PROJECT MANUAL

CITY OF BEAFORT –
ARSENAL ROOF REPLACEMENT PROJECT

BEAUFORT, SOUTH CAROLINA
PROJECT NO. 2018-104

MEADORS, Inc.

2811 Azalea Drive, Charleston SC, 29405
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Bid Set
August 1, 2018

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PROJECT NAME: CITY OF BEAUFORT ARSENAL ROOF REPLACEMENT PROJECT

PROJECT NUMBER: 2018-104

END OF TABLE OF CONTENTS

DOCUMENT 000107 - SEALS PAGE

1.1 DESIGN PROFESSIONALS OF RECORD

BUILDING ARCHITECT	**Betty Prime** **SC #8919** **Architectural Sections in Divisions 01 – 14; Section 313116**

SECTION 003126 – EXISTING HAZARDOUS MATERIAL INFORMATION

PART 1 - GENERAL

1.1 HAZARDOUS MATERIALS REPORTS

A. The following reports are attached for Contractor's information:

1. "Limited Asbestos Survey" performed by Trident Environmental Services, Inc., Survey Date: June 5, 2018.

END OF SECTION 003126

LIMITED
ASBESTOS SURVEY

THE ARSENAL
2018 ROOF RENOVATION
713 CRAVEN STREET
BEAUFORT, SOUTH CAROLINA 29902

Prepared For:

CITY OF BEAUFORT, SC
Attention: Mr. Neil Pugliese
1901 Boundary Street
Beaufort, SC 29902
843.525.7084

Performed By:

TES

Trident Environmental Services, Inc.

Consultants in Industrial Hygiene and Safety
500 Oakbrook Lane, Suite E
Summerville, SC 29485
(843) 873-3648

LIMITED
ASBESTOS SURVEY

The Arsenal
2018 Roof Renovation
713 Craven Street
Beaufort, SC 29902

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EXECUTIVE SUMMARY

The limited asbestos survey performed by Trident Environmental Services, Inc. on June 5, 2018 of The Arsenal Roof located at 713 Craven Street in Beaufort, South Carolina **did** reveal the presence of asbestos containing building materials. The following summary exhibits the asbestos containing building materials (ACBM) that were identified in the inspection.

Asbestos

Description	Type
Tar Application (low & high roof)	**Category I – Non Friable**

RACM – Regulated Asbestos Containing Material

The identified asbestos containing building materials (ACBM's) to include the item(s) listed above. All removal work of the identified asbestos should be performed by a properly trained and licensed abatement contractor prior to the planned renovation/demolition activities.

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BACKGROUND

Trident Environmental Services, Inc. was contracted by the City of Beaufort, South Carolina to perform a limited asbestos survey of The Arsenal Roof located at 713 Craven Street in Beaufort, South Carolina. The survey was performed in order to satisfy the NESHAP requirements for renovation and/or demolition. The Arsenal on Craven Street was built in 1798 to house the Beaufort Volunteer Artillery. The two story structure is built slab on grade and is approximately 9,700 square feet. Currently, the building operates as the Beaufort History Museum and was occupied on the date of inspection.

The upper roof on the two-story structure is approximately 2,850 square feet. Roofing materials consist of EPDM membrane, foam insulation over built-up roofing on a wood substrate. The two lower roofs consists of approximately 2,400 square feet. Roof construction is EPDM membrane and foam insulation over a wood substrate. Both the upper and lower roofs have concrete crenulations coated with ACM roof tar around the perimeter. **Note: This survey was limited to the roof and should not be considered or used as an all-inclusive survey for the structure.**

Non suspect material include glass, metals, brick or masonry block, cement, fiberglass, concrete, pressed wood or wood, plastic and rubber.

Asbestos

The inspection was conducted to identify asbestos-containing building materials (ACBM) which may be disturbed during the renovation/demolition activities. The identification of ACBM's will aid in the prevention of occupational exposures and/or environmental releases of airborne asbestos fibers. Identification of ACBM also complies with Title 40 Code of the Federal Regulations, Part 61, and South Carolina Department of Health and Environmental Control (SCDHEC) Regulation 61-86.1, along with Title 29 Code of Federal Regulations, Part 1926 enforced by the Occupational Safety and Hazard Administration (OSHA). The Asbestos Survey describes the investigative procedures utilized, results of the suspect ACBM sampled/analyzed, and recommendations regarding the structures as related to asbestos.

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ASBESTOS SURVEY

Asbestos Investigative Procedures

Trident Environmental Services, Inc. conducted an inspection for suspect ACBM's on June 5, 2018 of The Arsenal Roof located at 713 Craven Street in Beaufort, South Carolina. It is our understanding that the subject structure will undergo renovation or demolition activities in the near future. The asbestos survey was performed by observing and sampling suspect building materials. Significant destructive testing was not utilized during the inspection. There is a possibility that suspect materials exist in inaccessible areas such as wall cavities and pipe chases. If any additional suspect ACBM's are discovered during the course of demolition activities, bulk samples should be extracted to identify the presence, or absence, of asbestos prior to continuation of work activities.

A sampling strategy was developed to provide representative samples for analysis. Samples were then extracted from a variety of suspect ACBM's. Bulk samples collected were recorded on a Chain-of-Custody record and submitted to Electron Microscopy Services Laboratory Analytical, Inc. (EMSL) a Polarized Light Microscopy (PLM) laboratory. The laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP), which is administered by the National Institute of Standards and Technology (NIST). EMSL is accredited by NVLAP for the analysis of bulk asbestos by PLM (NVLAP Lab Code: 200841-0). NOB samples were submitted to EMSL for analyses by Transmission Electron Microscopy (TEM) as required by SCDHEC.

The suspect materials were analyzed by trained microscopists utilizing PLM techniques coupled with dispersion staining in accordance with EPA Test Method Title 40 Code of Federal Regulations, Chapter I (1-1-87 edition), Part 763, Subpart F- Appendix A. This method identifies asbestos mineral fibers based on six optical characteristics: morphology, birefringence, refractive index, extinction angle, sign of elongation and dispersion staining colors. The laboratory analysis reports the specific type of asbestos identified (there are six asbestos minerals) and the percentage of asbestos present. The EPA and OSHA defines materials as asbestos containing if an asbestos content of greater than one percent (>1%) is detected in a representative sample.

The SCDHEC require NOB materials with negative or trace results by PLM to be analyzed by at least one TEM. SCDHEC in accordance with ASTM E 2356-04 defines NOB materials as "materials that are not friable and that consist of fibers and other particulate matter embedded in a solid matrix of asphalt, vinyl or other organic substances." Examples of NOB materials include but are not limited to flooring materials such as vinyl floor tiles, vinyl sheet flooring, adhesives, mastics, asphalt shingles, roofing materials, glazing, caulks, and cove base.

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The EPA classifies ACBM into two categories, friable and non-friable. A friable material creates a greater health hazard due to the fact that it may be "crumbled, pulverized or reduced to powder by the forces expected to act upon it in the course of demolition or renovation operations."

Friable Asbestos material means any material containing more than one percent asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763 section 1, Polarized Light Microscopy, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10 percent as determined by a method other than point counting by polarized light microscopy (PLM), verify the asbestos content by point counting using PLM.

Category I Non Friable Asbestos-Containing Material (ACM) means asbestos-containing packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than one percent asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy.

Category II Non Friable ACM means any material, excluding Category I non friable ACM, containing more than one percent asbestos as determined using the methods specified in appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. (cement siding, transite board shingles, etc.)

Regulated Asbestos-Containing Material (RACM) means (a) Friable asbestos material, (b) Category I non friable ACM that has become friable, (c) Category I non friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

The following section summarizes the sample numbers, locations, type material, asbestos type, percent of asbestos detected, present condition of the asbestos containing material, potential for disturbance, and hazard assessment ratings. The asbestos sample laboratory analyses and chain of custody records are included at the end of this report.

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Asbestos Abbreviations and Hazard Assessment Key

The EPA and SCDHEC require that confirmed ACBM is given a hazard assessment based on its present condition and potential for future disturbance. This hazard assessment is used as a tool for prioritization in future remedial actions regarding the ACBM. The following key demonstrates the criteria that make up the hazard assessment.

Present Condition

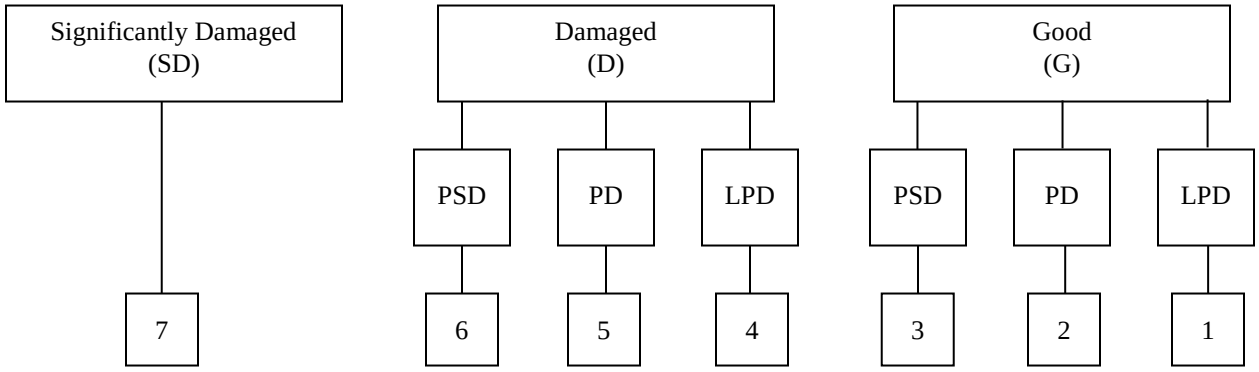
F = Friable
NF = Non-friable

G = Good (very localized limited damage)
D = Damaged (<10% distributed and/or <25% localized)
S = Significantly Damaged (≥10% distributed and/or 25% localized)

Potential for Future Disturbance

LPD = Low Potential for Disturbance (Contact, Vibration, and/or Air Erosion – low concern)
PD = Potential for Damage (Contact, Vibration, and/or Air Erosion – moderate concern)
PSD = Potential for Significant Damage (Contact, Vibration and/or Air Erosion – high concern)

Hazard Assessment



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HOMOGENOUS AREA ESTIMATED FOOTAGE TABLE
The Arsenal Roof Renovation – 713 Craven Street – Beaufort, SC

HOMOGENOUS AREA ID #	DESCRIPTION	ESTIMATED AMOUNT
01	Roof Flashing (low roof)	420 SF
02	Roof Core (low roof)	840 SF
03	**Tar Application (low & high roof)**	**566 LF**
04	Roof Flashing (high roof)	740 SF
05	Roof Core (high roof)	3,315 SF
06	Cloth (high roof)	680 SF
07	Roof Flashing (low roof)	420 SF
08	Roof Core (low roof)	840 SF

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ASBESTOS SUMMARY
The Arsenal Roof Renovation – 713 Craven Street – Beaufort, SC

DESCRIPTION	TYPE	ESTIMATED AMOUNT
Tar Application (low & high roof)	**Category I – Non Friable**	**566 LF**

RACM – Regulated Asbestos Containing Material *PACM - Presumed Asbestos Containing Material

SCDHEC requires any non-friable material that is identified in an asbestos inspection report in a condition other than good and non-friable must be handled as a Regulated Asbestos Containing Material (RACM) and identified as friable on the asbestos abatement application. This requirement is reflected in the Asbestos Summary Table listed above.

Asbestos fibers were identified in the Tar Application (low & high roof). Approximately 566 linear feet is in good condition and considered Category I – Non Friable Asbestos.

The estimated quantities provided should be verified by contractor and/or building owner. Any discrepancies are to be addressed prior to removal of ACM. Please note that removal costs vary depending on the contractor, the quantity/condition of the ACM, and the accessibility/location of the ACM.

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ASBESTOS SAMPLE DATA TABLE
The Arsenal Roof Renovation – 713 Craven Street – Beaufort, SC

DESCRIPTION OF EACH SAMPLE AREA				LABORATORY		ASSESSMENT OF MATERIALS	
Homogeneous Area & Sample ID	Description	Location/Room #	Friable (Y/N)	Asbestos Present		Condition Assessment Category	Hazard Assessment Category
				Percent	Asbestos		
01-01A	Roof Flashing (membrane)	Low Roof	N	0.0%	ND	7	N/A
01-01B	Roof Flashing (insulation)	Low Roof	N	0.0%	ND	7	N/A
01-02A	Roof Flashing (membrane)	Low Roof	N	0.0%	ND	7	N/A
01-02B	Roof Flashing (insulation)	Low Roof	N	0.0%	ND	7	N/A
01-03A T	Roof Flashing (membrane)	Low Roof	N	0.0%	ND	7	N/A
01-03B	Roof Flashing (insulation)	Low Roof	N	0.0%	ND	7	N/A
02-04A	Roof Core (membrane)	Low Roof	N	0.0%	ND	7	N/A
02-04B	Roof Core (insulation)	Low Roof	N	0.0%	ND	7	N/A
02-05A	Roof Core (membrane)	Low Roof	N	0.0%	ND	7	N/A
02-05B	Roof Core (insulation)	Low Roof	N	0.0%	ND	7	N/A
02-06A T	Roof Core (membrane)	Low Roof	N	0.0%	ND	7	N/A
02-06B	Roof Core (insulation)	Low Roof	N	0.0%	ND	7	N/A
03-07	**Tar Application**	**Low Roof**	**N**	**15.0%**	**CHRY**	**7**	**1**
03-08	**Tar Application**	**Low Roof**	**N**	**NT**	**PACM**	**7**	**1**
03-09	**Tar Application**	**Low Roof**	**N**	**NT**	**PACM**	**7**	**1**
04-10A	Roof Flashing (membrane)	High Roof	N	0.0%	ND	7	N/A
04-10B	Roof Flashing (cementitious)	High Roof	N	0.0%	ND	7	N/A
04-10C	Roof Flashing (tar)	High Roof	N	0.0%	ND	7	N/A
04-10D	Roof Flashing (insulation)	High Roof	N	0.0%	ND	7	N/A
04-11A	Roof Flashing (membrane)	High Roof	N	0.0%	ND	7	N/A
04-11B	Roof Flashing (cementitious)	High Roof	N	0.0%	ND	7	N/A
04-11C	Roof Flashing (tar)	High Roof	N	0.0%	ND	7	N/A
04-11D	Roof Flashing (insulation)	High Roof	N	0.0%	ND	7	N/A
04-12A T	Roof Flashing (membrane)	High Roof	N	0.0%	ND	7	N/A
04-12B	Roof Flashing (cementitious)	High Roof	N	0.0%	ND	7	N/A
04-12C T	Roof Flashing (tar)	High Roof	N	0.0%	ND	7	N/A
04-12D	Roof Flashing (insulation)	High Roof	N	0.0%	ND	7	N/A
05-13A	Roof Core (membrane)	High Roof	N	0.0%	ND	7	N/A
05-13B	Roof Core (tar)	High Roof	N	0.0%	ND	7	N/A

Assessment Categories

(1) Thermal Systems Insulation – Good Condition
(2) Thermal Systems Insulation – Damaged
(3) Thermal Systems Insulation – Significantly Damaged
(4) Surfacing – Good Condition
(5) Surfacing – Damaged
(6) Surfacing – Significantly Damaged
(7) Miscellaneous – Good Condition
(8) Miscellaneous – Damaged
(9) Miscellaneous – Significantly Damaged

Asbestos Present

AMOS – Amosite
CHRY – Chrysotile
CROC – Crocidolite
ANTH – Anthophylite
TREM – Tremolite
ACTI – Actinolite
ND – None Detected
NT – Not Tested
PACM – Presumed ACM
Asbestos Detected

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ASBESTOS SAMPLE DATA TABLE
The Arsenal Roof Renovation – 713 Craven Street – Beaufort, SC

DESCRIPTION OF EACH SAMPLE AREA				LABORATORY		ASSESSMENT OF MATERIALS	
Homogeneous Area & Sample ID	Description	Location/Room #	Friable (Y/N)	Asbestos Present		Condition Assessment Category	Hazard Assessment Category
				Percent	Asbestos		
05-13C	Roof Core (insulation)	High Roof	N	0.0%	ND	7	N/A
05-14A	Roof Core (membrane)	High Roof	N	0.0%	ND	7	N/A
05-14B	Roof Core (tar)	High Roof	N	0.0%	ND	7	N/A
05-14C	Roof Core (insulation)	High Roof	N	0.0%	ND	7	N/A
05-15A T	Roof Core (membrane)	High Roof	N	0.0%	ND	7	N/A
05-15B T	Roof Core (tar)	High Roof	N	0.0%	ND	7	N/A
05-15C	Roof Core (insulation)	High Roof	N	0.0%	ND	7	N/A
06-16	Cloth	High Roof	Y	0.0%	ND	7	N/A
06-17	Cloth	High Roof	Y	0.0%	ND	7	N/A
06-18	Cloth	High Roof	Y	0.0%	ND	7	N/A
07-19	Roof Flashing	Low Roof	N	0.0%	ND	7	N/A
07-20	Roof Flashing	Low Roof	N	0.0%	ND	7	N/A
07-21 T	Roof Flashing	Low Roof	N	0.0%	ND	7	N/A
08-22A	Roof Core (membrane)	Low Roof	N	0.0%	ND	7	N/A
08-22B	Roof Core (cementitious)	Low Roof	N	0.0%	ND	7	N/A
08-22C	Roof Core (insulation)	Low Roof	N	0.0%	ND	7	N/A
08-23A	Roof Core (membrane)	Low Roof	N	0.0%	ND	7	N/A
08-23B	Roof Core (cementitious)	Low Roof	N	0.0%	ND	7	N/A
08-23C	Roof Core (insulation)	Low Roof	N	0.0%	ND	7	N/A
08-24A T	Roof Core (membrane)	Low Roof	N	0.0%	ND	7	N/A
08-24B	Roof Core (cementitious)	Low Roof	N	0.0%	ND	7	N/A
08-24C	Roof Core (insulation)	Low Roof	N	0.0%	ND	7	N/A

Assessment Categories

(1) Thermal Systems Insulation – Good Condition
(2) Thermal Systems Insulation – Damaged
(3) Thermal Systems Insulation – Significantly Damaged
(4) Surfacing – Good Condition
(5) Surfacing – Damaged
(6) Surfacing – Significantly Damaged
(7) Miscellaneous – Good Condition
(8) Miscellaneous – Damaged
(9) Miscellaneous – Significantly Damaged

Asbestos Present

AMOS – Amosite
CHRY – Chrysotile
CROC – Crocidolite
ANTH – Anthophylite
TREM – Tremolite
ACTI – Actinolite
ND – None Detected
NT – Not Tested
PACM – Presumed ACM
Asbestos Detected

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CONCLUSIONS/RECOMMENDATIONS

Asbestos Inspection

The limited asbestos survey performed by Trident Environmental Services, Inc. on June 5, 2018 of the roof of The Arsenal Roof located at 713 Craven Street in Beaufort, South Carolina **did** reveal the presence of ACBM's. Renovation or demolition activities that will disturb the ACBM's will require removal per state and federal regulations. Asbestos materials can become hazardous when, due to damage, disturbance, or deterioration over time, they release asbestos fibers into the air of the building. All areas that contain asbestos should be utilized in a controlled manner to reduce the potential for disturbance. OSHA requires notification to all trades/contractors about the condition of the ACBM's to prevent possible occupational exposures.

Demolition activities in public and commercial building are regulated by OSHA, EPA, and SCDHEC. Code 40 of Federal Regulations Part 61, Subpart M, Final Rule, "National Emissions Standards for Hazardous Air Pollutants" (NESHAP), and SCDHEC Regulation 61-86.1 require the proper removal and disposal of ACBM that is affected by renovation or demolition. Demolition of the subject structures will require written notification, proper transportation, and disposal per state and federal regulations.

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PHOTOGRAPHS
The Arsenal/Roof – 713 Craven Street – Beaufort, SC

HOMOGENEOUS AREA 01
ROOF FLASHING (LOW ROOF)

HOMOGENEOUS AREA 02
ROOF CORE (LOW ROOF)

HOMOGENEOUS AREA 03
TAR APPLICATION (LOW ROOF)

HOMOGENEOUS AREA 04
ROOF FLASHING (HIGH ROOF)

HOMOGENEOUS AREA 05
ROOF CORE (HIGH ROOF)

HOMOGENEOUS AREA 06
CLOTH (HIGH ROOF)

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PHOTOGRAPHS
The Arsenal/Roof – 713 Craven Street – Beaufort, SC

HOMOGENEOUS AREA 07
ROOF FLASHING (LOW ROOF)

HOMOGENEOUS AREA 08
ROOF CORE (LOW ROOF)

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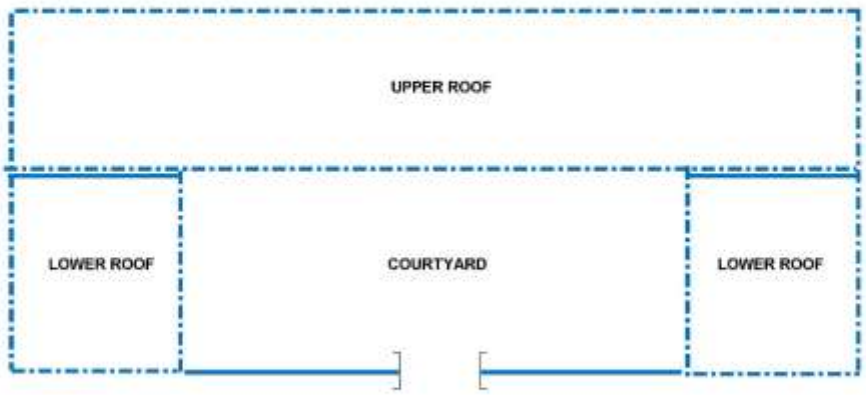

CRAVEN STREET

NON FRIABLE ACM ROOF TAR LOCATED ON CRENULATIONS AROUND THE PERIMETER

THE ARSENAL ROOF
713 CRAVEN STREET - BEAUFORT, SC

Not to Scale

DIAGRAM 1:

LOCATION OF ACM

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Project Designer:	
ROBIN BROWN	
Project Contact:	
ROBIN BROWN	
Project #	WO#
Date:	Rev. Date:
06/19/18	

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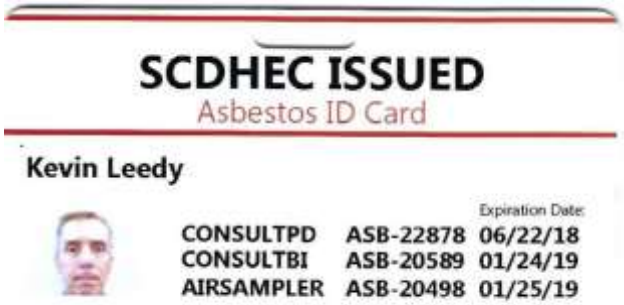
LIMITED
ASBESTOS SURVEY

Inspection Date: 06/05/2018

Preparation Date: 06/11/2018

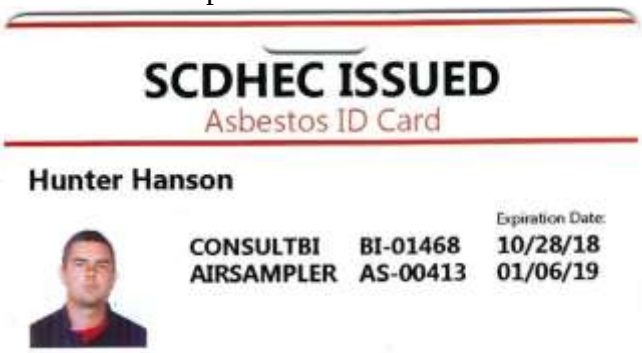
Inspected By:

Kevin E Leedy
S.C. Inspector License ASB – 20589


SCDHEC ISSUED
Asbestos ID Card
Kevin Leedy
Expiration Date:
CONSULTPD ASB-22878 06/22/18
CONSULTBI ASB-20589 01/24/19
AIRSAMPLER ASB-20498 01/25/19

Prepared By:

Hunter Hanson
S.C. Inspector License BI – 01468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Hunter Hanson
Expiration Date:
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AIRSAMPLER AS-00413 01/06/19

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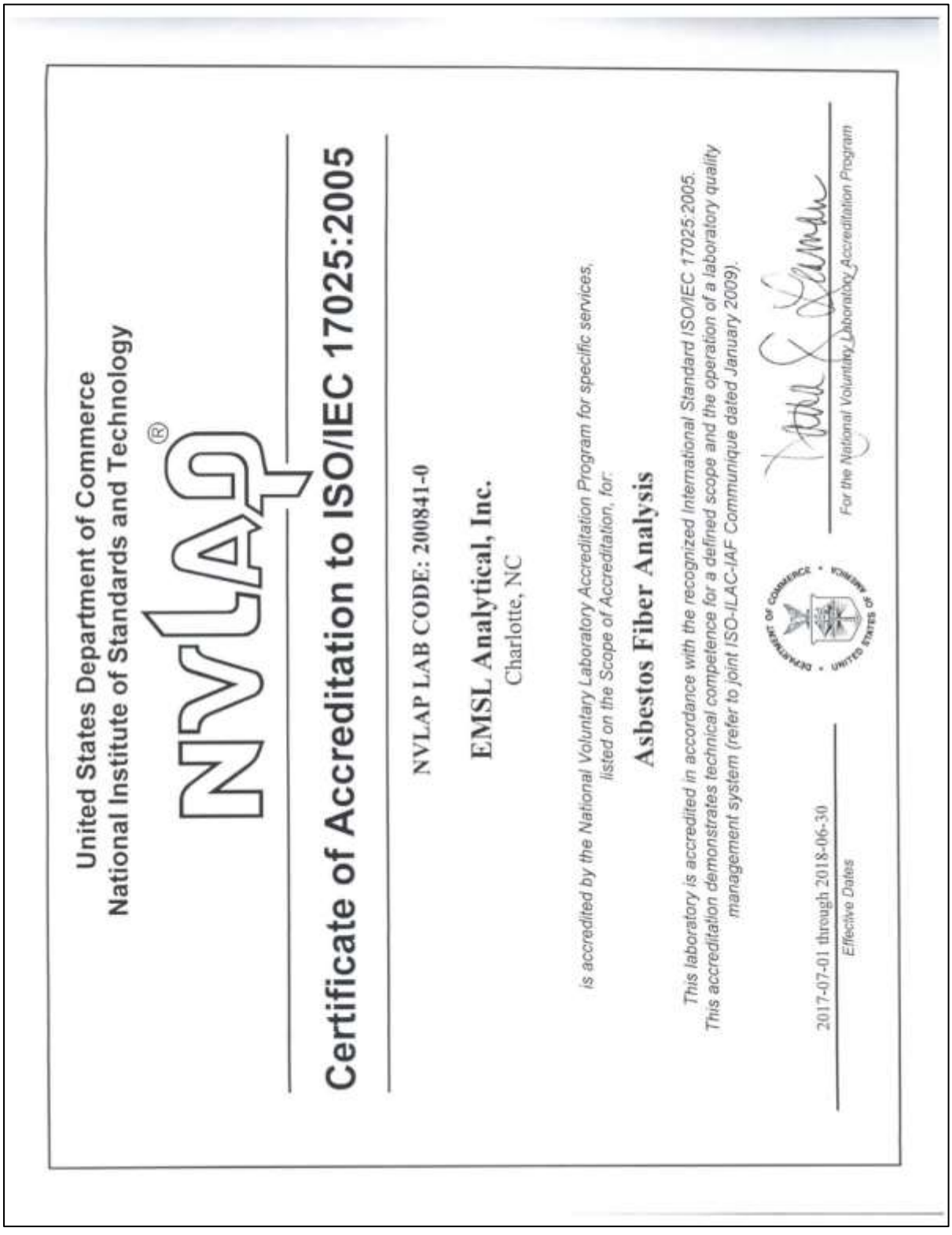

