53 - SNOW GUARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

A. Section Includes:

1. Pad-type, flat-mounted snow guards.
2. Rail-type, flat-mounted snow guards.

B. Related Sections:

1. Division 01 Section "Alternates" for bidding requirements of this Section.
2. Division 07 Section "Asphalt Shingles" for installation of pad-type, flat mounted snow guards.
3. Division 07 Section "Slate Shingles" for installation of rail-type, flat mounted snow guards on slate shingle roofing.

1.3 ACTION SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for snow guards.

B. Shop Drawings: Include roof plans showing layouts and attachment details of snow guards.

1. Include calculation of number and location of snow guards based on snow load, roof slope, roof type, components, spacings, and finish.
2. Include details of rail-type snow guards.

C. Samples:

1. Full size pad style.
2. Base, bracket and 12-inch-long rail.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each type of snow guard, for tests performed by manufacturer and witnessed by a qualified testing agency.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Performance Requirements: Provide snow guards that withstand exposure to weather and resist thermally induced movement without failure, rattling, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

B. Structural Performance: In accordance with the Massachusetts State Building Code.

1. Snow Loads: As indicated on Drawings.

2.2 PAD-TYPE SNOW GUARDS

A. Flat-Mounted Metal Snow Guard Pads:

1. Basis-of-Design Product: Subject to compliance with requirements, provide **Alpine SnowGuards; a division of Vermont Slate & Copper Services, Inc.; Model #40,** or comparable product by one of the following:

a. Rocky Mountain Snow Guards, Inc.
b. Sno Gem, Inc.

2. Material: Zinc coated copper sheet, 16 oz.
3. Fasteners: Compatible with snow guards and roof deck. Provide a minimum of two fasteners per snow guard.

2.3 RAIL-TYPE SNOW GUARDS

A. Flat-Mounted, Rail-Type Snow Guards:

1. Basis-of-Design Product: Subject to compliance with requirements, provide **Alpine SnowGuards; a division of Vermont Slate & Copper Services, Inc.; Model PP325,** or comparable product by one of the following:

a. Rocky Mountain Snow Guards, Inc.
b. Sno Gem, Inc.

2. Description: Units fabricated from metal baseplate anchored to fixed bracket and equipped with three bars.
3. Brackets: 1/8-inch thick 260 half hard brass.
4. Baseplate: 1/8-inch thick 260 half hard brass, sized to match size of one slate shingle.
5. Tubing: 272 Series brass, 1-inch outside diameter and 1/8-inch wall thickness.
6. Couplings: 300 Series brass, 3-inch long internal and concealed coupling.
7. End Caps: Brass plated Type 304 stainless steel.
8. End Collars: C230 Brass.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, snow guard attachment, and other conditions affecting performance of the Work.

1. Verify compatibility with and suitability of substrates including compatibility with existing finishes or primers.

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

3.2 PREPARATION

A. Clean and prepare substrates for bonding snow guards.

B. Prime substrates according to snow guard manufacturer's written instructions.

3.3 INSTALLATION

A. Install snow guards according to manufacturer's written instructions.

B. Attachment for Asphalt Shingle Roofing:

1. Flat-Mounted, Snow Guard Pads: Mechanically anchored through predrilled holes concealed by the shingles.

C. Attachment for Slate Shingle Roofing:

1. Flat-Mounted, Rail-Type Snow Guards: Mounting plates screwed to the roof in place of a shingle.

END OF SECTION 07 72 53