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200841-0

EMSL Analytical, Inc.
Charlotte, NC

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2017-07-01 through 2018-06-30
Effective Dates

For the National Voluntary Laboratory Accreditation Program

NVLAP® National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

EMSL Analytical, Inc.
376 Crompton Street
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Mr. Lee Plumley
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Email: lplumley@emsl.com
http://www.emsl.com

ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 200841-0**

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA – Appendix E to Subpart E of Part 763 – Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

Effective 2017-07-01 through 2018-06-30

Page 1 of 1

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http://www.EMSL.com / charlottelab@emsl.com

EMSL Order: 411804493
Customer ID: TRID50
Customer PO:
Project ID:

Attention: Kevin Leedy
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Summerville, SC 29485
Project: The Arsenal - Beaufort, SC

Phone: (843) 670-9987
Fax:
Received Date: 06/07/2018 9:50 AM
Analysis Date: 06/07/2018
Collected Date: 06/05/2018

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Type
01-01-Membrane 411804493-0001	Low Roof - Roof Flashing	Gray/White Non-Fibrous Homogeneous	10% Synthetic	8% Ca Carbonate 82% Non-fibrous (Other)	None Detected
01-01-Insulation 411804493-0001A	Low Roof - Roof Flashing	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
01-02-Membrane 411804493-0002	Low Roof - Roof Flashing	White Fibrous Homogeneous	10% Synthetic	90% Non-fibrous (Other)	None Detected
01-02-Insulation 411804493-0002A	Low Roof - Roof Flashing	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
01-03-Insulation 411804493-0002B	Low Roof - Roof Flashing	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
02-04-Membrane 411804493-0003	Low Roof - Roof Core	Gray/White Fibrous Heterogeneous	8% Synthetic	8% Ca Carbonate 84% Non-fibrous (Other)	None Detected
02-04-Insulation 411804493-0003A	Low Roof - Roof Core	Yellow Non-Fibrous Homogeneous		5% Ca Carbonate 95% Non-fibrous (Other)	None Detected
02-05-Membrane 411804493-0004	Low Roof - Roof Core	White Fibrous Homogeneous	10% Synthetic	90% Non-fibrous (Other)	None Detected
02-05-Insulation 411804493-0004A	Low Roof - Roof Core	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
02-06-Insulation 411804493-0004B	Low Roof - Roof Core	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
03-07 411804493-0005	Low Roof - Tar Application	Brown/Black Fibrous Heterogeneous	15% Cellulose	70% Non-fibrous (Other)	15% Chrysotile
03-08 411804493-0006	Low Roof - Tar Application				Positive Stop (Not Analyzed)
04-10-Membrane 411804493-0007	High Roof - Roof Flashing	Gray/Black/Yellow Fibrous Heterogeneous	8% Synthetic	8% Ca Carbonate 84% Non-fibrous (Other)	None Detected
04-10-Cementitious Layer 411804493-0007A	High Roof - Roof Flashing	Gray Non-Fibrous Homogeneous	15% Min. Wool	10% Ca Carbonate 75% Non-fibrous (Other)	None Detected
04-10-Tar 411804493-0007B	High Roof - Roof Flashing	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
04-10-Insulation 411804493-0007C	High Roof - Roof Flashing	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 06/07/2018 15:05:13

EMSL Analytical, Inc.
10801 Southern Loop Blvd Pineville, NC 28134
Tel/Fax: (704) 525-2205 / (704) 525-2382
http://www.EMSL.com / charlottelab@emsl.com

EMSL Order: 411804493
Customer ID: TRID50
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Type
04-11-Membrane 411804493-0008	High Roof - Roof Flashing	Gray/Black/Green Fibrous Homogeneous	10% Synthetic	90% Non-fibrous (Other)	None Detected
04-11-Cementitious Layer 411804493-0008B	High Roof - Roof Flashing	Gray Fibrous Homogeneous	20% Min. Wool	80% Non-fibrous (Other)	None Detected
04-11-Tar 411804493-0008C	High Roof - Roof Flashing	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
04-11-Insulation 411804493-0008D	High Roof - Roof Flashing	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
04-12-Cementitious Layer 411804493-0008E	High Roof - Roof Flashing	Gray Non-Fibrous Homogeneous	15% Min. Wool	10% Ca Carbonate 75% Non-fibrous (Other)	None Detected
04-12-Insulation 411804493-0008F	High Roof - Roof Flashing	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
05-13-Membrane 411804493-0009	High Roof - Roof Core	Gray/Black/Yellow Fibrous Heterogeneous	8% Synthetic	10% Ca Carbonate 82% Non-fibrous (Other)	None Detected
05-13-Tar 411804493-0009A	High Roof - Roof Core	Black Non-Fibrous Homogeneous	8% Glass	5% Ca Carbonate 87% Non-fibrous (Other)	None Detected
05-13-Insulation 411804493-0009B	High Roof - Roof Core	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
05-14-Membrane 411804493-0010	High Roof - Roof Core	Gray/Green Fibrous Homogeneous	10% Synthetic	90% Non-fibrous (Other)	None Detected
05-14-Tar 411804493-0010A	High Roof - Roof Core	Black Non-Fibrous Homogeneous	8% Glass	92% Non-fibrous (Other)	None Detected
05-14-Insulation 411804493-0010B	High Roof - Roof Core	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
05-15-Insulation 411804493-0010C	High Roof - Roof Core	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
06-16 411804493-0011	High Roof - Cloth	Gray/White Fibrous Heterogeneous	8% Synthetic	8% Ca Carbonate 84% Non-fibrous (Other)	None Detected
06-17 411804493-0012	High Roof - Cloth	Gray/White Fibrous Heterogeneous	8% Synthetic	10% Ca Carbonate 82% Non-fibrous (Other)	None Detected
06-18 411804493-0013	High Roof - Cloth	Green/Beige Fibrous Homogeneous	10% Synthetic	90% Non-fibrous (Other)	None Detected
07-19 411804493-0014	Low Roof - Roof Flashing	Gray/White Fibrous Heterogeneous	5% Synthetic 10% Min. Wool	8% Ca Carbonate 77% Non-fibrous (Other)	None Detected
07-20 411804493-0015	Low Roof - Roof Flashing	Gray/White Fibrous Homogeneous	8% Synthetic 5% Min. Wool	87% Non-fibrous (Other)	None Detected

Initial report from: 06/07/2018 15:05:13

ASB_PLM_0008_0001 - 1.18 Printed: 6/7/2018 3:05 PM

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EMSL Order: 411804493
Customer ID: TRID50
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
08-22-Membrane 411804493-0016	Low Roof - Roof Core	Gray/Green Fibrous Heterogeneous	10% Synthetic	5% Ca Carbonate 85% Non-fibrous (Other)	None Detected
08-22-Cementitious Layer 411804493-0016A	Low Roof - Roof Core	Gray Non-Fibrous Homogeneous	15% Min. Wool	8% Ca Carbonate 77% Non-fibrous (Other)	None Detected
08-22-Insulation 411804493-0016B	Low Roof - Roof Core	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
08-23-Membrane 411804493-0017	Low Roof - Roof Core	Gray Fibrous Homogeneous	10% Synthetic	90% Non-fibrous (Other)	None Detected
08-23-Cementitious Layer 411804493-0017A	Low Roof - Roof Core	Gray Fibrous Homogeneous	<1% Cellulose 15% Min. Wool	85% Non-fibrous (Other)	None Detected
08-23-Insulation 411804493-0017B	Low Roof - Roof Core	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
08-24-Cementitious Layer 411804493-0017C	Low Roof - Roof Core	Gray Fibrous Homogeneous	10% Min. Wool	8% Ca Carbonate 82% Non-fibrous (Other)	None Detected
08-24-Insulation 411804493-0017D	Low Roof - Roof Core	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Analyst(s)
Eric Loomis (25)
Kristie Elliott (16)

Evan L Plumley
Lee Plumley, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc. Pineville, NC NVLAP Lab Code 200841-0, VA 3333 00312

Initial report from: 06/07/2018 15:05:13

ASB_PLM_0008_0001 - 1.18 Printed: 6/7/2018 3:05 PM

Page 3 of 3

EMSL Analytical, Inc.
10801 Southern Loop Blvd Pineville, NC 28134
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http://www.EMSL.com / charlottelab@emsl.com

EMSL Order: 411804493
Customer ID: TRID50
Customer PO:
Project ID:

Attention: Kevin Leedy
Trident Environmental Services, Inc
500 Oakbrook Lane
Suite E
Summerville, SC 29485
Project: The Arsenal - Beaufort, SC

Phone: (843) 670-9987
Fax:
Received Date: 06/07/2018 9:50 AM
Analysis Date: 06/09/2018
Collected Date: 06/05/2018

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
01-03-Membrane 411804493-0018	Low Roof - Roof Flashing	Gray Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
02-06-Membrane 411804493-0019	Low Roof - Roof Core	Gray/Green Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
04-12-Membrane 411804493-0020	High Roof - Roof Flashing	Gray Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
04-12-Tar 411804493-0021	High Roof - Roof Flashing	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
05-15-Membrane 411804493-0022	High Roof - Roof Core	Gray Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
05-15-Tar 411804493-0023	High Roof - Roof Core	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
07-21 411804493-0024	Low Roof - Roof Flashing	Gray Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
08-24-Membrane 411804493-0025	Low Roof - Roof Core	Gray Non-Fibrous Heterogeneous	100	<0.1 Fibrous_Other	No Asbestos Detected

Analyst(s)
Aaron Hartley (8)

Lee Plumley, Laboratory Manager
or other approved signatory

This laboratory is not responsible for % asbestos in total sample when the residue only is submitted for analysis. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Pineville, NC

Initial report from: 06/11/2018 12:19:36

Printed 6/11/2018 12:19:38PM

Page 1 of 1

OrderID: 411804493

EMSL Analytical, Inc.
10801 Southern Loop Blvd

Pineville, NC 28134
PHONE: (704) 525-2205
FAX: (704) 525-2382

EMSL ANALYTICAL, INC.

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number *(Lab Use Only)*: 411804493

Company: TRIDENT ENVIRONMENTAL SERVICES, INC	**EMSL-Bill to:** ☑ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: 500 Oakbrook Lane Suite E	
City: Summerville **State/Province:** SC	**Zip/Postal Code:** 29485 **Country:** US
Report To (Name): Kevin Leedy	**Telephone #:** 8438733648
Email Address: kevinleedy@tridentenvironmental.com	**Fax #:** **Purchase Order:**
Project Name/Number: The Arsenal - Beaufort, SC	**Please Provide Results:** ☐ Fax ☑ Email ☐ Mail
U.S. State Samples Taken: SC	**CT Samples:** ☐ Commercial/Taxable ☐ Residential/Tax Exempt

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hour ☐ 6 Hour ■ 24 Hour ☐ 48 Hour ■ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week

**For TEM Air 3 hr through 6 hr, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.*

PLM - Bulk (reporting limit)	TEM – Bulk
■ PLM EPA 600/R-93/116 (<1%)	■ TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1
☐ PLM EPA NOB (<1%)	☐ NY ELAP Method 198.4 (TEM)
Point Count ☐ 400 (<0.25%) ☐ 1000 (<0.1%)	☐ Chatfield Protocol (semi-quantitative)
Point Count w/Gravimetric ☐ 400 (<0.25%) ☐ 1000 (<0.1%)	☐ TEM % by Mass – EPA 600/R-93/116 Section 2.5.5.2
☐ NIOSH 9002 (<1%)	☐ TEM Qualitative via Filtration Prep Technique
☐ NY ELAP Method 198.1 (friable in NY)	☐ TEM Qualitative via Drop Mount Prep Technique
☐ NY ELAP Method 198.6 NOB (non-friable-NY)	**Other**
☐ OSHA ID-191 Modified	☐
☐ Standard Addition Method	

■ **Check For Positive Stop – Clearly Identify Homogenous Group** **Date Sampled:** 06/05/18

Samplers Name: Leedy **Samplers Signature:**

Sample #	HA #	Sample Location	Material Description
		See attached COC	

Client Sample # (s): 01-21 - 08-24 **Total # of Samples:** 24

Relinquished (Client): **Date:** 6/6/18 **Time:** 1610

Received (Lab): **Date:** 6/7/18 **Time:** 730 EMSLFX

Comments/Special Instructions: 8060 8890 8679

Page 1 of ____ pages

Page 1 Of 3

OrderID: 411804493

411804493

TES
Trident Environmental Services, Inc.
Consultants in Industrial Hygiene and Safety
500 Oakbrook Lane, Suite E
Summerville, SC 29485
Phone (843) 873-3648
Fax (843) 821-1767

CHAIN OF CUSTODY FORM
Asbestos Bulk Samples

Project Name: The Arsenal - Date: 6/5/18

Location: Beaufort, SC

DESCRIPTION OF EACH SAMPLE AREA						ASSESSMENT OF MATERIALS		
Homog Area	Sample ID	Location	Description	Friable (+)	Friable (-)	Asbestos Type	COND Assess	HAZ Assess
01	01	Low Roof	roof flashing		X			
	02	↓	↓		X			
	03	↓	↓		X			
02	04	↓	roof core		X			
	05	↓	↓		X			
	06	↓	↓		X			
03	07	↓	tar apparatus		X			
	08	↓	↓		X			
	09	↓	↓		X			
04	10	High Roof	roof flashing		X			
	11	↓	↓		X			
	12	↓	↓		X			
05	13	↓	roof core		X			
	14	↓	↓		X			
	15	↓	↓		X			
06	16	↓	cloth	X				
	17	↓	↓	X				
	18	↓	↓	X				
07	19	Low Roof	roof flashing		X			
	20	↓	↓		X			
	21	↓	↓		X			

CONDITION Assessment Categories
(1) Thermal Systems Insulation - Good Condition
(2) Thermal Systems Insulation - Damaged
(3) Thermal Systems Insulation - Significantly Damaged
(4) Surfacing - Good Condition
(5) Surfacing - Damaged
(6) Surfacing - Significantly Damaged

Asbestos Present
(1) Amosite
(2) Chrysotile
(3) Crocidolite
(4) Anthophyllite
(5) Tremolite
(6) Actinolite

HAZARD Assessment Categories
G = Good Condition
D = Damaged
S = Significantly Damaged
LPD = Low Potential for Disturbance

Samples Collected by: Date / Time: 6/5/18

Samples Received by: Date / Time:

Page 2 Of 3

OrderID: 411804493

411804493

TES
Trident Environmental Services, Inc.
Consultants in Industrial Hygiene and Safety
500 Oakbrook Lane, Suite E
Summerville, SC 29486
Phone (843) 873-3648
Fax (843) 821-1787

CHAIN OF CUSTODY FORM
Asbestos Bulk Samples

Project Name: The Arsenal Date: 6/5/18

Location: Beaufort, SC

DESCRIPTION OF EACH SAMPLE AREA						ASSESSMENT OF MATERIALS		
Homog Area	Sample ID	Location	Description	Friable (+)	Friable (-)	Asbestos Type	COND Assess	HAZ Assess
C8	22	Low Roof	roof core		X			
	23	〃	〃		X			
	24	〃	〃		X			

CONDITION Assessment Categories
(1) Thermal Systems Insulation - Good Condition
(2) Thermal Systems Insulation - Damaged
(3) Thermal Systems Insulation - Significantly Damaged
(4) Surfacing - Good Condition
(5) Surfacing - Damaged
(6) Surfacing - Significantly Damaged

Asbestos Present
(1) Amosite
(2) Chrysotile
(3) Crocidolite
(4) Anthophyllite
(5) Tremolite
(6) Actinolite

HAZARD Assessment Categories
G = Good Condition
D = Damaged
S = Significantly Damaged
LPD = Low Potential for Disturbance

Samples Collected by: [signature] Date / Time: 6/5/18

Samples Received by: Date / Time:

Page 3 Of 3

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Project information.
   2. Work covered by Contract Documents.
   3. Work by Owner.
   4. Regulatory requirements.
   5. Access to site.
   6. Coordination with occupants.
   7. Work restrictions.
   8. Specification and drawing conventions.

B. Related Requirements:
   1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

A. Project Identification: Beaufort Arsenal/Beaufort History Museum
   1. Project Location: 713 Craven Street, Beaufort, South Carolina 29902.

B. Owner: City of Beaufort
   1. Owner's Representative: Paul McGee

C. Architect: Meadors, Inc., PO Box 21758, Charleston, SC 29413.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:
   1. The Beaufort Arsenal is an iconic local historic site and a major contributing structure in the City of Beaufort's National Historic Landmark District. The scope of work for this project includes: removal of the existing membrane roofs including insulation down to the roof deck, installation of two new single-ply membrane roofs at the 1-story wings (including insulation, tapered insulation, cover board, and flashings), installation of one new standing seam roof, flashings, and stainless-steel gutter at the 2-story main building. Scope includes cleaning, repairing, and painting designated sections of the masonry wall on the east and west 1- story wings, and repairing gutters and downspouts.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.5 REGULATORY REQUIREMENTS

A. Conform to requirements of all authorities having jurisdiction.

B. Standards for Historic Properties: All work shall comply with the Secretary of the Interior's "Standards for the Treatment of Historic Properties."

1.6 ACCESS TO SITE

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Use of Site: Limit use of Project site to work outlined in drawings. Do not disturb portions of Project site beyond areas in which the Work is indicated.
   1. Driveways, Walkways and Entrances: Keep driveways loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
      a. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Condition of Existing Building: Maintain portions of existing building affected by construction operation throughout construction period. Repair damage caused by construction operations.

1.7 COORDINATION WITH OCCUPANTS

A. Owner Limited Occupancy of Completed Areas of Construction: **The Arsenal is to remain open during construction. Maintain existing exits unless otherwise indicated.**
   1. Maintain access to existing walkways, corridors and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors or other occupied or used areas without written permission from Owner and approval of authorities having jurisdiction.
   2. All entrances and exits are to remain clear at all times so patrons and staff can come and go unimpeded. Active work areas are to be delineated by appropriate cautionary tape or like signage.
   3. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations of adjacent properties.

1.8 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.
   1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
   2. The upper roof is to be completed first, followed by the two lower roofs. Owner wants to minimize construction foot traffic on new PVC roofs.

B. On-Site Work Hours: The Arsenal is to remain open during construction. Hours of operation for Arsenal & Museum is Monday-Saturday 9AM – 5PM.
   1. Monday - Friday work hours between 7:30 AM – 5 PM.
   2. Weekend Hours: 8:30 AM – 5 PM, owner must approve weekend hours to ensure work does not conflict with event schedule.

3. Hours for Core Drilling and Other Noisy Activity: After 8:00 AM.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner.

D. Cleanup: Job site shall remain litter- and debris-free at all times. It shall be contractor's responsibility to clean both interior and exterior work sites thoroughly at the end of each workday. It is allowable to use the dumpster on site for disposal of debris and trash. The Arsenal is to remain open during construction.

E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances.

F. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Document Interpretation: In the case of conflicts or discrepancies between drawings and Divisions 02-49 of the specifications, or within or among the Contract Documents and not clarified by Addendum, the most stringent requirement shall apply.
1. Note: None of the documents included in the drawing index are intended to be considered in isolation of one another.
2. All bidders, sub-bidders, contractors, and sub-contractors shall utilize complete sets of the bidding and/or Construction Documents in quantifying and construction. Neither the owner nor architect assume responsibility for errors, omissions, or misinterpretations resulting from the use of incomplete sets of bidding and/or construction documents.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Requirements:

1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.

1.3 DEFINITIONS

A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

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

D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 1 – Stucco Repair:

1. Description: Replace deteriorated stucco with new compatible stucco.
2. Unit of Measurement: Square Foot.
3. Included in Base Bid: Refer to Drawings and Specifications.

B. Unit Price No. 2 – : Painting Stucco

1. Description: Apply pre-treatment and mineral silicate paint system as indicated on Drawings and as specified in Section 099133 “Silicate Mineral Exterior Paint/Coatings”.
2. Unit of Measurement: Square Foot.
3. Included in Base Bid: Refer to Drawings and Specifications.

C. Unit Price No. 3 – : Roof Decking

1. Description: Replace existing decking boards as indicated on Drawings and as specified in Section 061000 Rough Carpentry.
2. Unit of Measurement: Square Foot.
3. Included in Base Bid: 35% of Lower Roofs (Chamber of Commerce, Visitor’s Center, 25% of Upper Roof (Museum). See Site Plan on T100.

END OF SECTION 012200

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
   1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
   2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
   1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Sheathing (lower roofs only).
   1. Base Bid: None.
   2. Alternate: Provide new layer of sheathing on top of existing decking boards as indicated on Drawings and as specified in Section 061000 Rough Carpentry.
   3. State amount to ADD.

B. Alternate No. 2: Roofing Rigid and Tapered Insulation (lower roofs only).

   1. Base Bid: Provide Polyisocyanurate Insulation: ASTM C 1289, Type II, Class 1, Grade 2 as indicated on Drawings and as specified in Section 075419 Polyvinyl-Chloride (PVC) Roofing.
   2. Alternate: Provide Extruded Polystyrene (XPS) Insulation: Comply with ASTM C 578, Type IV as indicated on Drawings and as specified in Section 075419 Polyvinyl-Chloride (PVC) Roofing.
   3. State amount to ADD.

C. Alternate No. 3: Upper Roof Complete
   1. Base Bid: Complete roof system as indicated on Drawings and as specified in applicable specification sections.
   2. Alternate: Delete Upper Roof scope of work in its entirety.
   3. State amount to DEDUCT.

D. Alternate No. 4: Painting Stucco.

   1. Base Bid: Apply pre-treatment and mineral silicate paint system as indicated on Drawings and as specified in Section 099133 “Silicate Mineral Exterior Paint/Coatings”.
   2. Alternate: Delete scope of work.
   3. State amount to DEDUCT.

E. Alternate No. 4: Painting Metal Leader heads, Backplates, Downspouts, and Accessories

   1. Base Bid: Apply paint system as indicated on Drawings and as specified in Section 099000 “Architectural Coatings”.
   2. Alternate: Delete scope of work.
   3. State amount to DEDUCT.

END OF SECTION 012300

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions after award of Contract.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit one copy of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use facsimile of form provided in Project Manual.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication, or installation cannot be provided, if applicable.
b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Requested substitution provides sustainable design characteristics that specified product provided.
c. Substitution request is fully documented and properly submitted.
d. Requested substitution will not adversely affect Contractor's construction schedule.
e. Requested substitution has received necessary approvals of authorities having jurisdiction.
f. Requested substitution is compatible with other portions of the Work.
g. Requested substitution has been coordinated with other portions of the Work.
h. Requested substitution provides specified warranty.
i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not allowed.

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

COMPLETE AND SUBMIT THIS FORM FOR APPROVAL OF SUBSTITUTES. SUBMISSION SHALL BE MADE IN DUPLICATE FOR EACH PROPOSED SUBSTITUTE ITEM.

SUBSTITUTION REQUEST FORM

TO: Betty Prime, Meadors, Inc., betty@meadorsinc.com

PROJECT: Beaufort Arsenal Roof Replacement Project

We submit for your consideration the following product instead of the specified item for the above project:

Section	Paragraph	Specified Item
_____	_____	_____

Proposed Substitution: _____

Attach complete technical data, including laboratory tests, if applicable.

Include complete information on changes to Drawings and/or Specifications which proposed substitution will require for its proper installation.

Fill in blanks below:

A. Does the substitution affect dimensions shown on the drawings?

Yes _____ No _

B. Will the undersigned pay for changes to building design, including engineering and detailing costs caused by the requested substitution?

Yes _____ No _

C. What effect does substitution have on other trades?

_____
_____
_____
_____

D. Differences between proposed substitution and specified item?

_____
_____
_____
_____

E. Manufacturer's guarantees of proposed and specified items are:

Same ___ Different (Explain on Attachments)

The Undersigned states that the function, appearance, and quality are equivalent or superior to the specified item.

Submitted by:

_____ For Use by Design Consultant
Signature

_____ ___ Accepted ___ Accepted as Noted
Firm ___ Not Accepted ___ Received Too Late

_____ By: _____
Address

_____ Date: _____

Date: _____ TEL/FAX: _____

Notes: _____

Attachment to Section 00120 - Supplementary Instructions to Bidders

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
c. Include costs of labor and supervision directly attributable to the change.
d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.

1.5 ADMINISTRATIVE CHANGE ORDERS

A. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Changes Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on Owner approved form.

1.7 CONSTRUCTION CHANGE DIRECTIVE

A. Change Directive: Architect may issue a Change Directive on AIA Document G714. Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:
   1. Section 012200 "Unit Prices" for administrative requirements governing the use of unit prices.
   2. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
   3. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule. Gantt Chart may serve to satisfy requirements for the schedule of values.
   1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
      a. Application for Payment forms with continuation sheets.
      b. Submittal schedule.
      c. Items required to be indicated as separate activities in Contractor's construction schedule.
   2. Submit the schedule of values to Architect at earliest possible date, but no later than seven (7) days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one-line item for each Specification Section.
   1. Identification: Include the following Project identification on the schedule of values:
      a. Project name and location.
      b. Name of Architect.
      c. Architect's project number (17-0163).

d. Contractor's name and address.
e. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703.
3. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
   a. Related Specification Section or Division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator/supplier.
   e. Change Orders (numbers) that affect value.
   f. Dollar value of the percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.
6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Each item in the schedule of values and Applications for Payment shall be complete.
   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
8. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
   1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
   1. Submit draft copy of Application for Payment seven (7) days prior to due date for review by Architect.

A. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.

B. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
   1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
   2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.

3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

C. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation.
3. Provide summary documentation for stored materials indicating the following:
   a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
   b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
   c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

D. Transmittal: Submit one signed and notarized PDF copy of each Application for Payment to Architect by a method ensuring receipt within 24 hours. Include waivers of lien and similar attachments if required.
1. Transmit each copy with PDF transmittal form listing attachments and recording appropriate information about application.

E. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

F. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Certificates of insurance and insurance policies.
5. Performance and payment bonds.
6. Data needed to acquire Owner's insurance.
7. Progress and preconstruction photographs.

G. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

H. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
   1. Evidence of completion of Project closeout requirements (maintenance documents, warranties, etc.).
   2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
   3. Updated final statement, accounting for final changes to the Contract Sum.
   4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
   5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
   6. AIA Document G707, "Consent of Surety to Final Payment."
   7. Evidence that claims have been settled.
   8. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General coordination procedures.
2. Requests for Information (RFIs).
3. Project meetings.

B. Related Requirements:

1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
2. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Progress photographic documentation.
7. Pre-installation conferences.
8. Project closeout activities.

C. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1.6 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Project number.
3. Date.
4. Name of Contractor.
5. Name of Architect.
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.

11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: AIA Document G716 or similar software-generated form, acceptable to Architect.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven (7) working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor's means and methods.
    d. Requests for coordination information already indicated in the Contract Documents.
    e. Requests for adjustments in the Contract Time or the Contract Sum.
    f. Requests for interpretation of Architect's actions on submittals.
    g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

    a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Use Log Form with not less than the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.7 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute an electronic copy of the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Conduct the conference to review responsibilities and personnel assignments.
2. Attendees: Authorized representatives of Owner Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Trades:
    a. Gutter (fabricator and welder).
    b. Roof (standing seam and single-ply).
    c. Stucco.
    d. Paint.

4. Agenda: Discuss items of significance that could affect progress, including the following:

    a. Tentative construction schedule.
    b. Phasing.
    c. Critical work sequencing and long-lead items.
    d. Designation of key personnel and their duties.
    e. Lines of communications.
    f. Procedures for processing field decisions and Change Orders.
    g. Procedures for RFIs.
    h. Procedures for testing and inspecting.
    i. Procedures for processing Applications for Payment.
    j. Distribution of the Contract Documents.
    k. Submittal procedures.
    l. Preparation of record documents.
    m. Use of the premises and existing building.
    n. Work restrictions.
    o. Working hours.
    p. Owner's occupancy requirements.
    q. Responsibility for temporary facilities and controls.
    r. Procedures for moisture and mold control.
    s. Procedures for disruptions and shutdowns.

t. Construction waste management and recycling.
u. Parking availability.
v. Work, and storage areas.
w. Equipment deliveries and priorities.
x. First aid.
y. Security.
z. Progress cleaning.

5. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 30 days prior to the scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

a. Preparation of record documents.
b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
c. Submittal of written warranties.
d. Requirements for delivery of material samples, attic stock, and spare parts.
e. Preparation of Contractor's punch list.
f. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
g. Submittal procedures.
h. Responsibility for removing temporary facilities and controls.

4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

D. Progress Meetings: **Conduct progress meetings weekly. Expect daily site visits from the City's assigned project manager for the duration of the project**

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner and Architect, Contractor, subcontractor (at the discretion of the Contractor), and other concerned entities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period.

b. Review present and future needs of each entity present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.
4) Deliveries.
5) Access.
6) Site utilization.
7) Temporary facilities and controls.
8) Progress cleaning.
9) Quality and work standards.
10) Status of correction of deficient items.
11) Field observations.
12) Status of RFIs.
13) Status of proposal requests.
14) Pending changes.
15) Status of Change Orders.
16) Pending claims and disputes.
17) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

a. Schedule Updating: Revise monthly Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Contractor's construction schedule.
   2. Construction schedule updating reports.
   3. Site condition reports.
   4. Special reports.

B. Related Requirements:

   1. Section 013300 "Submittal Procedures" for submitting schedules and reports.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:
   1. PDF electronic file.

B. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

   1. Submit a PDF electronic copy of schedule.

C. Construction Schedule Updating Reports: Submit monthly with Applications for Payment.

D. Daily Logs: Submit at the conclusion of the project, a copy of the log will be turned over to the City’s assigned project manager to memorialize the restorative effort.

E. Site Condition Reports: Submit at time of discovery of differing conditions.

F. Special Reports: Submit at time of unusual event.

1.4 COORDINATION

A. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.

   1. Secure time commitments for performing critical elements of the Work from entities involved.

2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities by location.
2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
5. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule and show how the sequence of the Work is affected.
1. Work Restrictions: Show the effect of the following items on the schedule:
    a. Limitations of continued occupancies. The site will remain open for the duration of construction.
    b. Uninterruptible services.
    c. The upper roof is to be completed first, followed by the two lower roofs. Owner wants to minimize foot traffic on new PVC roofs.
    d. Seasonal variations.

2. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
    a. Submittals.
    b. Mockups.
    c. Disassembly.
    d. Installation.
    e. Tests and inspections.
    f. Curing.

3. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities.

D. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule with Critical Path: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule due (5 business days) before restoration work commences. Critical path is required.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments (by location) within time bar.

2.3 REPORTS

A. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

B. Daily Logs: The selected contractor will keep a log detailing work completed daily.

2.4 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute electronic copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate final completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Architect and Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. When revisions are made, distribute updated schedules to the same parties. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

C. At a minimum, reports and schedule to be submitted with pay applications monthly.

END OF SECTION 013200

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Periodic construction photographs.
3. Final Completion construction photographs.

B. Related Requirements:

1. Section 013300 "Submittal Procedures" for submitting photographic documentation.
2. Section 017700 "Closeout Procedures" for submitting photographic documentation as project record documents at Project closeout.

1.3 INFORMATIONAL SUBMITTALS

A. Key Plan: Submit key plan in PDF or JPEG format of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation. Key plan required for preconstruction and final completion construction photographs.

B. Construction Photographs: Submit images within three days of taking photographs.

1. Digital Camera: Minimum sensor resolution of 8 megapixels.
2. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
3. Identification: Name photos based on location and date. Example: “Perimeter Wall – North Elevation_02.16.18“

1.4 COORDINATION

A. Auxiliary Services: Cooperate with Owner or Architect’s photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs without obscuring shadows.

1.5 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date: Include date in file name for each image.

C. Preconstruction Photographs: Before commencement of demolition, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.

1. Take a minimum of 75 photographs to show existing conditions adjacent to areas of construction before starting the Work.
2. All preconstruction photographs must be submitted and approved by Architect before any work begins.

D. Periodic Construction Photographs: Take a minimum of 30 digital photographs weekly. Select vantage points to show status of construction and progress since last photographs were taken.

E. Architect-Directed Construction Photographs: From time to time, Architect will instruct photographer about number and frequency of photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.

F. Final Completion Construction Photographs: Take 75 color photographs after date of Substantial Completion for submission as project record documents. Vantage points should match preconstruction photographs.

1. Do not include date stamp.

G. Additional Photographs: Architect and Owner may issue requests for additional photographs, in addition to periodic photographs specified.

1. Three days' notice will be given, where feasible.
2. In emergency situations, take additional photographs within 24 hours of request.

3. Circumstances that could require additional photographs include, but are not limited to, the following:
    a. Immediate follow-up when on-site events result in construction damage or losses.
    b. Substantial Completion of a major phase or component of the Work.
    c. Extra record photographs at time of final acceptance.
    d. Owner's request for special publicity photographs.

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

B. Related Requirements:

1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
3. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files: Upon completion of Architect’s release form, electronic digital data files of the Contract Drawings may be provided by Architect for Contractor's use in preparing submittals.

1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.

a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
b. Digital Drawing Format: Architect will provide Drawings in PDF format.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 7 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Resubmittal Review: Allow 7 days for review of each resubmittal.

D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner**,** containing the following information:

a. Project name.
b. Date.
c. Name and address of Architect.
d. Name of Contractor.
e. Name of firm or entity that prepared submittal.
f. Names of subcontractor, manufacturer, and supplier.
g. Category and type of submittal.
h. Submittal purpose and description.
i. Specification Section number and title.
j. Specification paragraph number or drawing designation and generic name for each of multiple items.
k. Drawing number and detail references, as appropriate.

l. Location(s) where product is to be installed, as appropriate.
m. Related physical samples submitted directly.
n. Indication of full or partial submittal.
o. Transmittal number, numbered consecutively.
p. Submittal and transmittal distribution record.
q. Other necessary identification.
r. Remarks.

E. Options: Identify options requiring selection by Architect.

F. Resubmittals: Make resubmittals in same form as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

G. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities.

H. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Submit electronic submittals via email as PDF electronic files.

a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2. Action Submittals: Submit one PDF copy of each submittal unless otherwise indicated.
3. Informational Submittals: Submit one PDF copy of each submittal unless otherwise indicated.
4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. Submit Product Data before or concurrent with Samples.
5. Submit Product Data in the following format:

    a. PDF electronic file via email.

6. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.

C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

    a. Generic description of Sample.
    b. Product name and name of manufacturer.
    c. Sample source.
    d. Number and title of applicable Specification Section.
    e. Specification paragraph number and generic name of each item.
3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

    a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    b. Samples not incorporated into the Work are the property of Owner.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

    a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

D. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."

E. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."

F. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."

G. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."

H. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person as required in the Contract Documents.

I. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

J. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

K. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

L. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

M. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

N. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

O. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

1. . Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

B. Informational Submittals: Architect will review each submittal and will return it, or will not return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION 013300

SECTION 013591- HISTORIC TREATMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This project involves the rehabilitation of an historic building. Treat the building respectfully. Carefully inspect existing conditions and treat existing materials as irreplaceable. Do not remove, alter or disfigure any existing materials, elements or finishes, unless indicated on the Drawings, specified herein, or directed by the Architect.

B. Section includes general protection and treatment procedures for designated historic spaces, rooms, areas, and surfaces in the entire Project, including general project guidelines, selected historic preservation resources and the following specific work:

1. General Historic Treatment Procedures.
2. Historic removal and dismantling.

C. Codes and standards set forth by:
1. All work shall be performed in accordance with the “Secretary of the Interior’s Standards for Preservation, “U.S. Department of the Interior, National Park Service, 1995.”

1.3 REFERENCES

A. United States Department of the Interior, Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings.

B. United States General Services Administration: Historic Preservation Technical Procedures.

C. National Park Service Historic Preservation Briefs
1. Preservation Brief 2: Repointing Mortar Joints in Historic Masonry Buildings
2. Preservation Brief 16: The Use of Substitute Materials on Historic Building Exteriors
3. Preservation Brief 17: Architectural Character: Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving Their Character
4. Preservation Brief 22: The Preservation and Repair of Historic Stucco

1.4 DEFINITIONS

A. Consolidate: To strengthen loose or deteriorated materials in place.

B. Dismantle: To disassemble and detach items by hand from existing construction to the limits indicated, using small hand tools and small one-hand power tools, so as to protect nearby

historic surfaces; and legally dispose of dismantled items off-site, unless indicated to be salvaged or reinstalled.

C. Existing to Remain: Existing items that are not to be removed or dismantled.

D. Historic: Spaces, areas, rooms, surfaces, materials, finishes, and overall appearance which are important to the successful preservation, conservation, restoration, and reconstruction as determined by the Owner and Architect. Designated historic spaces, areas, rooms, and surfaces may be indicated on drawings.

E. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by the Owner or Architect.

F. Reconstruct: To remove existing item, replicate damaged or missing components, and reinstall in original position.

G. Refinish: To remove existing finishes to substrate and apply new finish to match original or as otherwise indicated.

H. Reinstall: To protect removed or dismantled item, repair and clean it as indicated for reuse, and reinstall it in original position, or where indicated.

I. Remove: Specifically, for historic spaces, areas, rooms, and surfaces, the term means to detach an item from existing construction to the limits indicated, using hand tools and hand-operated power equipment, and legally dispose of it off-site, unless indicated to be salvaged or reinstalled.

J. Repair: To correct damage and defects, retaining existing materials, features, and finishes while employing as little new material as possible. Includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.

K. Replace: To remove, duplicate, and reinstall entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.

L. Replicate: To reproduce in exact detail, materials, and finish, unless otherwise indicated.

M. Reproduce: To fabricate a new item, accurate in detail to the original, and in either the same or a similar material as the original, unless otherwise indicated.

N. Restore: To consolidate, replicate, reproduce, repair, and refinish as required to achieve the indicated results.

O. Retain: To keep existing items that are not to be removed or dismantled.

P. Reversible: New construction work, treatments, or processes that can be removed or undone in the future without damaging historic materials, unless otherwise indicated.

Q. Salvage: To protect removed or dismantled items and deliver them to Owner.

R. Stabilize: To provide structural reinforcement of unsafe or deteriorated items while maintaining the essential form as it exists at present; also, to reestablish a weather-resistant enclosure or to stabilize loose or detached original material in an effort to halt deterioration or future loss of historic material

S. Strip: To remove existing finish down to base material, unless otherwise indicated.

1.5 PROJECT MEETINGS FOR HISTORIC TREATMENT

A. Preliminary Historic Treatment Preconstruction Conference: Before starting historic treatment work, Contractor will conduct conference at Project site.
   1. Conduct conference on site following Project Preconstruction Meeting.

   2. Attendees: In addition to representatives of the Owner, Architect, Contractor, and Construction Supervisor, and installers who work interfaces with or affects historic treatment shall be represented at the meeting.

   3. General: Review methods and procedures related to historic treatment including, but not limited to, the following:
      a. Review manufacturer's written instructions for precautions and effects of historic treatment procedures on materials, components, and vegetation.
      b. Review and finalize historic treatment construction schedule; verify availability of materials, equipment, and facilities needed to make progress and avoid delays.
      c. Review qualifications of personnel assigned to the work and assign duties.
      d. Review areas where existing construction is to remain and requires protection.

   4. Removal and Dismantling:
      a. Inspect and discuss condition of construction to be removed or dismantled.
      b. Review requirements of other work that relies on substrates exposed by removal and dismantling work.

   5. Reporting: Construction Manager will record conference results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from conference.

1.6 MATERIALS OWNERSHIP

A. Historic items, relics, and similar objects including, but not limited to, artifacts, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during removal and dismantling work remain Owner's property. Carefully dismantle and salvage each item or object.

B. Coordinate with Owner’s representative, who will establish special procedures for dismantling and salvage.

1.7 SUBMITTALS

A. Historic Treatment Qualifications: Submit documentation of past project experience that meet the work experience outlined in the RFP and specifications.

1.8 REGULATORY REQUIREMENTS

A. Comply with governing EPA notification regulations before beginning removal and dismantling work. Comply with hauling and disposal regulations of authorities having jurisdiction. The required research report and manufacturer's data shall be on site and used for reference.
   1. Conform to all safety guidelines
   2. For Cleaning: Comply with municipal and Federal regulations governing cleaning, chemical waste disposal, scaffolding and protection of adjacent surfaces.

B. Standards: Comply with ANSI/ASSE A10.6.

C. Comply with all OSHA regulations and safety guidelines for scaffolding and protection.

1.9 SITE PROTECTION

A. Protect persons, surrounding surfaces of building, and building site from harm resulting from historic treatment procedures.

   1. Use only proven protection methods, appropriate to each area and surface being protected.
   2. Provide barricades, barriers, and temporary directional signage to exclude public from areas where historic treatment work is being performed.
   3. Contain dust and debris generated work and prevent it from reaching the public or adjacent surfaces.
   4. Protect floors and other surfaces along haul routes from damage, wear, and staining.
   5. Provide supplemental sound-control treatment to isolate work from other areas of the building.
   6. Provide protection against spreading water at or beyond the work area by sheeting and tarpaulins.
   7. Provide masking or covering on adjacent surfaces and permanent equipment. Secure coverings without the use of adhesive type tapes. Impervious sheeting which produces condensation should not be used.

B. All necessary precautions shall be taken to protect all parts of the historic building not being repaired from the effects of the work, including excessive amounts of water that should not be allowed to pond in any areas.

1.10 PROJECT CONDITIONS

A. General Size Limitation in Historic Spaces: Materials, products, and equipment used for performing the Work and for transporting debris, materials, and products shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection, by 12 inches or more.

B. Conditions existing at time of inspection for pricing purpose will be maintained by Owner as far as practical.

C. If unanticipated asbestos is suspected, stop work in the area of potential hazard, shut off fans and other air handlers ventilating the area, and rope off area until the questionable material is identified. Re-assign workers to continue work in unaffected areas. Resume work in the area of concern after safe working conditions are verified.

D. Do not change sources or brands of materials during the course of the work.

E. Storage or sale of removed or dismantled items on-site is not permitted unless otherwise indicated.

1.11 GENERAL HISTORIC TREATMENT

A. The principal aim of any work must be to halt the process of deterioration and stabilize the item's condition. Repair is a second option which becomes necessary only where preservation is not sufficient to ensure mid- to long-term survival. Repair should always be based on the fundamental principal of 'minimal disturbance'. Follow the procedures approved in the historic treatment program.
   1. Retain as much existing material as possible; repairing and consolidating rather than replacing.
   2. Use additional material or structure to reinforce, strengthen, prop, tie, and/or support existing material or structure.
   3. Use reversible processes wherever possible.
   4. Use of traditional materials and historically accurate repair and replacement techniques.

B. Record existing work before each procedure (preconstruction) and progress during the work with digital preconstruction documentation photographs. Comply with requirements in Division 01 Section "Photographic Documentation."

C. Ensure supervisory personnel are present when historic preservation treatment work begins and during its progress.

D. Notify Architect of Record and Owner of visible changes in the integrity of material or components whether due to environmental causes including biological attack, UV degradation, freezing, or thawing; or due to structural defects including cracks, movements, or distortion.

E. Owner's approval is required for any change, addition or removal of historic structural fabric or historic property.

F. Where missing features are indicated to be repaired or replaced, provide features whose designs are based on accurate duplications rather than conjectural designs subject to the approval of the Owner and Architect.

G. Where work requires existing features to be removed or dismantled and reinstalled, perform these operations without damage to the material itself, to adjacent materials, or to the substrate.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to the Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION (Not Used)

END OF SECTION 013591

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. Document Interpretation: In the case of conflicts or discrepancies between Drawings and Divisions 02 - 49 of the Specifications, or within or among the Contract Documents and not clarified by Addendum, the most stringent requirement shall apply.

1. Note: None of the documents included in the drawing index are intended to be considered in isolation of one another.
2. All bidders, sub-bidders, contractors, and sub-contractors, shall utilize complete sets of the bidding and/or construction documents in quantifying and constructing. Neither the owner not architect assumes responsibility for errors, omissions, or misinterpretations resulting from the use of incomplete sets of bidding and/or construction documents.

1.5 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities. Identify quality-control personnel responsible for the project.

1.6 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.

B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

1. Project quality-control manager may also serve as Project superintendent.

C. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.

D. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.7 REPORTS AND DOCUMENTS

A. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.8 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance. See specification sections for specific installer qualifications.

E. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

A. Qualifications: Submit documentation of past project experience that meet the work experience outlined in the RFP and specifications.

B. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

C. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

D. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

E. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
4. Demonstrate the proposed range of aesthetic effects and workmanship.
5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.

    a. Allow seven days for initial review and each re-review of each mockup.

6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

1.9 QUALITY CONTROL

A. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

    a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

B. Retesting/Reinspection: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspection, for construction that replaced Work that failed to comply with the Contract Documents.

C. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:
1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.

B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

C. Electric Power Service from Existing System: Electric power from Owner's existing temporary source is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 INFORMATIONAL SUBMITTALS

A. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

1.5 QUALITY ASSURANCE

A. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

A. Field Offices, General: Field Offices are not allowed on site.

B. Dumpster: Dumpster is allowed to be placed in parking space at 500 Carteret Street parking lot; approximately one block away. City does not have space adjacent to the building. Construction debris to be cleaned up nightly.

C. Sanitary Facilities: Contractor to provide portalet. Portalet to be placed at 500 Carteret Street parking lot. Location of portalet to be coordinated with owner prior to installation.

D. Storage: Storage not available on site. Storage box permitted at 500 Carteret Street parking lot.

2.2 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with day to day operations of the arsenal and performance of the Work. Relocate and modify facilities as required by progress of the Work.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.
   1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully. Provide a method to prevent solids such as stone, mortar, paint, residue from entering the drains and drain lines. Contractor shall be responsible for cleaning out drains and drain lines that become blocked or filled by sand or any other solids because of work performed under this contract.

C. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

D. Sanitary Facilities: Provide portalet.

E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

G. Lighting: Provide temporary lighting that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
   1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.3 SUPPORT FACILITIES INSTALLATION

A. Parking: 1 on street parking space provided for construction personnel. Additional parking can be provided in the 500 Carteret Street parking lot.

B. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
   1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.

C. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. All waste must be removed from site daily.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
   1. Comply with work restrictions specified in Section 011000 "Summary."

C. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

D. Temporary Fire Protection:
   1. General: Develop and supervise an overall fire-prevention and protection program for personnel at Project site. Instruct personnel in methods and procedures. Post warnings and information.
      a. Follow fire-prevention plan and the following.

b. Retain option Comply with NFPA 241 requirements unless otherwise indicated.
c. Remove and keep area free of combustibles including, rubbish, paper, waste, and chemicals, except to the degree necessary for the immediate work.
d. Prohibit smoking by all persons within the Project work and staging areas.

2. Heat-Generating Equipment and Combustible Materials: Not allowed on site. Exception: Welding equipment for installation of internal gutters.
3. Fire Extinguishers, Fire Blankets, and Rag Buckets: Maintain fire extinguishers, fire blankets, and rag buckets for disposal of rags with combustible liquids. Maintain each as suitable for the type of fire risk in each work area. Ensure that nearby personnel and the fire watch is trained in fire-extinguisher and blanket operation.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Substantial Completion procedures.
   2. Final completion procedures.
   3. Warranties.
   4. Final cleaning.
   5. Repair of the Work.

B. Related Requirements:
   1. Section 013233 "Photographic Documentation" for submitting final completion construction photographic documentation.
   2. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 ACTION SUBMITTALS

A. Product Data: For cleaning agents.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
   1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
   3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.
      a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.
   5. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
   1. Advise Owner of pending insurance changeover requirements.
   2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
   3. Complete startup and testing of systems and equipment.
   4. Perform preventive maintenance on equipment used prior to Substantial Completion.
   5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
   6. Advise Owner of changeover in heat and other utilities.
   7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
   8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   9. Complete final cleaning requirements, including touchup painting.
   10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Section 012900 "Payment Procedures." All closeout documents must be submitted before final payment will be processed.
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
    a. Project name.
    b. Date.
    c. Name of Architect.
    d. Name of Contractor.
    e. Page number.
4. Submit list of incomplete items in the following format:
    a. PDF electronic file via email.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document. Submit via email.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
   1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
      a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
      b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
      c. Remove tools, construction equipment, machinery, and surplus material from Project site.
      d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
      e. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
      f. Sweep concrete floors broom clean in unoccupied spaces.

g. Clean transparent materials, including glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish glass, taking care not to scratch surfaces.
h. Remove labels that are not permanent.
i. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
j. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
k. Leave Project clean and ready for occupancy.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
1. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

END OF SECTION 017700

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Related Requirements:
1. Section 017700 "Closeout Procedures" for general closeout procedures.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit copies of record Drawings as follows:

a. Initial Submittal:

1) Submit PDF electronic files of scanned record prints.
2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:

1) Submit PDF electronic files of scanned record prints on thumb drive and two set(s) of prints.
2) Print each drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and contract modifications on thumb drive. Provide one printed copy for Owner.

C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal on thumb drive. Provide one printed copy for Owner.

D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal on thumb drive. Provide one printed copy for Owner.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Accurately record information in an acceptable drawing technique.
    c. Record data as soon as possible after obtaining it.
    d. Record and check the markup before enclosing concealed installations.
    e. Cross-reference record prints to corresponding archive photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Revisions to routing of piping and conduits.
    d. Actual equipment locations.
    e. Locations of concealed internal utilities.
    f. Changes made by Change Order or Change Directive.
    g. Details not on the original Contract Drawings.
    h. Field records for variable and concealed conditions.
    i. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with red-colored pen. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, scan a full set of record prints of the Contract Drawings, as follows:

1. Format: PDF electronic file with comment function enabled via email for initial review submittal.

C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled via email. Provide three printed copies for Owner.
3. Record Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:

a. Project name.
b. Date.
c. Designation "PROJECT RECORD DRAWINGS."
d. Name of Architect.
e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as annotated PDF electronic file on thumb drive. Provide one printed copy for Owner.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as annotated PDF electronic file on thumb drive Provide one printed copy for Owner.

C. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file on thumb drive. No prints required.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION 017839

SECTION 040310 – CLEANING OF HISTORIC MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. Section 013591: “Historic Treatment Procedures”.

C. Section 090120: “Stucco Repairs and Replacement”.

D. Codes and standards set forth by:
   1. Preservation Brief #1 “Cleaning and Water-Repellent Treatments for Historic Masonry Buildings” as published by the U.S. National Park Service.
   2. Preservation Brief #6 “Dangers of Abrasive Cleaning to Historic Buildings” as published by the U.S. National Park Service

1.2 SUMMARY

A. Work includes, all labor, materials, equipment, and services necessary to complete the work of as shown on the Drawings and outlined in the supporting Reports, as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but is not necessarily limited to, the following:

   1. Extent of masonry surface treatments, as shown in the Drawings, and as specified herein, and as required for the proper performance of the work, on all the following masonry substrates:
      a. stucco
   2. Biogrowth cleaner shall be applied after stucco repair.
   3. Maintain aesthetic or historic qualities of all substrates.

1.3 DEFINITIONS

A. Atmospheric Soiling: The dust, aerosols, and particulate matter deposited from the air directly on the material surface. Particulates can result from vehicle exhaust, sea salts and other contaminants.

B. Biological soiling: Discolorations that include biological growth (biogrowth) and biological deposits. Biogrowth includes, but is not limited to microorganisms, including lichens, bacteria, algae, fungi, and molds that discolor the material surface. Factors influencing biogrowth include exposure, orientation, position, and the material’s surface texture. Deposited material, such as bird droppings, aphid “honey dew,” and others, are considered biological soiling.

C. Chemical Cleaning: Cleaning methods that involve applying a substance to the material that interacts with the material and any discoloration on the surface. Chemical cleaning methods may include water, organic solvents, and alkaline or acidic chemicals.

D. Cleaning Test Patch: A small unobtrusive area, usually less than 12 inch by 12 inch, in which the Contractor tests a particular cleaning method. Several cleaning test patches are usually performed side by side to directly compare methods.

E. Detergent: any chemical substance, other than soap, that is an effective cleanser and functions equally well as a surface-active agent in hard or soft water.

F. Non-ionic detergent: a detergent that does not ionize or carry a charge when dissolved in water. They are manufactured from alkalis and acids of equal strengths and are, therefore neither alkaline nor acidic with a pH of 7.

G. Low pressure spray: 100 to 500 psi.

H. Physical Cleaning: Physical cleaning methods generally involve the removal of material from the surface using abrasive methods. Physical methods include pressure washing at low and medium pressures, and mechanical or manual brushing.

I. Staining: a penetrating discoloration or soiled spot found on the material.

1.4 SCOPE

A. General: Provide all labor, materials, equipment, and services required to complete the cleaning as specified herein and required by existing conditions and authorities having jurisdiction.

B. Cleaning shall include the following elements:
   1. stucco

C. Cleaning shall include but not limited to:
   1. Removal of atmospheric soiling and staining (see drawings for extent of scope).
   2. Removal of plant growth and vegetation (see drawings for extent of scope).Removal of loose debris and dust from (see drawings for extent of scope).

D. Special care shall be taken to preserve surfaces with historic stucco while cleaning.
   1. Avoid over scrubbing and damage to fragile historic material

1.5 SUBMITTALS

A. Product Data: Submit product data for all materials specified within this section.

B. Submit product data sheets on equipment to be used in this section.

C. MSDS for all products to be used in this section.

D. Qualifications: Submit documentation of workers project experience that meets the minimum five-year work experience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years, including names and phone numbers.

1.6 PROJECT CONDITIONS

A. Performance Requirements: The intent of this Specification is to provide for the cleaning of areas of the building indicated above so as to render a natural, uniform clean (but not like new appearance) for all façade materials. Use the gentlest means possible to obtain desired results as approved by the Architect.

B. All exposed surfaces shall be cleaned using only the gentlest means as approved by the Architect on a location- by-location basis.

C. The Contractor is responsible for protecting existing adjacent materials during the execution of the work and shall provide all necessary protection and follow all necessary work procedures to avoid damage to existing material assemblies not a part of the work of this Section. At a minimum, the Contractor shall:
   1. Protect woodwork, glass, metal, and sound stucco and mortar adjacent to masonry and areas to be cleaned from overspray and possible chemical or water damage from cleaning operations.

D. The Contractor shall coordinate cleaning operations with the other trades involved in exterior restoration work. Cleaning is to be completed prior to the application of an exterior masonry surface treatments.

E. All Contractor personnel performing cleaning operations shall be provided with gloves, respirators, protective clothing and any other personal protective equipment as recommended by the manufacturer of the cleaning products and required by local, state, and federal regulations.

F. The Contractor shall to prevent leakage to interior enclosed spaces prior to starting cleaning operations.

1.7 ENVIRONMENTAL CONDITIONS

A. Regulatory Requirements: Work of this section shall be carried out in accordance with Federal, State and local codes and requirements of any other agency having jurisdiction related to the transportation, handling, use and disposal of all cleaning materials deemed hazardous by the authority having jurisdiction. In all cases, the more restrictive limitation of any applicable requirement(s) shall be followed.

B. The work of this Section shall be executed only when the air and surface temperatures are 40 degrees Fahrenheit and rising or less than 90 degrees F and falling. Minimum temperature for cleaning shall be 50 degrees F and above for at least two hours after completion and above freezing for at least 24 hours after completion. Work shall not commence when rain, snow, or below-freezing temperatures are expected within the next 24 hours. All surfaces shall be free of standing water, frost, and ice.

C. No masonry cleaning shall be performed when winds are sufficiently strong to spread cleaning materials or rinsed cleaning materials to adjacent unprotected areas.

1.8 QUALITY ASSURANCE

A. Employ skilled workers that have experience dealing with cleaning historic building materials. Technicians employed to carry out work must have a minimum of five years' experience working with and cleaning historic buildings.

B. This structure is an historic building. The cleaning work on this project is critical to the satisfactory execution of the work.

C. The Contractor shall conduct cleaning test patches, usually less than 12 inch by 12 inch, in unobtrusive locations on the areas to be cleaned.

D. The method of cleaning and the level of clean shall be approved by the Architect. The Contractor shall protect adjacent materials and openings.

E. Ensure water source is clean, drinkable, and free of damaging materials that could create staining or cause damage from dissolved and re-crystallized minerals such as salts.

F. Reference Standards: Cleaning shall be performed to match the level of cleanliness of approved cleaned test panels, as performed by the contractor as part of his mock-ups, prior to the start of work for each type of material to be cleaned. The approved test panels shall be maintained as the reference standard for all cleaning work specified herein.

G. Cleaning Appearance Standard: Cleaned surfaces are to have a uniform appearance as viewed from 20 feet (6 m) away by the Architect.

1.9 PROTECTION

A. Protect the general public and adjacent property from contact with cleaning materials by erecting properly constructed protection, positioned to confine and prevent any over-spray of water, abrasive media or chemicals. Provide complete details of such protection for approval by the Architect.

B. Any materials that may be damaged by the effects of any of the cleaning operations shall be protected as described herein.

C. Protect all other surrounding areas as recommended by the product manufacturer or as directed by the Architect.

D. Damage occurring to the building as a result of work of this section or Contractor's failure to protect against the occurrence of such damage shall be the Contractor's responsibility. The Contractor shall restore damaged areas to the complete satisfaction of the Architect at no expense to the Owner.

E. Operatives shall be aware of potentially hazardous nature of cleaning operations and shall wear appropriate safety clothing at all times during cleaning operations.

F. The Contractor shall inspect all masonry areas prior to performing cleaning to ensure that all repairs such as crack repair, patching, etc., intended to insure the water tightness of the building envelope have been allowed to dry thoroughly and be deemed properly and adequately cured prior to commencement of the cleaning operation. The Contractor shall perform any/all

temporary measures necessary to make the building envelope watertight prior to beginning any cleaning work. Any/all questionable areas shall be reviewed with the Architect.

G. Cleaning shall be performed in a manner which results in uniform coverage of all surfaces, including corners, interstices and which produces and even effect without streaking or damage to stucco surfaces.

H. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting.

I. Clean-up: All work areas shall be cleaned at the end of each working day, particularly when the work will be interrupted by weekends, holidays and other extended periods of time.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver restoration cleaning and testing materials and proprietary products to the project site in manufacturer's or distributor's packaging, undamaged, complete with application instructions and Material Safety Data Sheets.

B. Deliver materials to the job ready for use. Delivered materials shall be identical to reviewed shop drawings and samples.

C. Store and Deliver materials to the job ready for use. Transport cleaning agents, chemicals, and solvents within the temperature range recommended by the manufacturer and away from direct sunlight. Handle all materials according to manufacturer's instructions.

PART 2 - PRODUCTS

2.1 CLEANING, General

A. Water used for cleaning of historic materials shall be potable and free of injurious amounts of oil, soluble salts, alkali, acids, and other impurities that might stain or otherwise damage masonry, stucco, or metal.

B. Where water has high iron or other metal content, pre-treat with complexing agents before use to reduce risk of staining.

C. Brushes: Fiber bristle only.

D. Wire brushes or metal scrapers are strictly prohibited.

E. VOC content: Product shall comply with VOC limits of authorities having jurisdiction.

2.2 CLEANING OF BIOGROWTH

A. Cleaning methods: Cleaning shall be undertaken through the mildest, least abrasive method
1. Water Washing: Cold water applied with a biodegradable cleaning solution that is pH neutral and does not contain salts, bleach, or hydrogen peroxide. Product shall be proven safely and effective at removing biogrowth and air pollutants on a variety of historic

materials including brick, stone, stucco, metal and paint. Use lowest possible pressure to achieve desired results.

a. D/2 Biological Solution
b. An approved equal.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

A. Examine the surfaces to be cleaned prior to commencing cleaning operations.

B. Large cracks (one-eighth inch or larger) and open joints discovered shall be temporarily filled with removable sealant to prevent penetration of cleaning solutions into the core of the wall.

C. Door openings shall be protected from leakage and damage from cleaning solutions by plastic sheeting or another waterproof membrane. Open joints around door frames shall be filled with temporary sealant to prevent leakage.

3.2 REMOVAL OF SOILING, VEGETATION, ALGAL GROWTH, AND MOSS.

A. Cut away or trim any vegetation than can easily be removed from the building. Cut back as close to the face as possible, without endangering the integrity of this historic material.

B. Do not remove living mosses, lichens, and higher order plants without first killing them with a biocide, since roots and other attachments may penetrate deeply into the masonry. Allow time for the plant to detach before attempting removal. The Contractor may apply a biocidal product to colonies of moss, or other biological contaminants. After at least 24 hours, the Contractor may remove colonies of moss, and loose growth, from surfaces to be cleaned using wooden scrapers.

C. The Contractor shall apply selected cleaning agent in accordance with manufacturer's instructions and approved test panel. Allow product to dwell on soiled surfaces to achieve optimal cleaning.

D. Following required dwell time, agitate with a soft bristle brush to lift and remove embedded growth. The Contractor shall flush surfaces with low to medium-high pressure (not to exceed 500 psi) water rinse as required to remove staining. Repeat application as required to remove stains.

E. Spot clean for heavily soiled areas (biological growth):
   1. Spot cleaning shall be performed only after general cleaning has been completed for approximately two weeks.
   2. Thoroughly wet surfaces to be treated with spot cleaner. Apply the product using a brush, roller or low-pressure spray and allow it to dwell on the surface. Dwell time to be in accordance with the approved test panel.
   3. After dwell time has elapsed, thoroughly rinse the surface with clean water at moderate pressure (500 psi or less), working from the bottom up.

3.3 CLEAN UP

A. Collect and dispose of waste material, packaging, debris, and effluent associated with the cleaning work in accordance with local, state, and federal environmental regulations.

B. Upon completion of work, remove all protective coverings and coatings, and clean window glass and other spattered surfaces.

C. Rinse treated areas to clean and remove all biological growth and chemicals.

END OF SECTION 040310

SECTION 040513 – MORTARS FOR STRUCTURAL REPAIRS AND REPOINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. Section 013591: Historic Treatment Procedures

C. Section 040310: Cleaning of Historic Masonry

D. Section 090120: Stucco Repairs and Replacement

E. Codes and Standards set forth by:

1. Preservation Brief #1, “The Cleaning and Waterproof Coating of Masonry Buildings” as published by the US National Park Service.
2. Preservation Brief #2, "Repointing Mortar Joints in Historic Buildings" as published by the U. S. National Park Service.
3. Brick Institute of America Applied Standards

1.2 SUMMARY

A. Work includes, all labor, materials, equipment, and services necessary to complete the work of repointing mortars as shown in the Drawings, and as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but is not necessarily limited to, the following:
1. Repointing of historic brick masonry substrate below deteriorated stucco.

B. Related Sections:
1. Section 013591 “Historic Treatment Procedures”.
2. Section 040310 “Cleaning of Historic Masonry”.
3. Section 090120 “Stucco Repairs and Replacement”.

1.3 SCOPE

A. Provide all labor and materials to repair and restore masonry elements as specified herein and as detailed on the Drawings.

1.4 PROJECT CONDITIONS

A. The Contractor is responsible for protecting existing adjacent materials and surfaces during the execution of the work and shall provide all necessary protection and follow all necessary work procedures to avoid damage to existing material assemblies not a part of the work in the Section.

B. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall also provide that nearby vehicles and adjacent structures will be protected from damage during the course of the work.

C. The Contractor shall coordinate masonry repointing with the other trades involved in exterior restoration work.

1.5 ENVIRONMENTAL CONDITIONS

A. General: Perform work only when temperature of products being used and air temperature and humidity comply with the manufacturer's requirements and requirements of this Section. In case of conflict, the most stringent requirements shall govern.

B. Take precautionary measures necessary to assure that excessive temperature changes do not occur.

C. Cold Weather Limitations on Use of Mortars: Do not mix or use mortars when air or masonry temperature is below 45 deg F or when it is expected to drop below 45 deg F within 72 hours of mortar application.

D. Hot Weather Limitations: Protect fresh mortar from rapid drying when temperature, humidity, and wind conditions might cause rapid drying of mortar.

1. If ambient the air temperature exceeds 85 deg F or exceeds 80 deg F with a wind velocity greater than 8mph, flush mixer, transport container, and boards with cool water before they come into contact with the mortar ingredients. Maintain temperature of mortar below 120 deg F and use fresh mortar within 2 hours of initial mixing.
2. Limit spread of beds to 4ft when temperatures exceeds 85 deg F or exceeds 80 deg F with a wind velocity greater than 8mph

E. If masonry work must be done when ambient temperature is freezing, or below, all masonry material must be at temperature between 50 degrees Fahrenheit and 85 degrees Fahrenheit, and the mortar, when used, shall have a temperature between 60 and 80 degrees Fahrenheit. In addition, all masonry shall be protected from temperatures below 40 degrees Fahrenheit for at least 72 hours after being laid. Heat for heating materials and heated temporary enclosures will be provided by Contractor.

F. Antifreeze admixtures will not be allowed in the mortar. No frozen work shall be built upon. No masonry unit having a film of frost on its surface shall be installed in the work. Any completed work found to be affected by frost shall be taken down and rebuilt.

1.6 QUALITY ASSURANCE

A. This structure is an historic building. The mortar work on this project is critical to the satisfactory execution of the work.
1. Work Experience: Contractor must have a minimum of five (5) years demonstrated experience working on projects of similar scope, that employed hydraulic lime mortars. Contractor to have a working knowledge of the Secretary of the Interior's Standards for Treatment of Historic Properties.
2. Source of materials: The Contractor shall not change sources or manufacturers of mortar materials during the course of the work.

1.7 SUBMITTALS

A. Qualifications: Contractor Qualifications: Submit documentation of contractors past project experience that meets the work experience outlined in the specification. Provide two (2) references from an architect/engineer/owner who has worked on a similar project, using natural hydraulic lime repointing mortars, with the offeror in the last five years.

B. Product Data: For each type of product indicated, included material descriptions and all product labels for each product used. Include all MSDS and Material Specifications for all products used.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site and store in manufacturer's original unopened containers and packaging, bearing labels as to type and names of products and manufacturers, and which shall show grade, batch, and production data.

B. Deliver, store, and handle all products and materials to prevent damage, deterioration, or degradation and intrusion of foreign materials

C. Storage and Protection: All materials must be protected from rainwater and ground moisture, and from staining or intermixture with earth or other types of materials.

1. Sand
    a. Maintain sand at constant moisture content
    b. Cover pile when not in use
    c. Arrange pile for free drainage
    d. Do not use bottom portion of pile (wet or in contact with earth) in mortar
2. Lime
    a. Do not tarp or wrap materials so as to trap moisture or permit condensation to form
    b. Allow air to circulate freely around units
    c. Do not use bags that have been broken or exposed to moisture
3. Discard and remove from site deteriorated, contaminated materials, and products that have exceeded their restoration dates. Replace with fresh materials.
4. The contractor becomes responsible for the product at the time it is received.

D. Laws, Codes, and Regulations: Work of this Section shall comply with all applicable federal, state, and local laws, codes, and regulations.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Grade and Quality: Lime and aggregate shall conform to the requirements of this Section and shall be new, free from defects and of recent manufacture in date.

B. Prohibited materials: the following materials are strictly prohibited in all mortar specified in this section.

1. Antifreeze compounds or other admixtures
2. Air entraining agents

C. Hydraulic Lime Based Mortar

1. Natural Hydraulic Lime: NHL 3.5
   a. All containers shall be marked including manufacturing date and batch number. Manufacturer is required to maintain production-sampling procedures for each batch for quality control purposes. Samples of proposed materials for mock up panels at the site provided by the manufacturer.
2. Aggregate: Shall be a variable graded (coarse to fine) washed sand and shell matching the texture and range of sizes found in the original mortar. Natural or manufactured sharp sand, with at least four grades of sand forming a substantial part of the sand and no more than 1% of the particles smaller than grade 200. Clean, well-graded, sharp, angular crushed aggregate complying with the requirements for deleterious substances and soundness of ASTM C 144. Sand aggregate shall have a nominal top size of 2.38mm (No. 8 US sieve) with over 75% of the material having a diameter between 1mm (No. 16 US sieve) and 0.297mm (No. 50 US sieve).
3. Water: Shall be clean and free of acids, Alkalis or organic materials. If water must be transported or stored in a container, the container must not impart any chemicals to the water.

2.2 MORTAR MIXES

A. Repointing Mortar
   1. 1 part NHL 3.5
   2. 2.5 Parts aggregate

PART 3 - EXECUTION

3.1 PREPARATION

A. On exposed masonry, remove all deteriorated mortar by hand with a chisel and mallet. Do not use power tools. Chisels are to be the appropriate size to fit cleanly into mortar joints without damage to surrounding surfaces.

   1. Rake joints to a depth of 1.5 times the mortar joint width or to sound mortar.

B. Clean all surfaces exposed above according to Section 040310 “Masonry Cleaning”

C. Brush, vacuum, or flush joints to remove all dirt and loose debris. Loose or disintegrated mortar beyond the minimum depth shall be removed.

D. Removal of the mortar shall be done in a manner that does not score, chip, or otherwise damage masonry units or adjacent elements. Mortar should be removed cleanly from the masonry units, leaving square corners at the back of the cut.

E. Use a hand chisel to finish joints adjacent to door and window openings to avoid damage to frames and trim.

3.2 MIXING

A. All ingredients shall be measured by volume using pre-established uniform measure, rather than a less uniform measure such as a shovel.

B. Dry mix all dry materials

C. Mortar shall be mixed in an approved type power operated batch mixer. Mixing time shall be such as to produce a homogenous plastic mortar but shall not be less than five minutes; approximately two minutes of which shall be for mixing the dry materials and not less than three minutes for continuing the mixing after water has been added.

D. A minimum amount of water shall be used to produce a workable consistency for the mortar's intended purpose.

E. Mortar for repointing shall be as dry a consistency as will produce a mortar sufficiently plastic to be worked into the joints and to hang onto a trowel. Record the amount of water used so that it may serve as a guide for future batches.

F. After mixing, mortars shall sit for 20 minutes prior to use to allow for initial shrinkage. Mortar shall be placed in final position within 2 ½ hours of mixing. Retempering of hardened material shall not be permitted.

3.3 INSTALLATION

A. Repair of structural cracks in mortar joints
1. Areas of significant structural cracking must be reported to the Architect prior to repair.
2. Rake out compromised and unsound mortar in masonry joint.
3. Use only clean tools and equipment, free from hardened or partially hardened materials.
4. Dampen masonry prior to repointing to reduce suction of water from the mortar and shrinkage cracks. Do not fully saturate masonry. Substrate shall be glistening.
5. Maintain hand mister bottles or a garden sprayer with clean, clear, potable water immediately available to masons at all times during the repointing process. A very low-pressure spray (garden hose with nozzle adjusted to a fine, low-volume mist) may be used over large areas providing erosion of joints is prevented.
6. Finish joints uniformly in areas with exposed masonry. Match profile of existing mortar joints. Do not overwork. Leave the surface of the masonry clean.
7. In all cases, the mortar joint shall not be left less than 5/8" from the face of the brick prior to stucco rehabilitation work.

B. Repointing of Masonry to be Covered by Stucco

1. Use only clean tools and equipment, free from hardened or partially hardened materials.
2. Dampen masonry prior to repointing to reduce suction of water from the mortar and shrinkage cracks. Do not fully saturate masonry. Substrate shall be glistening.
3. Repoint localized areas in which the mortar has been removed more than 5/8" in depth.
4. In all cases, the mortar joint shall not be left less than 5/8" from the face of the brick prior to stucco rehabilitation work.

C. Structural Repairs
1. Damage observed during the completion of this work shall be brought to the attention of the Architect of Record when identified for resolution prior to continuing with work on the area involved on

3.4 CURING

A. Curing:

1. Protect completed work from adverse weather, heavy rainfall, freezing, and drying by direct sunlight and winds until cured.
2. If ambient the air temperature exceeds 100 deg F or exceeds 90 deg F with a wind velocity greater than 8mph, fog spray all newly applied mortar until damp, a minimum of three times a day for 3 days following application.
3. Shield from direct sun and drying winds for the first 72 hours after installation.

3.5 CLEAN UP

A. Maintain clean surfaces on the face, sills, ledges, and projections of masonry on a daily basis.

B. With a trowel, strike off minor dabs of adherent mortar from face of masonry.

C. Remove minor mortar marks from masonry by misting with water and brushing with a small, stiff-bristle brush.

END OF SECTION 040513

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

This Section includes the following:
1. Framing with dimension lumber.
2. Wood blocking, cants, and nailers.
3. Roof sheathing material.
4. Miscellaneous wood.

1.3 RELATED SECTIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Division 01 Section "Historic Preservation Treatment Procedures."

C. Section 070150.19 “Preparation for Reroofing”.

1.4 REFERENCES

A. PS 1 - Construction and Industrial Plywood; National Institute of Standards and Technology (Department of Commerce); 2007.

B. PS 20 American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 1994.

C. SPIB (GR) – Standard Grading Rules for Southern Pine Lumber; Southern Pine Inspection Bureau, Inc.; 1994.

D. APA PRP-108 - Performance Standards and Policies for Structural-Use Panels; 2002.

1.5 DEFINITIONS

A. Dimension Lumber: Lumber of 2 inches nominal or greater.

B. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NeLMA: Northeastern Lumber Manufacturers' Association.
2. NLGA: National Lumber Grades Authority.
3. SPIB: The Southern Pine Inspection Bureau.

4. WCLIB: West Coast Lumber Inspection Bureau.
5. WWPA: Western Wood Products Association.

C. Rough Carpentry: Carpentry work not specified in other Sections and not exposed, unless otherwise specified.

1.6 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

B. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

C. Plywood:

1. Comply with PS 1 where veneer plywood is specified.
2. Comply with APA PRP-108 where APA rated panels are specified; bearing APA trademark showing compliance with each specified requirement.

D. Wood treatment data as follows, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials:

1. For each type of preservative-treated wood product, include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards and rules, regulations, and restrictions of applicable governing authorities.
2. For waterborne-treated products, include statement that moisture content of treated materials was reduced to levels indicated before shipment to Project site.
3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

E. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Power-driven fasteners.

F. Warranty of chemical treatment manufacturer for each type of treatment.

1.7 QUALITY ASSURANCE

A. Quality of Materials and Workmanship: Provide woodwork that complies with requirements of "Architectural Woodwork Quality Standards," published by Architectural Woodwork Institute (AWI) (hereinafter referred to as "woodworking standard").

B. Where contract documents indicate deviations from the woodworking standard, the contract documents shall govern.

C. Installer:
1. Maintain throughout duration of the work a crew who is fully qualified to satisfy requirements of the specifications.

2. Maintain throughout the duration of the work a qualified superintendent.

D. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.

1. Acceptable Inspection Agencies: SPIB - Southern Pine Inspection Bureau.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect wood against moisture and dimensional changes. Support stacks at several uniformly spaced points to prevent deformation. Store stacks raised above ground. Cover to protect from rain and snow. Select and arrange cover to allow air circulation under and all around stacks to prevent condensation. Remove from the site any wood products that have been subjected to moisture or that do not comply with the specified moisture requirements. Stack lumber, plywood, and other panels.

1. Protect all lumber from rain, fog, snow, dew, and all other forms of moisture that may alter moisture content above specified requirements. The moisture content of lumber and plywood may be checked in the field with a reliable moisture meter.
2. For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

1.9 PROJECT CONDITIONS

A. Fit woodwork to actual construction. Take field measurements before fabricating woodwork.

B. Coordinate installation of woodwork with other work to avoid damage.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: Comply with DOC PS 20, “American Softwood Lumber Standard.” and with applicable rules of inspection grading agencies certified by ALSC’s Board of Review.

1. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
2. Provide dressed lumber, S4S, unless otherwise indicated.
3. Maximum moisture content: Provide kiln-dried lumber with a maximum moisture content between 6 and 11 percent. Maintain temperature and relative humidity during fabrication, storage and finishing operation so that moisture content values for wood at the time of installation do not exceed the above range.
4. Additional Restriction: Free of heart centers.
5. Texture: Smooth, flat, tight grain surface that will not telegraph grain through painted finish. Solid lumber stock, finger joints not acceptable. All wood and lumber shall be sound, properly seasoned, and dry and be straight, flat and true, free of twists, warps, bends, racking, knots, sap, splinters, cracks, nicks, gouges, and bark. Edges and sides shall be uniform in dimension and shape with no signs of bark removal.
6. Grade Stamps:

a. Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
b. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece, or omit grade stamps and provide grade-compliance certificates issued by inspection agency.

2.2 DIMENSION LUMBER

A. General: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.

B. For items of dimension lumber size, provide grade lumber of the following species for locations indicated on the structural drawings:

1. Species: Southern pine; SPIB.
2. Grade: Non-Dense Select Structural, Select Structural or Dense Select Structural, No. 1 grade for locations as indicated on the drawings.
3. Maximum moisture content for untreated lumber: 6 to 11 percent.
4. Additional Restriction: Free of heart centers.

2.3 MISCELLANEOUS LUMBER

A. General:

1. Provide lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.
2. Provide lumber for support or attachment of other construction, including cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.
3. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.

B. For items miscellaneous, provide grade lumber of the following species:

1. Species: Southern pine; SPIB.
2. Grade: Non-Dense Select Structural, Select Structural or Dense Select Structural, No. 1 grade for locations as indicated on the drawings.
3. Maximum moisture content for untreated lumber: 6 to 11 percent.
4. Additional Restriction: Free of heart centers.

2.4 WOOD PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground or masonry, Use Category UC3b for exterior construction not in contact with the ground or masonry, and Use Category UC4a for items in contact with the ground or masonry.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Drying requirements:

1. Prior to sizing and pressure treating lumber, dry to 19 percent.

2. After treatment, kiln-dry lumber and plywood to a maximum moisture content, as follows:
   a. Lumber: 19 percent
   b. Plywood: 15 percent.
3. Do not use material that is warped or that does not comply with requirements for untreated material. Use in locations as indicated on the drawings.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Obtain lumber only from true lumber yards that specialize in lumber and wood building materials and that are capable of kiln-drying lumber that meets these drying requirements or can provide such lumber.

E. Application: Treat items indicated on Drawings, and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, framing, supporting members, and similar concealed members in contact with masonry or concrete.
3. Wood supporting members used in the construction of suspended decks or porch decks, moist or humid air, or enclosed construction that is exterior to the building envelope.
4. Wood framing members less than 40 inches above grade.
5. Wood floor plates that are installed over concrete slabs directly in contact with earth.

F. Retention Rates

1. for lumber treated with ACQ: 0.40 pcf
2. for lumber treated with CA-B: 0.21 pcf
3. for lumber treated with CBA-A: 0.41 pcf
4. for lumber treated with CA-C: 0.15 pcf
5. for lumber treated with µCA-C: 0.15 pcf

G. Complete fabrication of treated items before treatment, where possible. If cut, drilled, or scratched, or otherwise abraded after treatment, apply field treatment complying with AWPA M4 to cut surfaces. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

2.5 PLYWOOD, GENERAL

A. Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D5456 and manufactured with an exterior-type adhesive complying with ASTM D2559 and containing no urea formaldehyde.

B. Provide plywood panels complying with DOC PS 1, "U.S. Product Standard for Construction and Industrial Plywood," where plywood is indicated. Factory mark structural-use panels with APA trademark evidencing compliance with grade requirements. Certification: Provide certification that plywood, untreated with fire-retardant, meets Standard Building Code Congress requirements for a flame spread of 200 or less (Class C) when tested in accordance with ASTM E84.

2.6 WOOD SHEATHING

A. Roof Sheathing (existing):

1. Existing Decking: 1 x 8 pine boards
2. Thickness: 1 inch actual

B. Roof Sheathing (new layer of sheathing @ upper museum roof):
1. APA rated sheathing, Exposure: 1. Comply with PS1.
2. Span Rating: 48/24 minimum span rating.
3. Thickness: 5/8 inch.

C. ALTERNATE: Roof Sheathing (new layer of sheathing @ lower roofs):
1. APA rated sheathing, Exposure: 1. Comply with PS1.
2. Span Rating: 48/24 minimum span rating.
3. Thickness: 5/8 inch.

D. Thicknesses: Where nominal thicknesses are indicated, provide actual thickness to match existing, providing other project requirements such as grade, span rating, exposure, etc., are met:

1. 1/2 inch nominal: 7/16, 15/32, or 1/2 inch actual.
2. 5/8 inch nominal: 19/32, 5/8, or 21/32 inch actual.
3. 3/4 inch nominal: 11/16 or 3/4 actual.
4. 1 inch nominal: 1 inch actual.
5. 1-1/8 inch nominal: 1-1/8 inch actual.
6. 1-1/4 inch nominal: 1-1/4 inch actual.

2.7 FASTENERS

A. General:

1. All wood fastenings shall be per IBC Table 2304.9.1 “Fastening Schedule” unless noted otherwise.
2. Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture for locations indicated on drawings.
3. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide stainless steel fasteners of Type 304, 304L, 316 or 316L, unless otherwise indicated.
4. All steel fasteners in contact with pressure-preservative treated wood shall be stainless steel Type 304, 304L, 316 or 316L, unless otherwise indicated.

B. Nails, Wire, Brads, and Staples: ASTM F 1667. Nails shall be of the thickness required to penetrate 2/3 of the substrate.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ANSI/ASME B18.6.1 and shall be of sufficient length to penetrate backing material a minimum of one inch.

E. Bolts and Nuts: Shall meet ASTM A307, grade A, with, ASTM A563 with hex nuts, where indicated on drawings, flat washers.

F. Lag Bolts: ANSI/ASME B18.2.1.

G. Machine Screws: ANSI/ASME B18.6.3.

H. Plain Washers: Round, carbon steel, ANSI/ASME B18.22.1.

I. Lock Washers: Helical, spring type, carbon steel, ANSI/ASME B18.21.1.

J. Toggle Bolts: FS FF-B-588, tumble-wing type, class and style as required.

K. Spacing: See Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Thoroughly examine and document existing conditions prior to beginning successive phases of Work.
2. Note locations on drawings where examination of members and confirmation of deterioration by Engineer or Architect is required before replacement.

3.2 DISASSEMBLY

A. Disassemble all associated elements as required.

B. Remove architectural millwork by cutting through shaft of nail fasteners. Do not pull nails through; this will damage millwork. Use hacksaw blades mounted on handles intended for that purpose.

3.3 INSTALLATION, GENERAL

A. Remove miscellaneous hardware, nails, etc., from all existing woodwork.

B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.

C. Apply field treatment complying with AWPA M4 to cut or abraded surfaces of preservative-treated lumber and plywood.

D. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

E. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim

F. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

G. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

H. Discard units of material with defects that impair quality of rough carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.

I. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid.

J. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated on drawings, if not otherwise noted comply with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

K. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.

L. Countersink nail heads on exposed carpentry work and fill holes with wood filler.

M. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.

1. Comply with indicated or approved fastener patterns where applicable. Before fastening, mark fastener locations, using a template made of sheet metal, plastic, or cardboard.
2. Use finishing nails, unless otherwise indicated. Countersink nail heads and fill holes with wood filler. Indicate locations of other fasteners, such as wood screws, bolts, and lag screws, on Drawings.

N. Pre-drill members when necessary to avoid splitting wood.

O. Back Priming: For all wood materials scheduled to be painted, including treated wood, back prime, including all edges and concealed surfaces, prior to installation. Apply primer to the same specifications as for the exposed surfaces. Treat all cut edges, end cuts, and disturbed surfaces the same way. Wood items shall be completely encapsulated with primer. Installed items not back-primed shall be removed, properly primed, and reinstalled at the Contractor’s expense. Damaged materials shall be replaced. This provision applies to both interior and exterior installations.

3.4 WOOD STRUCTURAL PANEL INSTALLATION

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:

1. Roof Sheathing:

a. Nail to wood framing. Apply a continuous bead of glue to framing members at edges of wall sheathing panels (where framing is exposed).
b. Space panels 1/8 inch apart at edges and ends.

END OF SECTION 061000

SECTION 070150.19 - PREPARATION FOR REROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Full tear-off of entire roof.
2. Removal of base flashings.

B. Related Requirements:

1. Section 011000 "Summary" for use of the premises and phasing requirements.
2. Section 015000 "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for reroofing preparation.
3. Section 075419 "Polyvinyl-Chloride (PVC) Roofing" for base bid roofing materials.

1.3 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

B. Roof Re-Cover Preparation: Existing roofing system is to remain and be prepared for new roof to be installed over it.

C. Full Roof Tear-Off: Removal of existing roofing system from deck.

1.4 SUBMITTALS

A. Fastener pull-out test report.

B. Photographs: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, that might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.

C. Landfill Records: Indicate receipt and acceptance of demolished roofing materials and hazardous wastes, such as asbestos-containing materials, by a landfill facility licensed to accept them.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Reroofing Conference: Conduct conference at Project site.

1. Meet with Owner; Architect; Owner's insurer if applicable; testing and inspecting agency representative; roofing system manufacturer's representative; roofing Installer, including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing, including installers of roof deck, roof accessories, and roof-mounted equipment.
2. Review methods and procedures related to roofing system tear-off and replacement, including, but not limited to, the following:

a. Reroofing preparation, including roofing system manufacturer's written instructions.
b. Temporary protection requirements for existing roofing system components that are to remain.
c. Existing roof drains and roof drainage during each stage of reroofing, and roof-drain plugging and plug removal.
d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to avoid delays.
e. Existing roof deck conditions requiring notification of Architect.
f. Existing roof deck removal procedures and Owner notifications.
g. Condition and acceptance of existing roof deck and base flashing substrate for reuse.
h. Structural loading limitations of roof deck during reroofing.
i. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that affect reroofing.
j. HVAC shutdown and sealing of air intakes.
k. Shutdown of fire-suppression, -protection, and -alarm and -detection systems.
l. Asbestos removal and discovery of asbestos-containing materials.
m. Governing regulations and requirements for insurance and certificates if applicable.
n. Existing conditions that may require notification of Architect before proceeding.

1.6 FIELD CONDITIONS

A. Existing Roofing System: Membrane Roofing.

B. Owner will occupy portions of building immediately below reroofing area. Conduct reroofing so Owner's operations are not disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.

1. Coordinate work activities daily with Owner so Owner can place protective dust and water-leakage covers over sensitive equipment and furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below work area.
2. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below affected area. Verify that occupants below work area have been evacuated before proceeding with work over impaired deck area.

C. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.

D. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

E. Conditions existing at time of inspection for bidding are maintained by Owner as far as practical.

1. A roof moisture survey of existing roofing system is available for Contractor's reference.
2. The results of an analysis of test cores from existing roofing system are available for Contractor's reference.
3. Construction Drawings for existing roofing system are provided for Contractor's convenience and information but are not a warranty of existing conditions. They are intended to supplement rather than serve in lieu of Contractor's own investigations. Contractor is responsible for conclusions derived from existing documents.

F. Limit construction loads on roof as directed by Structural Engineer for rooftop equipment wheel loads and uniformly distributed loads.

G. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.

1. Remove only as much roofing in one day as can be made watertight in the same day.

H. Hazardous Materials: It is expected that hazardous materials, such as asbestos-containing materials, could be encountered in the Work. Non-friable asbestos was identified in the black tar located on top of the crenellations at the two lower roofs.

1. Contractor will remove non-friable asbestos tar identified in Hazardous Materials Report (See Section 003126 Existing Hazardous Materials Information).

2. Existing roof will be left no less watertight than before removal.

PART 2 - PRODUCTS

2.1 AUXILIARY REROOFING MATERIALS

A. General: Use auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new roofing system.

PART 3 - EXECUTION

3.1 PREPARATION

A. Shut off rooftop utilities and service piping before beginning the Work.

B. Test existing roof drains to verify that they are not blocked or restricted. Immediately notify Architect of any blockages or restrictions.

C. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.

D. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.

E. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

1. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing roofing system components that are to remain.

3.2 ROOF TEAR-OFF

A. General: Notify Owner each day of extent of roof tear-off proposed for that day.

B. Remove flashings, accessories, and copings complete from roofing.

C. Full Roof Tear-Off: Remove existing roofing and other roofing system components down to the deck.

1. Remove membrane roofing.
2. Remove roof insulation and cover board.
3. Remove wood blocking, curbs, and nailers.
4. Remove liquid applied systems, including in areas where liquid applied system has been applied at transition between roof and stucco. Note: See drawings for constraints at upper museum roof.
5. Remove damaged, corroded, and backed-out fasteners from deck. Re-secure complete.

3.3 DECK PREPARATION

A. Inspect deck after tear-off of roofing system.

B. If broken or loose fasteners that secure deck panels to one another or to structure are observed, or if deck appears or feels inadequately attached, immediately notify Architect. Do not proceed with installation until directed by Architect.

C. If deck surface is unsuitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Architect. Do not proceed with installation until directed by Architect.

D. Provide additional deck securement as required.

E. Replace deck as directed by Architect. Deck replacement will be paid for by adjusting the Contract Sum according to unit prices included in the Contract Documents. Some decking replacement has been included in the base bid scope of work. See Section 012200 Unit Pricing for amount of deck replacement to be included in the base bid.

3.4 INFILL MATERIALS INSTALLATION

A. Immediately after roof tear-off, repair, if needed, deck. Fill in tear-off areas to match existing roofing system construction.

3.5 BASE FLASHING REMOVAL

A. Remove existing base flashings. Clean substrates of contaminants, such as asphalt, tar, sheet materials, dirt, and debris.

B. Do not damage metal counter-flashings that are to remain. Replace metal counter-flashings damaged during removal with counter-flashings of same metal, weight or thickness, and finish.

C. Inspect parapet sheathing, wood blocking, curbs, and nailers for deterioration and damage. If parapet sheathing, wood blocking, curbs, or nailers have deteriorated, immediately notify Architect.

D. When directed by Architect, replace parapet wood blocking, curbs, and nailers to comply with Section 061000 "Rough Carpentry."

3.6 FASTENER PULL-OUT TESTING

A. Perform fastener pull-out tests according to SPRI FX-1 and submit test report to roofing manufacturer before installing new roofing system.

1. Obtain roofing manufacturer's approval to proceed with specified fastening pattern. Roofing manufacturer may furnish revised fastening pattern commensurate with pull-out test results.

3.7 DISPOSAL

A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

1. Storage or sale of demolished items or materials on-site is not permitted.

B. Transport and legally dispose of demolished materials off Owner's property.

END OF SECTION 070150.19

SECTION 072100 - BUILDING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:
   1. Polyurethane spray insulation at gaps, as indicated.

1.3 SUBMITTALS

A. Product Data: Submit data on product characteristics, performance criteria, and limitations, including installation instructions.

B. Warranty: Submit documentation for product warranty.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

   1. Surface-Burning Characteristics: ASTM E 84.
   2. Fire-Resistance Ratings: ASTM E 119.
   3. Combustion Characteristics: ASTM E 136.

C. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

PART 2 - PRODUCTS

2.1 POLYURETHANE SPRAY INSULATION (FOR FILLING GAPS)

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

1. DAP, Inc.; DAP Kwik Foam.
2. Dow; Great Stuff Pro.
3. Hilti, Inc.; CF-128-DW Polyurethane Insulating Foam.

B. Polyurethane Spray Insulation: One-component, moisture-cure, polyurethane insulating foam for filling gaps; waterproof, sandable and paintable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for Sections in which substrates and related work are specified and other conditions affecting performance.

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

3.2 PREPARATION

A. Clean substrates of substances harmful to insulations, including removing projections capable of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice and snow.

C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Water-Piping Coordination: If water piping is located on inside of insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

E. Apply single layer of insulation to produce thickness indicated, unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF FOAM INSULATION

A. Foam Insulation: Apply spray foam insulation according to manufacturer's written instructions.
1. Apply insulation to fill voids around accessible service and equipment penetrations.

2. Seal plumbing stacks, electrical wiring and other penetrations to control air leakage.

3.5 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 075419 - POLYVINYL-CHLORIDE (PVC) ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Adhered polyvinyl-chloride (PVC) roofing system.
      a. Membrane to be installed with a MAXIMUM of one (1) seam.
   2. Tapered and rigid board insulation.

B. Related Sections:
   1. Section 061000 "Rough Carpentry" for wood sheathing, nailers, curbs, and blocking.
   2. Section 070150.19 “Preparation for Reroofing” for roof removal.
   3. Section 076200 "Sheet Metal Flashing and Trim" for metal roof flashings and counter-flashings.
   4. Section 077123 “ Gutters and Downspouts” for metal gutters, downspouts, leader heads, and scuppers.

1.3 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Roofing Conference: Conduct conference at Project site.
   1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
   2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
   3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
   5. Review structural loading limitations of roof deck during and after roofing.
   6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
   7. Review governing regulations and requirements for insurance and certificates if applicable.

8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product. Submit data on product characteristics, performance criteria, and limitations, including installation instructions.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work, including:
1. Base flashings and membrane terminations.
2. Seam layout.
3. Tapered insulation, including slopes.
4. Roof plan showing orientation of deck, fastening spacings, and patterns for mechanically fastened roofing.
5. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

C. Samples for Verification: For the following products:
1. Sheet roofing, of color required.

D. Sample Warranties: For manufacturer's special warranties.

1.6 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For components of roofing system, for tests performed by manufacturer and witnessed by a qualified testing agency.

B. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
1. Submit evidence of compliance with performance requirements.

C. Research/Evaluation Reports: For components of roofing system, from ICC-ES.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
   1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.10 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.
   1. Special warranty includes membrane roofing, base flashings, roof insulation, cover boards, roofing accessories, and other components of roofing system.
   2. Warranty Period: 10 years from date of Substantial Completion.

B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of roofing system such as membrane roofing, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, roof pavers, and walkway products, for the following warranty period:
   1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain components including roof insulation for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight.

1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.

B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

C. Roofing System Design: Tested by a qualified testing agency to resist pressures as indicated on Drawings.

2.3 PVC ROOFING

A. PVC Sheet: ASTM D 4434/D 4434M, Type III, fabric reinforced.
1. Basis-of-Design Product: Subject to compliance with requirements, provide **PVC Roofing System by Johns Manville** or comparable product by one of the following:

    a. Carlisle SynTec Incorporated.
    b. GAF Materials Corporation.
    c. GenFlex Roofing Systems.
    d. Versico, Inc.
    e. Sika Sarnafil.
2. Thickness: 60 mils, nominal.
3. Exposed Face Color: White.

2.4 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.

B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet to be used except at scupper liners and counterflashing. Scupper liners to be copper. Counterflashing to be copper.

C. Bonding Adhesive: Manufacturer's standard.

D. Slip Sheet: Manufacturer's standard, of thickness required for application.

E. Fasteners: All exposed fasteners to be stainless steel of Type 304, 304L, 316 or 316L, unless otherwise indicated.

F. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel bars, approximately 1 by 1/8 inch thick; with anchors.

G. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

H. 3” round specially coated galvalume plate with a recessed center and raised flat bonding surface to be used for insulation and membrane fastening plates. Use with compatible extra high load fasteners.

2.5 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by PVC roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.

C. Tapered Insulation (Polyisocyanurate): Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches unless otherwise indicated.

D. ALTERNATE: Extruded Polystyrene Board (XPS) Insulation: Comply with ASTM C 578, Type IV.

E. ALTERNATE: Tapered Insulation (Extruded Polystyrene XPS): Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches unless otherwise indicated.

F. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.6 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with roofing.

B. Fasteners: Factory-coated steel fasteners and metal plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer. All copper and stainless-steel metal should be fastened with non-corrosive fasteners. See Sections 07600 Sheet Metal Flashing and Trim for requirements.

C. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer.

D. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/4 inch thick, factory primed.
   1. Products: Subject to compliance with requirements, provide one of the following:

      a. CertainTeed Corporation; GlasRoc Sheathing.
      b. Georgia-Pacific Corporation; Dens Deck Prime.
      c. National Gypsum Company; Gold Bond eXP Extended Exposure Sheathing.
      d. USG Corporation; Securock Glass Mat Roof Board.

PART 3 - EXECUTION

3.1 EXAMINATION

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

1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.

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

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.3 ROOFING INSTALLATION, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

C. Install roofing and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition and to not void warranty for existing roofing system.

3.4 INSULATION INSTALLATION

A. Coordinate installing roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install tapered insulation under area of roofing to conform to slopes indicated.

D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

G. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
   1. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.

H. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together and fasten to roof deck.
   1. Fasten cover boards to resist uplift pressure at corners, perimeter, and field of roof.

3.5 ADHERED ROOFING INSTALLATION

A. Adhere roofing over area to receive roofing according to roofing system manufacturer's written instructions. Unroll roofing and allow to relax before retaining.
   1. Install sheet according to ASTM D 5036.
   2. Membrane to be installed with a MAXIMUM of one (1) seam.

B. Start installation of roofing in presence of roofing system manufacturer's technical personnel.

C. Accurately align roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Bonding Adhesive: Apply to substrate and underside of roofing at rate required by manufacturer and allow to partially dry before installing roofing. Do not apply to splice area of roofing.

E. In addition to adhering, mechanically fasten roofing securely at terminations, penetrations, and perimeter of roofing.

F. Apply roofing with side laps shingled with slope of roof deck where possible.

G. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of roofing and sheet flashings according to manufacturer's written instructions, to ensure a watertight seam installation.
   1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet.
   2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
   3. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.

H. Spread sealant bed over deck-drain flange at roof drains, and securely seal roofing in place with clamping ring.

3.6 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to inspect substrate conditions, surface preparation, membrane application, flashings, protection, and drainage components, and to furnish reports to Architect.

B. Flood Testing: Flood test each roofing area for leaks, according to recommendations in ASTM D 5957, after completing roofing and flashing but before overlying construction is placed. Install temporary containment assemblies, plug or dam drains, and flood with potable water.
   1. Flood to an average depth of 2-1/2 inches with a minimum depth of 1 inch and not exceeding a depth of 4 inches. Maintain 2 inches of clearance from top of base flashing.
   2. Flood each area for 48 hours.
   3. After flood testing, repair leaks, repeat flood tests, and make further repairs until roofing and flashing installations are watertight.

C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

D. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.8 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

END OF SECTION 075419

Attachment: Roofing Installer’s Warranty

ROOFING INSTALLER'S WARRANTY

A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:
   1. Owner: City of Beaufort
   2. Address: 1911 Boundary Street Beaufort, SC 29902
   3. Building Name/Type: Beaufort Arsenal
   4. Address: 713 Craven Street Beaufort, SC 29902
   5. Area of Work: <**Insert information**>.
   6. Acceptance Date: _____.
   7. Warranty Period: <**Insert time**>.
   8. Expiration Date: _____.

B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:
   1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:

      a. lightning;
      b. peak gust wind speed exceeding 139 mph
      c. fire;
      d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
      e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
      f. vapor condensation on bottom of roofing; and
      g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
   2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
   3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
   4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.

5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.
1. Authorized Signature: _____.
2. Name: _____.
3. Title: _____.

SECTION 076100 - SHEET METAL ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes custom-fabricated, standing-seam sheet metal roofing.

B. Related Requirements:
1. Section 061000 "Rough Carpentry" for wood sheathing, nailers, curbs, and blocking.
2. Section 070150.19 “Preparation for Reroofing” for roof removal.
3. Section 076200 "Sheet Metal Flashing and Trim".
4. Section 077123 “Gutters and Downspouts”.
5. Section 079200 "Joint Sealants" for field-applied sealants adjoining sheet metal roofing.

1.3 COORDINATION

A. Coordinate sheet metal roofing layout and seams with sizes and locations of roof curbs, equipment supports, equipment provided, and roof penetrations.

B. Coordinate sheet metal roofing installation with rain drainage work, flashing, trim, and construction of roofing substrate**,** parapets, walls, and other adjoining work to provide leakproof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.

1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review structural loading limitations of substrates during and after roofing installation.
3. Review flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affect sheet metal roofing.
4. Review requirements for insurance and certificates if applicable.
5. Review roof observation and repair procedures after sheet metal roofing installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

B. Qualification Data: For Installer.

C. Shop Drawings: For sheet metal roofing.

1. Include plans, elevations, sections, and attachment details.
2. Detail fabrication and installation layouts, expansion joint locations, fixed points, and keyed details. Distinguish between shop- and field-assembled work.
3. Include details for forming, including seams and dimensions.
4. Include details for joining and securing, including layout and spacing of fasteners, cleats, and other attachments. Include pattern of seams.
5. Include details of termination points and assemblies.
6. Include details of expansion joints, including showing direction of expansion and contraction from fixed points.
7. Include details of roof penetrations.
8. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counter flashings.
9. Include details of special conditions.
10. Include details of connections to adjoining work.

1.6 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each product, for tests performed by a qualified testing agency.

B. Sample Warranties: For special warranties.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing sheet metals and accessories to include in maintenance manuals.

1.8 QUALITY ASSURANCE

A. Sheet Metal Roofing Fabricator Qualifications: Employs skilled workers who have (5) years' experience installing custom fabricate sheet metal roofing similar to that required for this Project and whose products have a record of successful in-service performance. Furnish names of owners and architects of three buildings on which applicator has installed satisfactory roof similar to type herein specified.

B. Uniform Wind Load Capacity: Design, size and install components to withstand positive and negative wind loading pressures in accordance with International Building Code and as verified by Structural Engineer.

C. Mockups: Build mockups to verify selections made under Sample submittals to demonstrate aesthetic effects and to set quality standards for fabrication and installation.

1. Build mockup of typical roof area and eave as shown on Drawings, including, underlayment, attachments, and accessories.

a. Size: Approximately 4 ft. x 4 ft.
b. Include each type of roof edge, ridge, and panel seam conditions.

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. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal roofing materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal roofing materials away from uncured concrete and masonry.

1.10 WARRANTY

A. Special Warranty: Provide Warranty in which Installer agrees to repair or replace components of sheet metal roofing that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including, but not limited to, rupturing, cracking, or puncturing.
b. Wrinkling or buckling.
c. Loose parts.
d. Failure to remain weathertight, including uncontrolled water leakage.
e. Deterioration of metals, metal finishes, and other materials beyond normal weathering, including nonuniformity of color or finish.
f. Galvanic action between sheet metal roofing and dissimilar materials.

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

B. Special Warranty Architectural Sheet Copper: Manufacturer's standard form in which manufacturer agrees to replace defective architectural sheet copper that shows evidence of free from defects in workmanship and materials within the specified warranty period.
1. Finish Warranty Period: 25 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Sheet metal roofing system including, but not limited to, metal roof panels, cleats, anchors and fasteners, sheet metal flashing integral with sheet metal roofing, fascia panels, trim, underlayment, and accessories, shall comply with requirements without failure due to defective manufacture, fabrication, or installation, or due to other defects in construction. Sheet metal roofing shall remain watertight.

B. Sheet Metal Roofing Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or indicated on Drawings.

C. Copper Roofing Standard: Comply with Revere's "Copper and Common Sense." Conform to dimensions and profiles shown unless more stringent requirements are indicated on Drawings.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects.

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

2.2 ROOFING SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Copper Sheet: ASTM B 370, cold-rolled copper sheet, H00 temper.

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

a. Hussey Copper Ltd.
b. Revere Copper Products, Inc.

2. Weight (Thickness): 16 oz./sq. ft. unless otherwise indicated.
3. Non-patinated Exposed Finish: Mill.

2.3 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Sheet: Minimum 30 mils thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer.

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

a. Soprema, Lastobond Shield HT.
b. Grace Construction Products, a unit of W. R. Grace & Co.-Conn.; Grace Ice and Water Shield HT.
c. Henry Company; Blueskin PE200 HT.

2. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F or higher.
3. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F or lower.

B. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. minimum.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete roofing system and as recommended by primary sheet metal manufacturer unless otherwise indicated.

B. Wood Battens: Lumber according to requirements for nailers for roofing in Section 061000 "Rough Carpentry."

C. Fasteners: Wood screws, annular-threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.

1. Fasteners for Copper Sheet: Copper or passivated Series 300 stainless steel.
2. Rivots: Use copper rivets with non-ferrous mandrels.

D. Solder:

1. For Copper: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead with maximum lead content of 0.05 percent.

E. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, non-sag, nontoxic, non-staining tape 1/2 inch wide and 1/8 inch thick.

F. Elastomeric Sealant: ASTM C 920, single-component, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal roofing and remain watertight.

G. Butyl Sealant Caulk/Tape: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement. Caulk is approved for use with power seamers. Tape should be used for hand seaming.

2.5 ACCESSORIES

A. Sheet Metal Accessories: Provide components required for complete sheet metal roofing assembly including trim, copings, fasciae, corner units, clips, flashings, sealants, gaskets, fillers, metal closures, closure strips, and similar items. Match material and finish of sheet metal roofing unless otherwise indicated.

1. Cleats: Intermittent and continuous attachment devices for mechanically seaming into joints and formed from the following materials and thicknesses unless otherwise indicated:

a. Copper Roofing: 16-oz./sq. ft. copper sheet.

2. Expansion-Type Cleats: Cleats of a design that allows longitudinal movement of roof panels without stressing panel seams; of same material as other cleats.
3. Backing Plates: Plates at roofing splices, fabricated from material recommended by SMACNA.
4. Flashing and Trim: Formed from same material and with same finish as sheet metal roofing, minimum 20 oz.

B. Pipe Flashing: Copper.

2.6 FABRICATION

A. General: Custom fabricate sheet metal roofing to comply with details shown and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions (panel width and seam height), geometry, metal thickness, and other characteristics

of installation. Fabricate sheet metal roofing and accessories in shop to greatest extent possible.

1. Standing-Seam Roofing: Form standing-seam panels with finished seam height of 1-inch.

B. Fabrication Tolerances: Fabricate sheet metal roofing that is capable of installation to tolerances specified in Revere's "Copper and common Sense."

C. Form exposed sheet metal work to fit substrates with little oil canning; free of buckling and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.

1. Lay out sheet metal roofing so transverse seams, if required, are made in direction of flow with higher panels overlapping lower panels.
2. Offset transverse seams from each other 12 inches minimum.
3. Fold and cleat eaves and transverse seams in shop.
4. Form and fabricate sheets, seams, strips, cleats, valleys, ridges, edge treatments, integral flashings, and other components of metal roofing to profiles, patterns, and drainage arrangements indicated on Drawings and as required for leakproof construction.

D. Expansion Provisions: Fabricate sheet metal roofing to allow for expansion in running work sufficient to prevent leakage, damage, and deterioration of the Work.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

E. Sheet Metal Accessories: Custom fabricate flashings and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item required. Obtain field measurements for accurate fit before shop fabrication.

1. Form exposed sheet metal accessories without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
2. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
3. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces of accessories exposed to view.
4. Fabricate cleats and attachment devices of sizes recommended by SMACNA's "Architectural Sheet Metal Manual" for application, but not less than thickness of metal being secured.

F. Do not use graphite pencils to mark metal surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

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

1. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking, that tops of fasteners are flush with surface, and that installation is within flatness tolerances required for finished roofing installation.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored, and that provision has been made for drainage, flashings, and penetrations through sheet metal roofing.
3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating sheet metal roofing to verify actual locations of penetrations relative to seam locations of sheet metal roofing before installation.

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

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

3.2 UNDERLAYMENT INSTALLATION

A. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller. Cover underlayment within 14 days.

1. Apply self-adhering sheet underlayment over entire roof.

A. Apply slip sheet, wrinkle free, over underlayment before installing sheet metal roofing and related flashing. Overlap some of the edge cleat with the rosin paper. Install subsequent lengths of rosin paper, lapping it only slightly over previous length. Do not nail or fasten rosin paper.

B. Install flashings to cover underlayment according to requirements in Section 076200 "Sheet Metal Flashing and Trim."

3.3 INSTALLATION, GENERAL

A. General: Install sheet metal roofing to comply with details shown and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to installation characteristics required unless otherwise indicated on Drawings. Install fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required for complete roofing system and as recommended by fabricator for sheet metal roofing.

1. Install sheet metal roofing true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
2. Anchor sheet metal roofing and other components of the Work securely in place, with provisions for thermal and structural movement.
3. Field cutting of sheet metal roofing by torch is not permitted.
4. Provide metal closures at rake edges, eaves and each side of ridge and hip caps.
5. Flash and seal sheet metal roofing with closure strips at eaves, rakes, and perimeter of all openings. Fasten with self-tapping screws.

6. Locate and space fastenings in uniform vertical and horizontal alignment. Predrill panels for fasteners.
7. Locate roofing splices over, but not attached to, structural supports. Stagger roofing splices and end laps to avoid four-panel lap splice condition. Install backing plates at roofing splices.
8. Splice pans over 14' in length. Cross seam roof pans at splice. Bend up ¾" on upper edge of lower pan. Bend down ¾" on lower edge of upper pan. Do not install a cross seam over a gap in sheathing. Stagger cross seams in adjacent pans. On slopes of less than 3-in-12, pans shall be continues run up to 30'-0".
9. Lap metal flashing over sheet metal roofing to direct moisture to run over and off roofing.
10. Do not use graphite pencils to mark metal surfaces.

B. Thermal Movement: Rigidly fasten metal roof panels to structure at only one location for each panel. Allow remainder of panel to move freely for thermal expansion and contraction.

1. Point of Fixity: Fasten each panel along single line of fixing located at eave.
2. Avoid attaching accessories through roof panels in manner that inhibits thermal movement.

C. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

D. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating, by applying self-adhering sheet underlayment to each contact surface, or by other permanent separation as recommended by sheet metal manufacturer or SMACNA.

E. Soldering: All soldering shall be done with well heated solders to heat sheet thoroughly and to sweat solder completely through full width of seam. Ample solder shall be used and seam shall show at least one full inch of evenly flowed solder. Wherever possible, all soldering shall be done in flat position. Seams on slopes steeper than 45 degrees shall be soldered a second time.

F. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

G. Fascia: Align bottom of sheet metal roofing and fasten with blind rivets, bolts, or self-tapping screws. Flash and seal sheet metal roofing with closure strips where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

H. Rake and Eave Edge: Bend Overhang flush with the fascia board. On eaves where there is a gutter, angle edge away from the fascia for good drainage into the gutter. Where no gutter exists, drip edge strip shall be installed to control water so as not to stain or damage vertical wall or woodwork.

3.4 CUSTOM-FABRICATED SHEET METAL ROOFING INSTALLATION

A. Fabricate and install work with lines and corners of exposed units true and accurate. Form exposed faces flat and free of buckles, excessive waves, and avoidable tool marks, considering metal temper and reflectivity. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant. Fold back sheet metal to form hem on concealed side of exposed edges unless otherwise indicated.

1. Install cleats to hold sheet metal panels in position. Attach each cleat with at least two fasteners to prevent rotation.
2. Within 36 inches of edges of eaves, space cleats not more than 6 inches o.c. Over remaining roof area, space cleats not more than 12 inches o.c. or as otherwise required to meet wind uplift requirements. Bend tabs over fastener head.
3. Provide expansion-type cleats for roof panels that exceed 30 feet in length.

B. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to a width of 1-inch; however, reduce pre-tinning where pre-tinned surface would show in completed Work.

1. Do not use torches for soldering.
2. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
3. Copper Soldering: Tin edges of uncoated sheets, using solder for copper.

C. Standing-Seam Roofing: Attach standing-seam metal panels to substrate with double-fastened cleats spaced at 12 inches o.c. or as required to meet wind uplift requirements. Install panels reaching from eave to ridge before moving to adjacent panels. Before panels are interlocked, apply continuous bead of sealant to top of flange of lower panel. Lock standing seams by folding over twice so cleat and panel edges are completely engaged.

1. Lock each panel to panel below with soldered transverse seam.
2. Loose-lock panels at eave edges to continuous cleats and flanges at roof edge at gutters.
3. Leave seams upright after locking at ridges and hips.
4. Butyl sealant tape to be installed at all panel seams.

3.5 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for complete sheet metal roofing assembly including trim, copings, seam covers, flashings, sealants, gaskets, fillers, metal closures, closure strips, and similar items.
2. Install accessories integral to sheet metal roofing that are specified in Section 076200 "Sheet Metal Flashing and Trim" to comply with that Section's requirements.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and install units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

1. Install flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers.
2. Install continuous strip of self-adhering underlayment at edge of continuous flashing overlapping self-adhering underlayment, where "continuous seal strip" is indicated in SMACNA's "Architectural Sheet Metal Manual" and on Drawings.
3. Install exposed flashing and trim without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates, and to result in waterproof and weather-resistant performance.

4. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.

    a. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, and filled with butyl sealant concealed within joints.
    b. Use lapped expansion joints only where indicated on Drawings.

C. Pipe Flashing: Form flashing around pipe penetration and sheet metal roofing. Fasten and seal to sheet metal roofing as recommended by SMACNA.

D. Roof Curbs: Install flashing around bases where curbs meet sheet metal roofing.

3.6 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal roofing within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

B. Installation Tolerances: Shim and align sheet metal roofing within installed tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."

3.7 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as sheet metal roofing is installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal roofing installation, clean finished surfaces as recommended by sheet metal roofing manufacturer. Maintain sheet metal roofing in clean condition during construction.

E. Replace sheet metal roofing components that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 076100

SECTION 076200 – SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. Codes and standards set forth by:
   1. Sheet Metal Roofing Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or shown on Drawings
   2. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
   3. Sheet Metal Standard for Copper: Comply with Revere's "Copper and Common Sense." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

1.2 SUMMARY

A. Section includes:
   1. Copper sheet metal flashing and trim.

B. Extent of each type of flashing and sheet metal work is indicated on the drawings and by the provisions of this section and as required to provide a complete water-tight roof assembly.

C. Preparation and cleaning of substrate.

D. Without restricting the volume or quantity, work included under this Section shall consists of but not be limited to:
   1. Shop-formed flashing and sheet metal work related to roofing and terminations. Work includes removal of existing sheet metal flashings and installation of new sheet metal flashings and counter flashings.
   2. All other sheet metal fabrications indicated on the Contract Documents.

E. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leak-proof, secure, and noncorrosive installation.

F. Related Sections
   1. Section 013591: Historic Treatment Procedures.
   2. Section 061000 "Rough Carpentry" for sheathing, wood nailers, curbs, and blocking.
   3. Section 070150.19 "Preparation for Reroofing" for roof removal.
   4. Section 075419 "Polyvinyl-Chloride (PVC) Roofing".
   5. Section 076100 "Sheet Metal Roofing".
   6. Section 077123 "Gutters and Downspouts" for metal gutters, downspouts, leader heads, and scuppers.
   7. Section 079200: "Joint Sealants".

1.3 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leak proof, secure, and noncorrosive installation.

1.4 SCOPE

A. General: Provide all labor, materials, equipment, and services required to complete sheet metal flashing installation as specified herein and required by existing conditions and authorities having jurisdiction.

1.5 SUBMITTALS

A. Product Data: Submit complete product data for all products used in this Section.

B. Follow techniques as specified by Architect and illustrated in Drawings.

1.6 PROJECT CONDITIONS

A. Historic roofing craftsmanship characteristic of the structure are to be treated with sensitivity and are to be preserved and followed.

B. Replacement and repair work shall be equal to original workmanship. Sheet metal work shall match prototype exposure, size, pattern, and material. Reinstall with compatible non-ferrous fasteners.

1.7 ENVIRONMENTAL CONDITIONS

A. Do not perform work on metal roof in misty or rainy weather.

B. Do not apply metal flashing to wet roof sheathing.

C. At the end of the work day, provide building protection for any exterior roofing element removed for repair or replacement

D. Remove only a quantity of sheet metal, which may be repaired on the same day. At the end of the day use 15 pound roofing felt or polyethylene sheeting to drape over missing roofing and insert under roof unit or temporarily secure areas of existing roofing and roof as required to make roof watertight and windproof.

E. Contractor is responsible for prevent damage and protecting building envelope and interior during completion of work.

1.8 QUALITY ASSURANCE

A. Sheet Metal Flashing Fabricator and Installer Qualifications: Employs skilled workers who have (5) years' experience and custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance. Furnish names of owners and architects of three buildings on which applicator has installed satisfactory flashing similar to type herein specified.

B. Uniform Wind Load Capacity: Design, size and install components to withstand positive and negative wind loading pressures in accordance with International Building Code and as verified by Structural Engineer.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.

B. Protect products and accessories against damage and discoloration. Inside dry storage is required to prevent condensation from forming between sheets and components. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

C. Do not overload roof with stored materials or permit excessive traffic on completed roof surfaces.

1.10 WARRANTY

A. Special Warranty: Provide Warranty in which Installer agrees to repair or replace components of sheet metal flashing and trim that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures including, but not limited to, rupturing, cracking, or puncturing.
      b. Wrinkling or buckling.
      c. Loose parts.
      d. Failure to remain weathertight, including uncontrolled water leakage.
      e. Deterioration of metals, metal finishes, and other materials beyond normal weathering, including nonuniformity of color or finish.
      f. Galvanic action between sheet metal roofing and dissimilar materials.
   2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty Architectural Sheet Copper: Manufacturer's standard form in which manufacturer agrees to replace defective architectural sheet copper that shows evidence of free from defects in workmanship and materials within the specified warranty period.
   1. Finish Warranty Period: 25 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. Sheet Metal Standard for Copper: Comply with Revere's "Copper and Common Sense." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

D. SPRI Wind Design Standard: Manufacture and install copings and roof edge flashings tested according to SPRI ES-1 and capable of resisting the following design pressure as required by local building codes.

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects.
   1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METAL FLASHING MATERIALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Copper Sheet: ASTM B 370, cold-rolled copper sheet, H00 or H01 temper.
   1. 20 oz/sq. ft.
   2. Non-patinated exposed finish: Mill
   3. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Hussey Copper Ltd.
      b. Revere Copper Products, Inc.
      c. Canadian Brass

2.3 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Sheet: Minimum 30 mils thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Soprema, Lastobond Shield HT
      b. Grace Construction Products, a unit of W. R. Grace & Co.-Conn.; Grace Ice and Water Shield HT.
      c. Henry Company; Blueskin PE200 HT.

d. Owens Corning; WeatherLock Specialty Tile & Metal Underlayment.

2. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F or higher.
3. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F or lower.

B. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. minimum.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated.

B. Fasteners: Use fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.
1. General: All fasteners must be compatible with base material on which they are used.
2. Fasteners for Copper Sheet: Copper or passivated Series 300 stainless steel.
a. No aluminum fasteners shall be used with copper sheet.
3. Use copper rivets with non-ferrous mandrels.

C. Solder: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead with maximum lead content of 0.05 percent.

D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

E. Caulk: Single part linear polyurethane polymer as indicated in Section 079200 “Joint Sealants”

2.5 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
2. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
3. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

C. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

D. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.

E. Seams in Copper: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.

F. Do not use graphite pencils to mark metal surfaces.

PART 3 - EXECUTION

3.1 GENERAL

A. The installed work of this Section shall not be used as a storage space for other materials.

B. Do not permit unnecessary walking on the repaired sections of finished roof and sheet metal flashing. Require all personnel to wear rubber-soled shoes when installing or walking on a finished roof.

3.2 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
   1. Verify compliance with requirements for installation tolerances of substrates.
   2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
   3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Before commencement of work, carefully examine all surfaces to receive work and notify the Architect in writing of any conditions detrimental to the performance of this work. Do not proceed until unsatisfactory or deteriorated conditions have been inspected, corrected and are acceptable to the Architect and the applicator. Commencement of work will be construed as the applicator's acceptance of all surfaces. Commencement of the work prior to the Architect's inspection and acceptance is done at the applicator's risk.

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

3.3 UNDERLAYMENT INSTALLATION

A. Comply with guidelines and temperature restrictions of underlayment manufacturer for installation. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller. Cover underlayment within 14 days.

B. Apply slip sheet, wrinkle free, over underlayment before installing sheet metal flashing and trim.

3.4 INSTALLATION

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
   1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
   2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
   3. Space cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
   4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
   5. Torch cutting of sheet metal flashing and trim is not permitted.
   6. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by separating surfaces with a permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
   1. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

D. Conceal fasteners and expansion provisions in exposed work and locate to minimize possibility of leakage. Fasteners shall not be exposed.

E. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches (38 mm), except where pre-tinned surface would show in finished Work.
   1. Do not use torches for soldering.
   2. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
   3. Copper Soldering: Tin edges of uncoated sheets, using solder for copper.
   4. Soldering: All soldering shall be done with well heated solders to heat sheet thoroughly and to sweat solder completely through full width of seam. Ample solder shall be used and seam shall show at least one full inch of evenly flowed solder. Wherever possible, all soldering shall be done in flat position. Seams on slopes steeper than 45 degrees shall be soldered a second time.

3.5 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

B. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."

3.6 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.

END OF SECTION 076200

SECTION 077123 – GUTTERS AND DOWNSPOUTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Documents and general provisions of the Contract, including the General and Supplementary Conditions and Division 01 Specifications Sections, apply to this section.

B. Codes and standards set forth by:
   1. Preservation Brief #4, "Roofing for Historic Buildings" as published by the U. S. National Park Service.
   2. Sheet Metal Roofing Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or shown on Drawings
   3. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
   4. Sheet Metal Standard for Copper: Comply with Revere's "Copper and Common Sense." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

1.2 SUMMARY

A. Section Includes but is not limited to:
   1. Removal of existing internal membrane gutter and damaged downspouts and accessories.
   2. Installation of internal 18-gauge stainless steel gutter as indicated in the Drawings. Install expansion joints as required.
   3. Modification of leader heads as required for installation of new thru-wall scuppers and scupper liners.
   4. Replacement of missing, damaged, or inappropriate downspouts, brackets, and fasteners.
   5. Remove existing caulking at leader heads, install new caulk.
   6. Replace one (1) missing splash block.

B. Related Sections
   1. Section 013591: Historic Treatment Procedures.
   2. Section 061000 "Rough Carpentry" for sheathing, wood nailers, curbs, and blocking.
   3. Section 070150.19 "Preparation for Reroofing" for roof removal.
   4. Section 075419 "Polyvinyl-Chloride (PVC) Roofing".
   5. Section 076200 "Sheet Metal Flashing and Trim" for metal roof flashings and counter-flashings.
   6. Section 076100 "Sheet Metal Roofing".
   7. Section 079200: "Joint Sealants".
   8. Section 099000: "Architectural Coatings".

1.3 PERFORMANCE REQUIREMENTS

A. General: Install gutter and downspouts to withstand structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.

B. Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

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

1.4 SUBMITTALS

A. Samples for Verification.

1. Downspout brackets.

2. Downspouts: 12 inches long by actual width of unit, in required profile.

3. Scupper liner (lower roof).

4. Welding Sample: See Section 1.7E for requirements.

B. Product Data: Submit product data for all materials specified.

C. Fabricator/Installer Qualifications

D. Welding certificates from AWS. Minimum Requirement: AWS 6G Stainless

1.5 PROJECT CONDITIONS

A. Installation Requirements

1. Installation contractor is responsible for installing system, including anchorage to substrate and necessary modifications to meet specified and drawn requirements and maintain visual design concepts in accordance with Contract Documents and following installation methods as stipulated by the manufacturer.
2. Drawings are diagrammatic and are intended to establish basic dimension of units, sight lines, and profiles of units.
    a. Make modifications only to meet field conditions and to ensure fitting of system components.
    b. Obtain Architect's approval of modifications.
    c. Provide concealed fastening wherever possible.
    d. Attachment considerations: Account for site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening and fracturing connection between units and building structure or between components themselves.
    e. Obtain Architect's approval for connections to building elements at locations other than indicated in Drawings.
    f. Accommodate building structure deflections in system connections to structure.

3. System shall accommodate movement of components without buckling, failure of joint seals, undue stress on fasteners, or other detrimental effects when subjected to seasonal temperature changes and live loads

1.6 ENVIRONMENTAL ISSUES

A. Do not apply gutter or downspout materials during inclement weather.

1.7 QUALITY ASSURANCE

A. Perform work per SMACNA Architectural Sheet Metal Manual and NRCA Roofing and Waterproofing Manual.

B. Leader head/Downspout Installer/Fabricator: A firm with a minimum of five (5) years of successful experience with installation of downspout and leader head work of type and scope equivalent to Work of this Section.

C. Sheet Metal Flashing Fabricator and Installer Qualifications: Employs skilled workers who have (5) years' experience and custom fabricate sheet metal gutters similar to that required for this Project and whose products have a record of successful in-service performance. Furnish names of owners and architects of two buildings on which applicator has installed satisfactory internal gutters similar to type herein specified. All welders must be certified by AWS specifically for the welding procedures as outlined in this specification. Minimum certification is AWS 6G Stainless.

D. Uniform Wind Load Capacity: Design, size and install components to withstand positive and negative wind loading pressures in accordance with International Building Code and as verified by Structural Engineer.

E. Owner is to hire third party inspector to inspect lapping and welding methods of stainless steel gutter liner prior to and during installation. Contractor to provide architect and third-party inspector with profile and sample that is at least 12" in length. Sample to be lapped and welded. Sample is to be an exact replica and duplication of materials to be used and process to be performed during installation of actual system. Contractor, Inspector, and Architect to meet prior to installation of stainless steel gutter liner to review sample and discuss installation methods. Inspector to provide 100% inspection of welds during installation.

1.8 DELIVERY STORAGE AND HANDLING

A. Packing, Shipping, Handling, and Unloading: Protect finish metal faces.

B. Acceptance at Site: Examine each component and accessory as delivered and confirm that material and finish is undamaged. Do not accept or install damaged materials.

C. Prevent contact with materials that could cause discoloration, staining, or damage.

D. Stack pre-formed material to prevent twisting, bending, and abrasions, and to provide ventilation. Slope to drain.

1.9 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SHEET METAL MATERIALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Stainless Steel Sheet (Gutter Liner, thru-wall scuppers): ASTM A 240/A 240M or ASTM A 666, Type 304L, dead soft, fully annealed; with smooth flat surface
1. 16-gauge
2. 304L Stainless Steel, mill finish
3. Profile as indicated in Drawings.
4. Gutter liner sheets to be installed in 10ft. sections.

C. Copper Sheet (scupper liner): ASTM B 370, cold-rolled copper sheet, H00 or H01 temper.
1. 20 oz/sq. ft.
2. Non-patinated exposed finish: Mill
3. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Hussey Copper Ltd.
b. Revere Copper Products, Inc.
c. Canadian Brass

D. Aluminum Leader head: Modify existing as required.

2.2 DOWNSPOUT MATERIALS

A. Aluminum: Match existing.

B. Rivets: Aluminum

C. Aluminum Downspouts: Rectangular Corrugated Downspouts. Match existing size.

D. Aluminum Downspout Elbow: Rectangular Corrugated Downspout Elbow. Match existing size.

E. Aluminum Downspout Brackets: Aluminum Downspout Bracket to match existing non-perforated straps. Fasten with non-corrosive metals screw. Lead shields to be used when fastening into masonry.

F. Splash Blocks
1. Concrete splash blocks- Match existing.

2.3 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete installation and as recommended by manufacturer unless otherwise indicated.

B. Fasteners: Use fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.
   1. General: All fasteners must be compatible with base material on which they are used.
   2. Fasteners for Copper Sheet: Copper or passivated Series 300 stainless steel.
      a. No aluminum fasteners shall be used with copper sheet.
   3. Use copper rivets with non-ferrous mandrels.

C. Solder (Copper): ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead with maximum lead content of 0.05 percent.
   1. Flux: Muriatic acid neutralized with zinc or approved brand of soldering flux.

D. Filler Metal (Stainless-steel): 308L, 309L or 316L stainless steel metal filler.
   1. Flux: Tri-mix gas

E. Caulk (metal to masonry): Single part linear polyurethane polymer as indicated in Section 079200 “Joint Sealants”

2.4 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Sheet: Minimum 30 mils thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Soprema, Lastobond Shield HT
      b. Grace Construction Products, a unit of W. R. Grace & Co.-Conn.; Grace Ice and Water Shield HT.
      c. Henry Company; Blueskin PE200 HT.
      d. Owens Corning; WeatherLock Specialty Tile & Metal Underlayment.
   2. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F or higher.
   3. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F or lower.

B. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. minimum

2.5 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Fabricate gutters, downspouts, and fittings to the shape and profile indicated on the Drawings. When fabrication details are not indicated follow the applicable requirements of the Architectural Sheet Metal Manual of the Sheet Metal And Air Conditioning Contractors National Association, Inc.

C. Expansion Provisions: Follow provisions to accommodate expansion and contraction of gutter systems.

D. Solder for Copper:

1. Solder metal joints except those indicated or required to be movement type joints in accordance with the "Copper in Architecture" handbook published by the Copper Development Association Inc. (CDA).
2. Tin edges of copper sheets and cleats at soldered joints.
3. Upon completion of each area of soldering, carefully remove flux and other residue from surfaces. Neutralize acid flux by washing with baking soda solution, and then flushing with clear water. Use special care to neutralize and clean crevices.

E. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

F. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

G. Form exposed work true to line and level with accurate angles and surfaces and straight edges.

H. Weld corners and seams continuously to comply with the following:
1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

I. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.

J. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

K. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

L. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.6 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

PART 3 - EXECUTION

3.1 GENERAL

A. The installed work of this Section shall not be used as a storage space for other materials.

B. Do not permit unnecessary walking on the repaired sections of finished gutter and sheet metal flashing. Require all personnel to wear rubber-soled shoes when installing or walking on a finished gutter.

3.2 PREPARATION

A. Verify that substrates are in place and ready for installation of gutters and downspouts.

B. Do not install the Work of this Section unless all necessary nailers, blocking and other supporting components have been provided.
   1. Coordinate installation of roof perimeter flashing with installation of gutter system.

C. Confirm that substrate system is even, smooth, sound, clean, dry, and free from defects.

3.3 GENERAL

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.
   1. Provide flashing, counterflashing, cap flashing, metal trim, or any other fabricated items and miscellaneous sheet metalwork indicated or required to provide a complete and watertight installation.
   2. Install gutters and downspouts as indicated and in accordance with the Drawings and pertinent provisions of SMACNA Architectural Sheet Metal Manual.
   3. Anchor supports for operable partitions securely to and rigidly brace from building structure.
   4. All gutters, scuppers, and roof drains must be replaced and securely attached to structure.

B. Work Quality:

   1. General: Except as otherwise indicated, comply with Architects installation instructions and recommendations and with cited industry standards. Anchor units of work securely in place by methods indicated, providing for thermal expansion of units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof
      a. Install units plumb, square, and free from warp or twist while maintaining dimensional tolerances and alignment with surrounding construction.
      b. Fit gutters to downspouts and flashings for watertight connections. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
      c. Miter, lap seam and close corner joints with welds. Seal seams and joints watertight with welds.
      d. Install expansion joints at frequency recommended by the cited industry standards. Do not fasten moving seams such that movement is restricted.
      e. Coordinate with installation of roofing system and roof accessories

C. Gutters shall have the minimum cross section dimensions as shown on the drawings.

D. The opening in the gutter into the downspout shall equal the minimum downspout size shown on the drawings.

E. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by separating surfaces with a permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
   1. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

F. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

G. Conceal fasteners and expansion provisions in exposed work and locate to minimize possibility of leakage. Fasteners shall not be exposed.

H. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches (38 mm), except where pre-tinned surface would show in finished Work.
   1. Do not use torches for soldering.
   2. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
   3. Copper Soldering: Tin edges of uncoated sheets, using solder for copper.
   4. Soldering: All soldering shall be done with well heated solders to heat sheet thoroughly and to sweat solder completely through full width of seam. Ample solder shall be used and seam shall show at least one full inch of evenly flowed solder. Wherever possible, all soldering shall be done in flat position. Seams on slopes steeper than 45 degrees shall be soldered a second time.

3.4 UNDERLAYMENT INSTALLATION

A. Comply with guidelines and temperature restrictions of underlayment manufacturer for installation. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller. Cover underlayment within 14 days.

B. Apply slip sheet, wrinkle free, over underlayment before installing sheet metal gutter.

3.5 INTERNAL GUTTER INSTALLATION

A. Internal Gutters

   1. Remove of existing internal membrane gutter, thru-wall scuppers, and accessories.
   2. Install as indicated on Drawings and in accordance with cited industry standards.
   3. Install gutter level.
   4. Install expansion joints as required by cited industry standards.
   5. Provide fasteners as indicated and as recommended by cited industry standards.
   6. Locate new thru-wall scuppers per Drawings. Fabricate new thru-wall scuppers.
   7. Temporarily remove leader heads and modify as required to receive new stainless steel backplate.

8. Reinstall leader head and connect to downspout. Caulk perimeter of new backplate.

B. Scupper liners

1. Remove existing scupper liner. Repair stucco substrate.
2. Locate new scupper liners per Drawings. Fabricate new scupper liners.
3. Install as indicated on Drawings and in accordance with cited industry standards.
4. Provide fasteners as indicated and as recommended by cited industry standards.

C. Downspouts

1. Install as indicated on Drawings and in accordance with cited industry standards.
2. Locate downspouts per Drawings.
3. Damaged and missing downspouts must be replaced and securely attached to structure.
4. Provide spacers, hanger, and fasteners as indicated and as recommended by cited industry standards.
5. Repair leaky downspout joints.
6. Flash and seal leader head to downspout.
7. Caulk perimeter leader head backplate.

D. Installation of Missing Splash Blocks: Install splash block where downspout discharges onto grade (lower roofs only).

E. Install counter-flashing as indicated to prevent water from migrating behind gutter system.

3.6 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

B. Installation Tolerances: Shim and align sheet metal within installed tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."

3.7 CLEAN UP

A. Remove damaged, defective or improperly installed materials. Replace with new materials installed per requirements of this section.

B. Remove temporary protective coverings and strippable films as sheet metal are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal installation, remove unused materials and clean finished surfaces as recommended by sheet metal manufacturer. Maintain sheet metal in clean condition during construction.

C. Clean finished surfaces according to manufacturer’s written instructions; maintain clean condition until Final Completion.
1. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
2. Clean and neutralize flux materials. Clean off excess solder.
3. Clean off excess sealants.

END OF SECTION 077123

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Joint sealants.

B. Related Sections:
1. Section 013591: “Historic Treatment Procedures”.
2. Section 076200 "Sheet Metal Flashing and Trim".
3. Section 077123 “Gutters and Downspouts”.

1.3 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.

C. Field-Adhesion Test Reports: For each sealant application tested.

D. Warranties: Sample of special warranties.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.

1.6 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

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

B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period for Urethane Sealants: 5 years from date of Substantial Completion.

2. Warranty Period for Silicone Sealants: 20 years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

C. Stain-Test-Response Characteristics: Where sealants are specified to be non-staining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

D. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.3 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

B. Stain-Test-Response Characteristics: Where elastomeric sealants are specified to be non-staining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

2.4 URETHANE JOINT SEALANTS

A. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
   1. Products:
      a. Sika Corporation, Inc.; Sikaflex - 1a.
      b. BASF Building Systems; Sonolastic NP1.
      c. Tremco; Vulkem 116.

2.5 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material and type that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) or other type, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

C. 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 applicable.

2.6 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests. Prime all joint substrates unless indicated otherwise in writing by the Architect.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) or other type, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

D. 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 applicable.

E. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

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

C. Before commencement of work, carefully examine all surfaces to receive work and notify the Architect in writing of any conditions detrimental to the performance of this work. Do not proceed until unsatisfactory or deteriorated conditions have been inspected, corrected and are acceptable to the Architect and the applicator. Commencement of work will be construed as the applicator's acceptance of all surfaces. Commencement of the work prior to the Architect's inspection and acceptance is done at the applicator's risk.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Non-sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.

    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

F. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping. Do not pull or stretch material. Produce seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures, apply heat to sealant in compliance with sealant manufacturer's written instructions.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

A. Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:
    a. Control and expansion joints in unit masonry.
    b. Joints between metal panels.
    c. Joints between different materials listed above.
    d. Perimeter joints between materials listed above and frames of doors and windows.
    e. Control and expansion joints in ceilings and other overhead surfaces.
    f. Other dynamic joints as indicated.
    g. Construction joints in copper flashing.
    h. Joints between copper flashing and stucco masonry.
    i. Joints between copper flashing and woodwork.
2. Joint Sealant: Paintable single component non-sag urethane sealant, as recommended by manufacturer.
3. Joint-Sealant Color: As selected by Architect from manufacturers full range of colors.

END OF SECTION

SECTION 090120 – STUCCO REPAIRS AND REPLACEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. Codes and Standards set forth by:

1. Preservation Brief #1, “The Cleaning and Waterproof Coating of Masonry Buildings” as published by the US National Park Service.
2. Preservation Brief #22, “The Preservation and Repair of Historic Stucco" as published by the U. S. National Park Service.
3. Conway, Brian D. “Illinois Preservation Series Number 2: Stucco.” Springfield, Illinois: Illinois Department of Conservation, Division of Historic Sites, 1980.
4. ASTM C10, Specification for Natural Cement

1.2 SUMMARY

A. Work includes, all labor, materials, equipment, and services necessary to complete the work of stucco repairs as shown on the Drawings, as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but is not necessarily limited to, the following:

1. Restore stucco (replace missing stucco, repair damaged and deteriorated stucco).
2. Preparation of existing stucco to receive new work. Repointing masonry substrate as required.
3. Application of stucco as specified.
4. Finish new stucco to match existing.
5. Install sloped stucco wash on top of wall crenellations (lower roofs only).

B. Related Sections
1. Section 013591 “Historic Treatment Procedures”.
2. Section 040310 “Masonry Cleaning”.
3. Section 040513 “Mortars for Structural Repairs and Repointing”.
4. Section 070150.19 “Preparation for Reroofing” for roof removal”.
5. Section 076200 "Sheet Metal Flashing and Trim".
6. Section 099133: “Mineral Silicate Paint/Coatings”.

1.3 SCOPE

A. Provide all labor and materials to repair and restore stucco as specified herein and as detailed on the Drawings.

1.4 PROJECT CONDITIONS

A. Protection of Building: Protect building elements and finishes from damage and from deterioration caused by work of this section.

1. Minimize levels of dust during stucco removal and application operations.
2. Protect open joints and other vulnerable areas from water penetration to prevent leakage during the course of the work. Open areas shall not be left exposed overnight or when inclement weather is predicted.
3. Protect adjacent work from moisture deterioration and soiling due to stucco rehabilitation work. Provide temporary coverings as required to prevent spattering of stucco on other materials.
4. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall provide that nearby vehicles and adjacent structures and foliage are protected from damage during the stucco rehabilitation work.
5. Contractor shall coordinate stucco work with the other trades involved in exterior rehabilitation work.

1.5 SEQUENCING AND SCHEDULING

A. Perform stucco repair work in the following sequence:
1. Remove liquid applied systems, including in areas where liquid applied system has been applied at transition between roof and stucco. Note: See drawings for constraints at upper museum roof. See Section 070150.19 Preparation for Reroofing.
2. Remove plant growth.
3. Repair stucco with new stucco materials. Repoint masonry below stucco as required.
4. After repairs have been completed and cured, perform a final cleaning to remove residues from this work.
5. Prep surface and paint stucco following required curing.

1.6 ENVIRONMENTAL CONDITIONS

A. General: Perform work only when temperature of products being used and air temperature and humidity comply with the manufacturer’s requirements and requirements of this Section. In case of conflict, the most stringent requirements shall govern.

B. Cold Weather Limitations on use of stucco: Do not mix or use stucco when air or masonry temperature is below 40 degrees F or when it is expected to drop below 40 degrees F within 72 hours of stucco application. Protect work from freezing for not less than 72 hours after set of material has occurred.

C. When ambient air temperature is below 40 degrees F, heat mixing water to maintain stucco temperature between 40 and 120 degrees F until placed. If necessary, store materials in a heated area to allow stucco temperatures to remain above 40 degrees F throughout the placement and finishing cycle.

D. Hot Weather Limitations: Under hot, dry and windy conditions use proper pre-dampening, protection and moist curing procedures as required to keep stucco moist for 72 hours following final tooling.

1.7 QUALITY ASSURANCE

A. The Contractor shall not change sources or manufacturers of stucco materials during the course of the work.

B. Mock-Up: Before starting work, prepare and stucco a sample area of not less than 4 feet high and 4 feet long using the procedures, proposed colors and texture, finish and workmanship for approval by the Architect.

C. Work Experience: Contractor and lead mason to perform the work in this section shall have at least five (5) years demonstrated experience working with natural cement stuccos. Contractor to have a working knowledge of the Secretary of the Interior's Standards for Treatment of Historic Properties. Experience only in new stucco work is insufficient experience for work.

D. Submittals
   1. Qualifications: Submit documentation of mason's past project experience that meets the work experience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years that employed natural cement stuccos, including contact names and phone numbers. Submit resume of lead mason.
   2. Product Data, MSDS, and manufacturer's instructions for all specified materials used during the course of the work. Provide product literature that indicates that products meet or exceed specified requirements, and ingredients meet applicable ASTM standards.
   3. Submit stucco design mix.
   4. Prepare portable samples approximately 18 x 18 inches. Once a matching stucco sample has been approved by the Architect, on site mockup may begin.
   5. Pre-installation meeting shall be held to review extent of stucco repairs.

E. Approved test panels and samples shall become part of the finished work at the Contractor's option and shall establish the standard of quality expected through the remainder of the construction. The Contractor shall prepare up to three samples if required to obtain approval without additional compensation.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site and store in manufacturer's original unopened containers and packaging, bearing labels as to type and names of products and manufacturers, and which shall show grade, batch, and production data.

B. Deliver, store, and handle all products and materials to prevent damage, deterioration, or degradation and intrusion of foreign materials

C. Storage and Protection: All materials must be protected from rainwater and ground moisture, and from staining or intermixture with earth or other types of materials.
   1. Do not tarp or wrap materials so as to trap moisture or permit condensation to form
   2. Allow air to circulate freely around materials
   3. Do not use bags that have been broken or exposed to moisture. Reseal open bags at the end of the work day in a manner to prevent moisture intrusion.
   4. Discard and remove from site deteriorated, contaminated materials and products that have exceeded their expiration dates. Replace with fresh materials.
   5. The contractor becomes responsible for the product at the time it is received.

PART 2 - PRODUCTS

2.1 MANUFACTURERES

A. Basis of Design: Rosendale Natural Cement 10C as manufactured by Edison Coatings, Inc., Plainville, CT (800) 341-6621.
   1. Approved Equal

2.2 MATERIALS, General

A. Grade and Quality: Materials shall conform to the requirements of this Section and shall be new, free from defects, and of recent manufacture

B. Natural Cement: Natural cement processed from argillaceous limestone and meeting the requirements of ASTM C10. Artificial mixtures of other cementitious materials, fly ash, slag, Portland cement, hydraulic lime or lime-pozzolan mixtures are not permitted as substitutes for natural cement.

C. Aggregate: ASTM C144 natural sand blend, rounded to sub-angular in shape, washed, screened and dried. Aggregate to be selected to match the color and texture of the original stucco aggregates as closely as possible while remaining in compliance with ASTM C144 grading and soundness requirements.

D. Stucco Colors: Inorganic mineral oxides meeting the requirements of ASTM C979, at levels not to exceed 10% on cement weight, except for carbon black, which may not exceed 2% on cement weight. Use of color pigments shall be limited to the minimum amount required to adjust stucco color and use of properly matched aggregates and natural cement matrix shall be the primary means of achieving color match.

E. Admixtures: NO admixtures shall be used without the express written consent of the Architect and the stucco manufacturer. Calcium chloride is not permitted in any stucco.

F. Water: Shall be clean and free of acids, Alkalis or organic materials. If water must be transported or stored in a container, the container must not impart any chemicals to the water.

2.3 STUCCO MIXES

1. Scratch Coat
   a. 1 Part Rosendale Natural Cement 10C
   b. 2 Parts Sand
   c. Enough water to form a workable consistency
2. Finish Coat
   a. 1 Part Rosendale Natural Cement 10C
   b. 2-3 Parts Sand (match texture of existing stucco)
   c. Enough water to form a workable consistency.

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor shall hold a pre-installation meeting with the architect prior to starting repairs.

3.2 PREPARATION

A. Remove all loose, deteriorated, and severely cracked stucco to the masonry substrate. Remove stucco using hand tools. Do not use power tools. Avoid over sounding to prevent additional damage.

B. Probe areas of loose stucco to ensure no abandoned fasteners remain adhered to the masonry substrate

1. Remove abandoned fasteners that would impede successful patching of the stucco.

C. Square off large areas to receive new patching, back-beveling edges to receive new stucco. Where possible, square off patches to coincide with scoring lines on stucco surface.

D. Wash areas to be patched thoroughly with clean water to remove dust and loose debris prior to patching.

3.3 MIXING

A. It is recommended that a dust mask be worn during mixing.

B. All stucco shall be preblended, pre-colored and prepackaged under controlled factory conditions. All ingredients are to be batched within plus or minus 1% accuracy, except pigments which shall be weighed to a precision of 0.02%.

C. Thoroughly mix stucco in quantities needed for immediate use, using mechanical mortar mixer or paddle mixer. Add approximately half the required water and mix stucco for a minimum of 5 minutes, and then slowly add water as needed to reach the desired working consistency. Do not exceed mix time of 10 minutes.

D. Add only clean, potable water at the project site. Do not add sand, stone, cement, lime, bonding agents, coloring admixtures, set accelerators, plasticizers, air entraining admixtures or other materials unless specifically authorized in writing.

E. Use a batch type mixer in accordance with ASTM C270, Subparagraph 6.3.

F. Mixed stucco must be used before initial set, so mix only as much material as will be used within 10 minutes for quick-setting stucco, or within 30 minutes for regular setting stucco. Once material has begun to set, it should not be re-tempered or adjusted with additional water but should be discarded.

3.4 INSTALLATION

A. Stucco Repair by Patching

1. Ensure mortar joints are raked back to key new stucco. Rake out brick mortar joints to a minimum depth of ½”
2. Surface should be free of debris, dust, dirt, grease, oil, paint, and vegetation. Clean with a bristle brush. A clean surface is necessary to obtain a good bond between the stucco and substrate
3. Area should be cut on the diagonal and squared off with a butt joint to provide a neat patch. If necessary, and as reviewed by the Architect, it may be preferred to stucco the area of an entire feature.
4. New patch must not overlap existing stucco.
5. Pre-dampen masonry surfaces to receive stucco for a minimum of 20 minutes prior to stucco placement. Masonry surfaces should be saturated but free of excess or standing water at time of stucco placement. Substrate shall be glistening, and no standing water should remain during a new application.
6. Scratch coat: Fill joints and spread stucco to provide thin “bond coat” on the masonry surface.
7. Finish coat: A second, heavier application is then applied and finished immediately.
8. Stucco patches shall match the existing surface texture and tooling unless otherwise noted.
9. Allow stucco to fully cure before final cleaning. Longer cure times are required in cooler weather. Only low pressure should be used to avoid damaging new stucco. Only cleaning materials approved by the stucco manufacturer, and only at the approved rates of dilution and dwell time.
10. After initial cure, prepare surface and paint stucco.

3.5 CURING

A. Protect completed work from adverse weather, heavy rainfall, freezing, and drying by direct sunlight and winds until cured.

B. Once the material has been finished, it must be maintained in a damp condition throughout its curing period. Generally, this period of wet curing will be a minimum of 3 days, depending on conditions. Consult your Edison Coatings technical representative for curing guidelines for your specific project conditions. Acceptable curing methods include draping burlap over the fresh stucco and maintaining the burlap in a damp condition, or frequent misting with water, or covering with polyethylene.

3.6 CLEANING

A. Remove temporary coverings used to protect adjacent surfaces from stucco spatter. Promptly remove stucco from surfaces which are not to be plastered. Repair surfaces which have been stained, marred or otherwise damaged during the stucco work. Remove unused materials, containers, equipment and debris after stucco work is complete.

B. After stucco is thoroughly cured and set, clean masonry surfaces, walls, sills, overhangs, etc.

3.7 PRODUCTION

A. Remove and replace all damaged products and materials that are wet, moisture damaged, or mold damaged.

END OF SECTION 090120

SECTION 099000 – ARCHITECTURAL COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. Codes and standards set forth by:
   1. All work shall be performed in accordance with the “Secretary of the Interior’s Standards for Rehabilitation, “U.S. Department of the Interior, National Park Service, 1995.”
   2. MPI Standards:
      a. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
      b. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.
   3. ASTM D16-03 “Standard Terminology for Paint, Related Coatings, Materials, and Applications”

1.2 SUMMARY

A. This project involves the rehabilitation of an historic building. Treat the building respectfully. Carefully inspect existing conditions and treat existing materials as irreplaceable. Do not remove, alter or disfigure any existing materials, elements or finishes, unless indicated on the Drawings, specified herein, or directed by the Architect.

B. Section includes plain painting as follows:
   1. Paint all newly installed and disturbed metal leader heads, back plates, downspouts, and accessories.
   2. Plain painting of new disturbed metal leader heads, back plates, downspouts, and accessories.
   3. Do not alter, remove, or paint over finishes unless explicitly specified.

1.3 DEFINITIONS

A. “Paint” includes coating systems materials, primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate, or finish coats.

1.4 SCOPE

A. This Section includes all labor, materials, equipment, and services required to furnish and apply all of the painting materials indicated on the Drawings and as specified herein. Work shall include complete painting of the building’s leader heads, downspouts, and accessories.

   1. All items shall be painted monochromatically to match stucco walls.

B. Contractor shall leave owner with one can of each product used appropriately marked with details of location on buildings. Provide list of color names, numbers and formulas.

1.5 SUBMITTALS

A. Product Data: For each paint system indicated. Include block fillers and primers.

1. Provide manufacturers' technical information, label analysis, and application instructions for each material proposed for use.

B. Qualifications: Submit documentation of painters past project experience that meet the work experience outlined in the specification. Provide references for a minimum of five years' experience painting. Submit resume of lead painter.

C. Samples. Provide samples of each color and material to be applied, with texture to simulate actual conditions, on representative samples of the actual substrate.

D. Closeout Documentation: Contractor shall leave one can of each product used appropriately marked with details of location on the building. Provide list of color names, numbers, and formulas.

1.6 QUALITY ASSURANCE

A. Work Experience: A qualified painting specialist with five years' expertise in matching and touching up existing painting. Experience only in new painting work is insufficient experience for work.

1.7 PROJECT CONDITIONS

A. The Contractor is responsible for protecting existing adjacent materials and surfaces during the execution of the work, and shall provide all necessary protection and follow all necessary work procedures to avoid damage to existing material assemblies not a part of the work in the Section.

B. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall also provide that nearby vehicles and adjacent structures will be protected from damage during the course of the work.

1.8 ENVIRONMENTAL CONDITIONS

A. The coating manufacturer's requirements for ambient temperature, humidity, and ventilation during painting operations, and temperature of surfaces to receive a coating shall be strictly followed

B. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 degrees F.

C. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 95 degrees F.

D. Do not paint exterior when temperature is below 50° F when the surface is damp, or when temperature is likely to drop to freezing within 24 hours. Avoid painting when surface is exposed to hot sun or early morning dew.

1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

E. Comply with the manufacturer's recommendations as to environmental conditions under which the coating systems may be applied.

F. Do not apply paint in areas where dust is being generated.

G. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver all coating materials to site and store in manufacturer’s original unopened containers and packaging, bearing manufacturer’s name and label and the following information:

1. Product name or title of material
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.

B. Protection

1. Store only the approved materials on the job site and store only in a suitable and designated area restricted to the storage of paint materials. Space shall comply with the paint manufacturer’s requirements for storage temperature. Protect from freezing.
2. Use all means necessary to ensure the safe storage and use of paint materials and the prompt and safe disposal of waste.
3. Use all means necessary to protect paint materials before, during, and after application and to protect the installed work and materials of all other Trades.
4. Keep storage area neat and orderly. Remove oily rags and waste daily.

C. Replacements: In the event of damage to the products, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

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

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

2.2 MODERN PAINT MATERIALS, GENERAL

A. Transition Coat: Paint manufacturer's recommended coating for use where a residual existing coating is incompatible with the paint system.

B. Products listed below represent materials that will likely be used for painting elements. This section assures quality of Work by listing regulatory language and by setting standards of quality for materials. Information from the testing shall guide product selection.

2.3 MANUFACTUERS

A. Manufactures: Provide best quality grade of paint as regularly manufactured by specified manufacturer. Primer coats must be produced by the same manufacturer as the top coats unless otherwise specified. Subject to compliance with requirements, provide products by one of the following or equivalent MPI listed manufacturer:

1. Benjamin Moore & Co.
2. PPG Industries, Inc.
3. Sherwin-Williams Co.

B. Substitutions must be approved by Architect.

2.4 PREPARATORY MATERIALS

A. Pigments, thinners, and solvents used with any coating material shall be as recommended by the paint manufacturer for the particular product.

2.5 PAINT MATERIALS, GENERAL

A. Material Compatibility:

1. All paint and finishing materials shall be lead free.
2. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
3. For each coat in a paint system, provide products recommended in writing by manufactures of topcoat for use in paint system and on substrate indicated.
4. Colors: Match adjacent stucco.

B. Caulking Materials: Sealant with 20-year life expectancy. Sealant to be paintable.

1. Exterior
   a. Sonneborn Sonolastic NP1 one component polyurethane
   b. Sashco Big Stretch Sealant

c. An approved equal
NOTE: Sealants must be primed

2.6 EXTERIOR METAL PRIMER & PAINT (PREVIOUSLY PAINTED LEADERHEADS, DOWNSPOUTS, & APPLICABLE ACCESSORIES)

A. Exterior Primer
1. PrepRite Pro Block Latex Primer
2. Or an Approved Equal

B. Exterior Paint
1. Duration Exterior Latex
2. Or an Approved Equal

2.7 PAINTING, GENERAL

A. Execution of the Work:
1. Remove failed coatings and corrosion and repaint.
2. Verify that substrate surface conditions are suitable for painting.
3. Allow other trades to repair items in place and retain as much original material as possible before repainting.
4. Install temporary protective measures to protect historic painted surfaces that shall be treated later or are not scheduled to be painted.

B. Matching Existing Painted Surfaces:
1. Color match existing painted surfaces to ensure new painting visually matches the existing coatings in color and sheen.

C. Mechanical Abrasion: Where mechanical abrasion is needed for the work, use only the gentlest mechanical methods, such as scraping and lightly hand sanding, that will not abrade softer substrates, reducing clarity of detail. Do not use abrasive methods such as rotary sanding, rotary wire brushing, or power tools except as indicated as part of the historic treatment program and as approved by Architect.

D. Heat Processes: Do not use torches, heat guns, or heat plates.

2.8 EXAMINATION:

A. Before commencement of work, carefully examine all surfaces to be painted and notify the Architect in writing of any conditions detrimental to the performance of this work. Do not proceed until unsatisfactory or deteriorated conditions have been inspected, corrected and are acceptable to the Architect and the applicator. Commencement of work will be construed as the applicator's acceptance of all surfaces. Commencement of the work prior to the Architect's inspection and acceptance is done at the applicator's risk.

2.9 INSPECTION:

A. Prior to all work of this Section, carefully inspect the installed work of all other Trades and verify that all such work is complete to the point where this installation may properly commence.

B. Verify that paint finishes may be applied in strict accordance with all pertinent codes and regulations and the requirements of these Specifications.

2.10 DISCREPENCIES

A. In the event of discrepancy, immediately notify the Architect.

B. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved. Commencement of work shall be construed as acceptance of the surfaces and, therefore, the Contractor shall be fully responsible for satisfactory work as required herein.

2.11 SURFACE PREPARATION

A. General: For application of approved removal products, use only such equipment as is recommended for application of the paint removal product by the manufacturer, and as approved by the Architect.
   1. General: Use only the gentlest, appropriate method necessary to clean surfaces in preparation for painting. Clean all surfaces, corners, contours, and interstices.

B. Compatibility: Prior to actual use of the application equipment, use all means necessary to verify that the proposed equipment is actually compatible with the material to be applied and that the integrity of the finish will not be jeopardized by use of the proposed application equipment. Contractor to coordinate with manufacturer's representatives on appropriate tools and equipment.

C. Prior to all surface preparation and paint operations, completely mask, remove, or otherwise adequately protect all hardware, accessories, machined surfaces, plates, lighting fixtures, and similar items in contact with painted surfaces but not scheduled to receive paint.

D. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease and incompatible paint and encapsulates.

E. Do not proceed with treatment until proper protection has been installed for adjacent materials.

F. Detergent Cleaning: Wash surfaces by hand using clean rags, sponges, and bristle brushes. Scrub surface with detergent solution and bristle brush until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet. Rinse with water applied by clean rags or sponges.

G. Solvent Cleaning: Use solvent cleaning to remove oil, grease, smoke, tar, and asphalt from painted or unpainted surfaces before other preparation work. Wipe surfaces with solvent using clean rags and sponges. If necessary, spot-solvent cleaning may be employed just prior to commencement of paint application, provided enough time is allowed for complete evaporation.

H. Mildew: Clean off existing mildew, algae, moss, plant material, loose paint, grease, dirt, and other debris by scrubbing with bristle brush or sponge and detergent solution. Scrub mildewed areas with mildewcide. Rinse with water applied by clean rags or sponges.

I. Contractor shall reclaim and dispose of all spent media used in conjunction with this project in accordance with applicable laws.

2.12 PAINT REMOVAL

A. Schedule all cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

B. Adequate illumination shall be provided in all areas where painting and staining operations are in progress.

2.13 MATERIAL PREPARATION OF PAINT

A. Mix and prepare materials in accordance with manufacturer's directions or those specified herein, whichever is more stringent.

B. Stir materials before application to produce a mixture of uniform density and stir as required during application of the materials. Do not stir into the material any foreign materials, residue or surface film. Remove any such deleterious material and strain coating materials before using if necessary.

C. Add minimum amount of solvents or thinners to coating materials as necessary to achieve proper consistency for method of application.

2.14 PAINT APPLICATION

A. Prepare surfaces to be painted according to the Surface-Preparation Schedule and with manufacturer's written instructions for each substrate condition.

B. Apply a transition coat over incompatible existing coatings.

C. General Finish Application for Paint
   1. All materials shall be applied under adequate illumination, evenly spread, and smoothly flowed on with the proper type and size of brushes, roller covers, and bucket grids, to avoid run, sags, holidays, brush marks, air bubbles, and excessive roller stipple.
   2. The number of coats and film thickness shall be the same regardless of the method of application. Do not apply succeeding coats until previous coat has dried or cured as recommended by paint manufacturer. Give special attention to insure that surfaces, including edges, corners, and crevices receive a dry film thickness equivalent to that of flat surfaces.
   3. Apply each coat at not less than recommended spreading rate to provide the dry film millimeter thickness specified by the manufacturer for each paint coating.
   4. Coverage and hiding shall be complete. When color, stain, mark of any kind, dirt or undercoats show through the final schedule coat of paint to the surface, it shall be covered by additional coats until the paint film is of uniform finish, color, appearance and coverage at no additional cost to the Owner.
   5. Back prime any new material before installation unless specified to receive a transparent finish.
   6. Touch-up painting as required to provide smooth, even finish prior to final acceptance of work.

D. All materials must be inspected by Architect prior to application of finish coat.

2.15 CLEAN UP

A. General

1. Provide daily cleanup
2. During progress of the Work, do not allow the accumulation of empty containers or other excess items except in area specifically set aside for that purpose. Do not store paint materials uncovered.
3. Prevent accidental spilling or splashing of paint materials, and in the event of such spill, immediately remove all spilled material and the waste or other equipment used to clean up the spill, and wash the surfaces to their original undamaged condition, all at no additional cost to the Owner.

B. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

C. Upon completion of the painting or finishing, remove excess paint materials, tools and equipment, drop cloths and other protective materials, and debris from the site.

D. Prior to final acceptance: Upon completion of this portion of the Work, visually inspect the surfaces. Clean paint spots or spatters from surfaces not scheduled to receive paint, such as landings, adjacent masonry, and fixtures, leaving surfaces in a satisfactory condition.

END OF SECTION 099000

SECTION 099133 – SILICATE MINERAL EXTERIOR PAINT/COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. Section 013959 “Historic Treatment Procedures”

C. Section 040310 “Masonry Cleaning”

D. Codes and standards set forth by:
1. All work shall be performed in accordance with the “Secretary of the Interior’s Standards for Rehabilitation, “U.S. Department of the Interior, National Park Service, 1995.”
2. Preservation Brief #1, "Assessing Cleaning and Water Repellent Cleaning for Historic Masonry Buildings" as published by the U. S. National Park Service.
3. Preservation Brief #6, "Dangers of Abrasive Cleaning to Historic Buildings" as published by the U. S. National Park Service.
4. ASTM D16-03 “Standard Terminology for Paint, Related Coatings, Materials, and Applications”
5. ASTM E 96, "Standard Test Methods for Water Vapor Transmission of Materials."
6. ASTM E 514, "Standard Test Method for Water Penetration and Leakage Through Masonry."

1.2 SUMMARY

A. This project involves the preservation of an historic building. Treat the building respectfully. Carefully inspect existing conditions and treat existing materials as irreplaceable. Do not remove, alter or disfigure any existing materials, elements or finishes, unless indicated on the Drawings, specified herein, or directed by the Architect.

B. Section includes surface preparation and the application of paint systems on the following exterior substrates:
1. Stucco

C. Related Products
1. BEECK Fixative

1.3 DEFINITIONS

A. Mineral Silicate paint/coating, base coat: The first applied coat of the mineral silicate paint/coating.

B. Mineral Silicate paint/coating, top coat: The second applied coat of the mineral silicate paint/coating.

1.4 SYSTEM DESCRIPTION

A. A materials-compatible highly vapor permeable decorative coating system offering strong weathering protection for exterior exposure.
   1. Mineral Silicate Paint/Coating: An incombustible two coat system comprising of a “Coarse” texture filled base coat and a “Fine” smooth top coat.
      a. Mineral Silicate paint/coating penetrates the surface and in a chemical reaction combines with the substrate through chemical and mechanical bonds forming a hard, amorphous microporous layer with extremely high vapor permeability.
      b. Unaffected by acids or alkalinity, UV exposure, or air-borne pollutants.
      c. Unique alkaline mineral layer structure maintains moisture balance through vapor diffusion to keep wall assemblies breathable and dry, thus resisting mold and biological growth.
      d. Will not reduce vapor permeability of substrate.
      e. Coarse, filling first coat optically blends together the primer coat application and fills existing hairline cracks, crazing and other irregularities.

1.5 SCOPE

A. This Section includes all labor, materials, equipment, and services required to furnish and apply all of the painting materials indicated on the Drawings and as specified herein.

B. Contractor shall leave owner with one can of each product used appropriately marked with details of location on buildings. Provide list of color names, numbers and formulas.

1.6 SUBMITTALS

A. Product Data: Submit product data showing material proposed. Submit sufficient information to determine compliance with the Drawings and Specifications. Provide published documentation describing materials, characteristics, and limitations.

B. Samples: Submit samples for verification purposes, fabrication techniques and workmanship. Resubmit until required sheen, color, and texture is achieved

C. Manufacturer's Instructions: Submit manufacturer’s instructions including technical data sheets, material safety data sheets, mixing instructions, application requirements, special procedures, and conditions requiring special attention.

D. Qualifications: Submit documentation of painters past project experience that meets minimum the work experience outlined in the specification (five years of experience in matching and touching up existing painting). Provide references for a minimum of two (2) projects completed in the last five years, including contact names and phone numbers. Projects must include installation of mineral silicate paint/coating systems.

E. Closeout Documentation: Contractor shall leave one can of each product used appropriately marked with details of location on the building. Provide list of color names, numbers, and formulas.

1.7 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer Qualifications: Provide evidence that Manufacturer is a firm engaged in the manufacture of mineral silicate paint/coatings of types required, and whose products have been in satisfactory use in similar service for a minimum of fifteen years.
2. Applicator Qualifications:
    a. Provide evidence Applicator is a firm having a minimum of five (5) years of successful application experience with projects similar in type and scope to that required for this Project and having passed a product certification training course provided by the manufacturer prior to the execution of this unit of work. Qualified painting specialist must have a minimum of two projects that include the installation of mineral silicate paint/coatings systems.

B. Mockups: Prepare mockups for each type of coating system and substrate indicated and each color and finish required to demonstrate aesthetic effects and to set quality standards for materials and execution. Duplicate appearance of approved Sample submittals.
1. Prior to application of the work, fabricate and erect mock ups for each type of finish and application to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution.
2. Build mock ups to comply with the following requirements using materials indicated for final unit of work.
    a. Locate mock ups as directed by the Architect.
    b. Demonstrate the proposed range of aesthetic effects and workmanship to be expected in the completed work.
    c. Obtain the Architect’s acceptance of mock ups before start of final unit of work.
    d. Determine Application Ratio:
        1) Locate area(s) to receive the mineral silicate paint/coating mock up samples. Prepare surfaces as directed in Sections 3.1 EXAMINATION, 3.3 PREPARATION, and 3.4 APPLICATION.
        2) Demonstrate the proposed range of aesthetic effects and workmanship to be expected in the completed work. .
        3) Prepare sample material: Provide minimum three transparent examples of mineral silicate paint/coatings and thinner mixed in a ratio of one to the other. Maintain a record of prepared paint/coating color and thinner ratio mixtures.
        4) Stir well before starting application and keep well-stirred thereafter for color consistency. Apply sample material as directed in Section 2.4 FINISHES. Apply the prepared samples in two coats allowing minimum 12 hours between coats. Results may be evaluated for approval after final coat has cured minimum 16 hours.
        5) Approved Application: Maintain a record of approved mock up’s product mixing and application steps to incorporate into final unit of work to ensure color consistency and textural aesthetics

C. PROJECT CONDITIONS
1. The Contractor is responsible for protecting existing adjacent materials and surfaces during the execution of the work and shall provide all necessary protection and follow all necessary work procedures to avoid damage to existing material assemblies not a part of the work in the Section.
2. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall also provide that nearby vehicles and adjacent structures will be protected from damage during the course of the work.

1.8 ENVIRONMENTAL CONDITIONS

A. The coating manufacturer’s requirements for ambient temperature, humidity, and ventilation during painting operations, and temperature of surfaces to receive a coating shall be strictly followed.

B. Do not apply in freezing conditions, when rain is expected, or in high winds.

C. Comply with the manufacturer's recommendations as to environmental conditions under which the coating systems may be applied.

D. Do not apply paint in areas where dust is being generated.

E. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the Project site in supplier’s or manufacturer’s original wrappings and containers, labeled with manufacturer’s name, material and product brand name, and lot number, if any.

B. Store materials according to manufactures product data sheet and in their original undamaged packages and containers inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

C. Replacements: In the event of damage to the products, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

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

1.10 WARRANTY

A. Provide manufacturer’s written product warranty.
1. Warranty period from date of Substantial Completion is 15 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design:
1. Items specified are to establish a standard of quality for design, function, materials, compatibility, performance, warranty, and appearance.
2. Equivalent products by listed manufacturers are acceptable.
3. The Architect is the sole judge of the basis of what is equivalent.

B. Listed Manufacturers
a. BEECK Mineral Paints, 8161 Regent Parkway #101, Fort Mill, South Carolina 29715. Telephone: 704-940-3603. Email: info@BeeckMineralPaints.com

2.2 MATERIALS

A. Pretreatment: BEECK Fixative
   1. Pure mineral potassium water glass
   2. Organic content 0 % (VOB/C DIN 18363 2.4.1.)
   3. Water thinnable
   4. Free from solvents, biocides and preservatives

B. Mineral Silicate Paint/Coating, Base Coat: Provide mineral silicate based opaque paint/coating meeting or conforming to:
   1. DIN 4102-A2 & EN 13501-1, non-flammable standard – will not burn.
   2. ASTM E 96 Vapor Permeability – 75 to 85 perms.
   3. ASTM G 154 Accelerated Weathering – no fading, cracking, peeling.
   4. ASTM E 514 62-MPH Wind-Driven Rain Test – no water penetration.
   5. ASTM D 6886-12 Standard Test Method for Individual Volatile Organic Compounds (VOCs) – Less than 10 grams per liter VOC (Volatile Organic Content) white or fully tinted.
   6. Having mineral fillers in grains from 0 to 0.5 mm.
   7. Tinted equal to the top finish coating.
   8. Basis of Design: “BEECK Renosil Coarse”, BEECK Mineral Paints.
   9. Color: C-124-2 (BEECK Classic LV 62)

C. Mineral Silicate Paint/Coating, Top Coat: Provide mineral silicate based opaque paint/coating meeting or conforming to:
   1. DIN 4102-A2 & EN 13501-1, non-flammable standard – will not burn.
   2. ASTM E 96 Vapor Permeability – 75 to 85 perms.
   3. ASTM G 154 Accelerated Weathering – no fading, cracking, peeling.
   4. ASTM E 514 62-MPH Wind-Driven Rain Test – no water penetration.
   5. ASTM D 6886-12 Standard Test Method for Individual Volatile Organic Compounds (VOCs) – Less than 10 grams per liter VOC (Volatile Organic Content) white or fully tinted.
   6. Tinted to the desired finish color. C-124-2 (BEECK Classic LV 62)
   7. Basis of Design: “BEECK Renosil Fine”, BEECK Mineral Paints

2.3 EQUIPMENT

A. Tools:
   1. Mineral Silicate paint/coating, base and top coats: Apply by natural bristle façade brush.
      a. Mineral Façade Brush produced by BEECK Mineral Paints
      b. Or approved equal

2.4 FINISHES

A. Mineral Silicate paint/coating, base and top coats:
   1. Apply in full coverage evenly distributed coats to a smooth mineral matte finish without lap lines, voids, “holidays”, or drips. Compare manufacturer-verified mock up consumption data with application consumption data to ensure enough product is applied.
   2. Maintain a wet edge to prevent sight lines, color differences and textural differences.
   3. Apply enough product to prevent shading and textural differences that contribute to striping, especially with the base coat. Applying inadequate or inconsistent amount of product can produce unexpected results.
   4. When working from scaffolding, work as a team moving across façade maximum eight (8) vertical feet per applicator to ensure complete coverage and wet edge left to right and top to bottom of each section.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Confirm by examination the areas and conditions under which the work is to be applied for compliance with manufacturer's instructions. Do not proceed with the work until unsatisfactory conditions have been corrected.
   1. Verify substrate is secure, sound, dry, and absorbent, and free of dirt, grease, salts, oil-based paints, release agents, curing agents, and other bond breakers.
   2. Verify substrate has no pretreatments or priming materials applied unless such conditions are approved by manufacturer.
   3. Verify surfaces or materials to be coated are fully cured to manufacturer recommendations.
   4. Confirm coating surfaces are less than 40 percent relative humidity as measured by a masonry moisture meter prior to application of mineral silicate paint/coatings.
   5. Beginning of the work shall indicate acceptance of the areas and conditions as satisfactory by the Applicator.

3.2 DISCREPENCIES

A. In the event of discrepancy, immediately notify the Architect.

B. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved. Commencement of work shall be construed as acceptance of the surfaces and, therefore, the Contractor shall be fully responsible for satisfactory work as required herein.

3.3 PREPARATION

A. Protection:
   1. Prior to all surface preparation and paint operations, completely mask, remove, or otherwise adequately protect all hardware, accessories, machined surfaces, plates, lighting fixtures, and similar items in contact with painted surfaces but not scheduled to receive paint.
   2. Lay ground cloths and take measures as necessary to protect surfaces subject to contact by products specified by this Section.
   3. Mineral Silicate paint/coatings or thinner may etch or bond to glass, metal, and concrete.

B. Efflorescence on any area that is scheduled to be painted shall be removed.

C. Surface Preparation
   1. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease and incompatible paint and encapsulates.
   2. Clean the surface removing all biological growth.
   3. Remove as much of the old limewash as possible by washing and scrubbing the surface using a low-pressure pressure washer and plastic bristle scrub brush. Any tightly adhering limewash that remains can be bound with the pretreatment. After the surface has dried, test the remaining limewash by rubbing your hand on the surface. If the surface does not chalk onto your hand, it is ready for pretreatment. If the surface chalks onto your hand, repeat the cleaning and scrubbing step

3.4 APPLICATION

A. Conform to reviewed product data, manufacturer's written instructions, and provisions of the Contract Documents.

B. Plan the work properly.
   1. Maintain temperature during and after application. Substrate and ambient air temperature must be between 40 °F (4 °C) and 86 °F (30 °C).
   2. Work ahead of the sun on shaded façades to avoid working on hot substrates.
   3. Work to logical stopping points (corners, seams, architectural features, etc.).
   4. Apply mineral silicate paint/coatings as directed by 2.4 FINISHES.
   5. Protect from wind and rain prior to, during, and for a minimum 24 hours after application.
   6. Obtain manufacturer’s written instructions for application outside of the above parameters.

C. Pretreatment:
   1. BEECK Fixative
      a. Substrate Requirements
         1) The substrate must be mineral, non-water repellent, clean, dry, firm and stable, free from efflorescent and separating substances such as oils, greases and other contaminants.
         2) Test new stucco or plaster for drying and strength.
         3) Allow proper drying and curing of newly installed surfaces.
         4) Use an etching fluid to remove sinter skin on solid new mortar, plaster/stucco/render. Do not etch thin coat renders and composite materials.
      b. For the pretreatment use an application ratio of 1:2 for highly absorbing surfaces.
         1) Thin 1 part Fixative with 2 parts water.
         2) Apply in a flow coat repeatedly (2-3 times wet-on-wet) until the surface is completely saturated.
         3) Approx. 20 minutes after final application, remove any excess or standing material from the surface or spread it to more absorbent areas.
         4) Surface should dry completely before starting the base coat application of paint.
            a) Drying time: at least 12 hours per coat

D. Mineral Silicate paint/coatings:
   1. Base coat:
      a. Thin mineral silicate coarse paint/coating with maximum 10 percent clean water (1 gallon with 12 oz.). Stir well by hand or 600-800 RPM mixing equipment. Care should be taken not to introduce air into the product.
      b. Stir well with mixing equipment to ensure color is uniform throughout the material. Keep mixture continuously stirred during application.
      c. Apply base coat of prepared Mineral Silicate paint/coatings.
      d. Allow minimum 12 hours drying time.
   2. Top coat:
      a. Do not thin mineral silicate fine paint/coatings. Stir well by hand or 600-800 RPM mixing equipment. Care should be taken not to introduce air into the product.
      b. Stir well with mixing equipment to ensure color is uniform throughout the material. Keep mixture continuously stirred during application.
      c. Apply top coat of prepared Mineral Silicate paint/coatings.
   3. Touch up:
      a. Some colors touch up well, some do not. Always perform a test and allow the touch up to cure minimum 12 hours before evaluation. Colors become lighter as they dry.
      b. For colors that do not touch up well, expect corner to corner recoating for acceptable results.

c. When possible, use the same tools and techniques from the application for best results.
d. Articulate the application confining the touch up to the borders of the repair.

3.5 CLEAN UP

A. General

1. Provide daily cleanup.
2. During progress of the Work, do not allow the accumulation of empty containers or other excess items except in area specifically set aside for that purpose. Do not store paint materials uncovered.

B. Prevent accidental spilling or splashing of paint materials, and in the event of such spill, immediately remove all spilled material and the waste or other equipment used to clean up the spill, and wash the surfaces to their original undamaged condition, all at no additional cost to the Owner. Clean tools, spills, and accidental drips immediately with plenty of water.

C. Upon completion of the painting or finishing, remove excess paint materials, tools and equipment, drop cloths and other protective materials, and debris from the site.

D. Prior to final acceptance: Upon completion of this portion of the Work, visually inspect the surfaces. Clean paint spots or spatters from surfaces not scheduled to receive paint, such as landings, adjacent masonry, and fixtures, leaving surfaces in a satisfactory condition. Touch up and restore damaged or defaced painted surfaces.

E. Leave applications clean and premises free from residue and debris from work of this Section.

END OF SECTION 099133

PROJECT MANUAL

CITY OF BEAFORT –
ARSENAL ROOF REPLACEMENT PROJECT

BEAUFORT, SOUTH CAROLINA
PROJECT NO. 2018-104

MEADORS, Inc.

2811 Azalea Drive, Charleston SC, 29405
PHONE: 843-723-8585 | FAX: 843-577-3107 | WEBSITE: meadorsinc.com

Bid Set
July 25, 2018

SECTION 002113 – INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.1 FORM

A. Instructions to Bidders form shall be AIA Document A701, INSTRUCTIONS TO BIDDERS - 1997 EDITION, published by the American Institute of Architects, and amended by the Owner for this project.

END OF SECTION 002113

SECTION 002213 – SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.1 GENERAL

A. The following supplements modify "Instructions to Bidders", AIA Document A701, 1997 Edition. Where portion of Instructions to Bidders is modified or deleted by Supplementary Instructions to Bidders, unaltered portions of Instructions to Bidders shall remain in effect.

1.2 ARTICLE 2 – BIDDERS REPRESENTATIONS

A. Add Subparagraph 2.1.5:

1. “2.1.5 The Bidder is properly licensed contractor in accordance with State of South Carolina Code."

1.3 ARTICLE 3 – BIDDING DOCUMENTS

A. Add the following to 3.3.2: "All requests for substitution shall be submitted by bona-fide Bidder, using Standard CSI Substitution Request Form or form attached hereto."

B. Revise 3.3.4 to read: "Substitutions will be considered after the Contract award as specifically provided in Division 01."

1.4 ARTICLE 4 – BIDDING PROCEDURES

A. Add Subparagraph 4.1.8:

“4.1.8 Failure to submit a bid in the form requested or inclusion of any alternates, conditions, limitations or provisions not called for, will render the bid irregular; and shall be considered sufficient cause for rejection of bid. Failure to complete entries in all blanks in the Bid Form shall be considered sufficient cause for rejection of a bid."

B. Add the following to 4.2.1: "Bid Bond shall be provided in an amount not less than five (5) percent of the Base Bid.”

C. Add the following to 4.3.1: "Identify the following on the outside of Bid Envelope as follows:

RFP BEAUFORT ROOF REPLACEMENT PROJECT

1.5 ARTICLE 7 - PERFORMANCE AND PAYMENT BOND

A. Add the following to 7.1.1: "Both a Performance Bond and a Payment Bond will be required, each in an amount equal to one hundred percent of the contract price."

END OF SECTION 002213

SECTION 004100 - BID FORM

*THIS FORM IS A DUPLICATE OF THE BID FORM PROVIDED IN THE RFP PACKET. FOR REFERENCE ONLY.

City of Beaufort
Beaufort Arsenal Roof Replacement Project- 2018
RFQ NO. 2018-104

_____
(Date)

TO: CITY OF BEAUFORT
ATTEN: PAUL MCGEE
1911 BOUNDARY STREET
CITY HALL, 2ND FLOOR FINANCE DEPARTMENT
BEAUFORT, SC 29902

FROM: _____
(Bidder)
_____

_____
(Address)

The Undersigned, having carefully examined drawings, project details, specifications, and other documents bound in the Project Manual, for BEAUFORT ARSENAL ROOF REPLACEMENT PROJECT, and the following addenda:

Addendum No. ___ Dated_____ Addendum No. ___ Dated_____

Addendum No. ___ Dated_____ Addendum No. ___ Dated_____

as well as the premises and conditions affecting the work proposes to furnish all services, labor, materials and equipment called for by them for the entire work in accordance with said documents for the Stipulated Sum of _____ Dollars ($_____),which sum is hereinafter called the "Base Bid".

Unit Prices: The attached unit prices, if accepted in the award of this Contract, shall be used in establishing adjustment of Contract Price for additions to or deductions from work in accordance with applicable requirements specified in the General Conditions. Unit Prices listed shall include all costs, profit and overhead, and no further surcharges are to be added to any unit price item of work that may be ordered done.

Unit prices, as submitted, may or may not be used in calculating additions or deductions from the Contract, at the option of Owner. Such unit prices as may be employed by Owner shall be written into the Contract and accepted and agreed upon by the respective parties to the Contract.

Bid Holding Time: The Undersigned hereby agrees that this bid may not be revoked or withdrawn after time set for opening bids but shall remain open for acceptance for a period of SIXTY (60) days following such time.

Contract Acceptance: In case the Undersigned be notified in writing by mail, telegraph or delivery of acceptance of this bid within 60 days after the time set for opening of bids, he agrees to execute, within ten

days from notice, a contract (AIA Standard Form of Agreement Between Contractor and Owner When A Stipulated Sum Forms the Basis of a Payment, AIA Form A101) for the work for the above-stated amount and at the same time to furnish and deliver to Owner a Performance Bond and a Payment Bond, in the form issued by the American Institute of Architects (AIA Form A312), each in an amount equal to 100 percent of the contract sum.

Completion Time: The Undersigned agrees to commence actual physical work at the site, with an adequate force and equipment, within ten calendar days from a date to be established in a "Notice to Proceed" and to substantially complete the work within **6 MONTHS** from such date.

Liquidated Damages: The Undersigned understands that should he fail to substantially complete work under this contract within the time specified hereinbefore, or such later date as may result from an authorized extension of time, he will pay to Owner, as liquidated damages, the sum of TWO-HUNDRED Dollars ($200.00) for each succeeding calendar day, Saturdays, Sundays and Holidays included, that the terms of the contract remain unfulfilled, which sum is agreed upon as the proper measure of liquidated damages which Owner will sustain per diem by failure of undersigned to complete the work by the time stipulated, and this sum is not to be construed as in any sense a penalty.

Bid Security: Enclosed is a Bid Bond or Certified Check in the amount of _____ Dollars ($_____) being not less than 5 percent of the Base Bid, payable to Owner. The Undersigned agrees that the above-stated amount is the proper measure of liquidated damages which Owner will sustain by failure of the undersigned to execute the Contract, and to furnish the Performance Bond within the ten-day period from notice, in case the Bid is accepted by Owner within 60 days after the date set for opening of Bids.

The undersigned agrees that, if he is unwilling to execute the contract within the ten-day period from notice, or if he fails to furnish both Performance Bond and Payment Bond, the obligation of the Bid Bond will remain in full force and effect, and the moneys payable thereon shall be paid into the funds of Owner as liquidated damages for such failure.

Contractor Resources: It is understood that, before a proposal is considered for award, Bidder may be requested by Architect to submit a statement of facts in detail as to his previous experience in performing similar or comparable work, and of his business and technical organization and financial resources and plant available to be used in performing contemplated work.

Respectfully submitted,

Firm Name: _____

Address: _____

South Carolina Contractor's License No. _____

By: _____

Title: _____

SECTION 005200 - AGREEMENT FORM

PART 1 - GENERAL

1.1 FORM

A. Agreement form shall be AIA Document A101, "Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment is a Stipulated Sum, 2017 Edition, published by the American Institute of Architects, as supplemented and amended by the Owner for this project.

END OF SECTION 005200

SECTION 005400 - AGREEMENT FORM SUPPLEMENTS

PART 1 - GENERAL

1.1 GENERAL

A. These Standard Modifications amend or supplement the *Standard Form of Agreement Between Owner and Contractor* (AIA Document A101-2017 or Agreement). Compliance with these Standard Modifications is required by the Contractor. This document shall be attached to the Agreement upon execution of the Agreement. The following supplements modify, delete and/or add to the Agreement. Where any portion of the Agreement is modified, or any paragraph, subparagraph or clause thereof is modified or deleted by these Standard Modifications, the unaltered provisions of the agreement shall remain in effect.

1.2 ARTICLE 1 GENERAL PROVISIONS

A. Delete Article 1 The Contract Documents and substitute the following:

"**1.1 ARTICLE 1 THE CONTRACT DOCUMENTS**

Contract Documents consist of the AIA A101-2017, Standard Modifications to AIA Document A101-2017, AIA A201 Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid and Addenda relating to bidding requirements, and Modifications issued after execution of the Contract. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral."

1.3 ARTICLE 2 WORK OF THIS CONTRACT

A. Add the following Paragraph 2.1:

"**2.1** The Contractor shall furnish only skilled and properly trained staff for the performance of the Work. During the performance of the Work, the Contractor shall keep a competent superintendent at the Project site, fully authorized to act on behalf of the Contractor with regard to the work included in the Contract Documents."

1.4 ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

A. Delete Paragraph 3.1 and substitute the following:

"**3.1** The Date of Commencement shall be fixed in a Notice to Proceed. The Notice to Proceed shall be issued to the Contractor in writing, no less than seven (7) days prior to the Date of Commencement. Contract times shall be expressed in calendar days."

B. Add the following Paragraphs to the end of Article 3:

"**3.3** Substantial completion for the entire work will be no later than **TBD**.

3.4 Time is of the essence in the performance of all duties of the Owner, Contractor and AE.

3.5 Should the Contractor fail to substantially complete the work under this contract within the stipulated time as set forth in "Time of Completion" paragraph, plus any additional days that may result from extension of time granted by the AE, Contractor agrees that it shall pay to the Owner, not as a penalty, but as liquidated damages, the sum of $200.00 per day for each succeeding calendar day that the Project is incomplete after the Time of Completion date."

1.5 ARTICLE 4 CONTRACT SUM

A. Add the following to Paragraph 4.3:

"**4.3.1** Prices are considered complete and include: (1) all materials, equipment, labor, delivery, installation, overhead, and profit; and, (2) any other costs or expenses in connection with, or incidental to, the performance of that portion of the Work to which such unit prices apply."

1.6 ARTICLE 5 PAYMENTS

A. Add the following sentence to Subparagraph 5.1.5:

"**5.1.5** Each Application for Payment shall include such other information, documentation, and materials as the Owner or the A/E may require to substantiate the Contractor's entitlement to payment. The Schedule of Values for the Project shall be submitted to the Owner and AE for approval prior to submission of the first application for payment for the Project."

B. In the blank spaces set forth in Subparagraphs 5.1.6.1 and 5.1.6.2, insert the following:

"Ten Percent (10%)."

C. Add the following Clauses to Subparagraph 5.1.8:

"5.1.8.1 Subject to Subparagraph 9.8.5 of the General Conditions, upon Substantial Completion and completion of all punchlist items, the Owner will pay one-half of all retainage to the Contractor.

5.1.8.2 If, in the Owner's reasonable discretion, Owner chooses to release said retainage prior to the events described in Subparagraph 5.1.8.1, such payment may be reduced by two hundred percent (200%) of the estimated dollar value of any uncorrected punchlist items as determined by the Owner and/or the AE. Those amounts withheld as identified for uncompleted punchlist items shall be paid thirty (30) days after completion of all such items approved and acceptance of the Work by the Owner.

5.1.8.3 At the sole discretion of the Owner, the Owner may choose to release all or a portion of retained percentages prior to the time of final payment. Release of all or some of retained percentages shall not release the Contractor of the obligation to provide the Owner with proper warranties of the Work, nor shall any reduction or release of retainage be a waiver of Owner's rights to retainage in connection with other payments to the Contractor, or any other right or remedy that the Owner has under the Contract Documents, at law or in equity."

D. Add the following Subparagraphs:

"5.1.10.1 Contractor shall not incur any expense chargeable to the Owner on or about the Work of this Agreement until the A101 document is executed by all parties.

5.1.10.2 The Contractor represents and warrants the following to the Owner (in addition to any other representations and warranties contained in the Contract Documents), as an inducement to the Owner to execute this Agreement, which representations and warranties shall survive the execution and delivery of this Agreement, any termination of this Agreement, and the final completion of the Work.

5.1.10.3 The Contractor and its Subcontractors are financially solvent, able to pay all debts as they mature, and possessed of sufficient working capital to complete the Work and perform all obligations hereunder;

5.1.10.4 The Contractor and Subcontractors are able to furnish the plant, tools, materials, supplies, equipment, and labor required to complete the Work and perform its obligations hereunder;

5.1.10.5 The Contractor and the Subcontractors are authorized to do business in the State of South Carolina and properly licensed by all necessary governmental and public and quasi-public authorities having jurisdiction over it and over the Work and the Project;

5.1.10.6 The execution of this Agreement and its performance thereof is authorized by the Contractor's governing body and/or rightful owners.

5.1.10.7 The Contractor or his duly authorized representative has visited the site of the Project, familiarized himself with the local and special conditions under which the Work is to be performed, and correlated his observations with the requirements of the Contract Documents; and that it possesses a high level of experience and expertise in the business administration, construction, construction management, and superintendence of projects of the size, complexity, and nature of this particular Project, and it will perform the Work with the care, skill, and diligence of such a contractor. The foregoing warranties are in addition to, and not in lieu of, any and all other liability imposed upon the Contractor by law with respect to the Contractor's duties, obligations, and performance hereunder. The Contractor acknowledges that the Owner is relying upon the Contractor's skill and experience in connection with the Work called for hereunder.

5.1.10.8 The Owner reserves the right, pursuant to Article 7 of the General Conditions, to modify the Work of the Contractor."

E. Add the following Clause to Subparagraph 5.2.1:

"5.2.1.3 Contractor has delivered to the Owner all operating instructions, warranties, and guarantees applicable to the Work and as required by the Contract Documents."

F. Delete Subparagraph 5.2.2 and insert the following:

"5.2.2 Final payment shall be made within thirty (30) days from the date the Owner (or A/E) receives the final undisputed Application for Payment, including all supporting documentation, from the Contractor. All conditions stipulated in the Contract Documents shall have been met before final payment is made."

G. Add the following paragraphs after Paragraph 5.2.2:

"5.3 As a condition of Progress or Final Payment, the Contractor must provide with each month's invoice 1) waivers of liens and/or releases from all subcontractors and materialmen associated with the Work as invoiced during the previous month and for which the Contractor has

been compensated for by the Owner, and 2) verification to the reasonable satisfaction of the Owner that costs contained on any application for payment had been incurred by the Contractor. In the absence of such waivers/releases and verification, the Owner, at its sole option, may withhold all or any portion of funds otherwise due the Contractor to protect the Owner from loss.

5.4 Partial or final payment will not be payable or due at the option of the Owner in the event that any of the following conditions exist.

5.4.1 Any insurance or bonds required of the Contractor ceases to be effective and in force.

5.4.2 Owner may delay any and all payments due Contractor until Contractor shall have submitted satisfactory evidence to Owner that all payrolls, material bills, and other indebtedness connected with the Work for which Contractor has been paid, have been paid by Contractor or its subcontractors, provided that Owner has performed its payment obligations, subject to rightful setoffs, as provided herein. If a lien is filed by any subcontractor, labormen, or materialmen and Owner has met all of its payment obligations hereunder, Contractor shall be solely responsible for the amount of any valid lien plus any and all incidental costs and shall cause the valid and undisputed lien to be extinguished and canceled, so that such lien shall not constitute a cloud, lien, or encumbrance, against the ownership of the Project by Owner."

1.7 ARTICLE 6 DISPUTE RESOLUTION

A. Replace Paragraph 6.1 with the following:

"**6.1** The Owner's representative will serve as initial decision maker where applicable."

B. Replace Paragraph 6.2 with the following:

"**6.2** If mediation fails, the claims, disputes, or other matters in question between the parties to this Agreement, arising out of or related to this Agreement, or the breach thereof, shall be tried before a Circuit Court. The Contractor and the Owner agree that the venue for this action will be in Sumter, South Carolina. Any legal proceeding arising out of or relating to this Agreement shall include, by consolidation, joinder, or joint filing, any additional person or entity not a party to this Agreement to the extent necessary to the final resolution of the matter in controversy."

1.8 ARTICLE 8 MISCELLANEOUS PROVISIONS

A. In the blank spaces set forth in Subparagraph 8.2, insert the following:

"Three Percent (3%) per annum."

1.9 ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

A. In Subparagraph 9.1.3 insert the following:

"**9.1.3** BEAUFORT-A101, "BEAUFORT Standard Modifications to AIA Document A101-2017", BEAUFORT-201, "BEAUFORT Standard Modifications to AIA Document A201-2017"."

B. In Subparagraph 9.1.4 insert the Project Manual issue date.

C. In Subparagraph 9.1.5 insert the Title and Date of the Project Drawings.

D. List the following Subparagraph 9.1.7.3:

"**9.1.7.3**

Invitation for Bids/Information for Bidders
Bid Form
Bid Bond
Payment Bond
Performance Bond
Notice of Award
Notice to Proceed
AIA G701Contract Administration Change Order
Supplemental Conditions and/or Addenda

END OF SECTION 005400

SECTION 006113 - PERFORMANCE BOND AND PAYMENT BOND

PART 1 - GENERAL

1.1 FORM

A. The form of Performance and Payment Bonds required under this contract will be AIA Document A312, "Performance Bond and Payment Bond", December 2010 Edition, Published by the American Institute of Architects, copies of which are available from Architects upon written request.

END OF SECTION 006113

SECTION 007200 - GENERAL CONDITIONS OF THE CONTRACT

PART 1 - GENERAL

1.1 GENERAL CONDITIONS

A. The "General Conditions of the Contract for Construction", AIA Document A201, 2017 Edition, a standard document of and published by the American Institute of Architects, is hereby made a part of these specifications, and, as modified by the Owner, are the general conditions on which all contracts for this work will be based.

END OF SECTION 007200

SECTION 007300 - SUPPLEMENTARY CONDITIONS

PART 1 - GENERAL

The AIA Document A201 - 2017 "*General Conditions of the Contract for Construction"*, Articles 1 through 15 inclusive, is a part of this Contract and is incorporated as fully as if herein set forth. For brevity, AIA Document A201 is also referred to in the Contract Documents collectively as the "General Conditions." The following supplements modify, delete and/or add to the General Conditions. Where any portion of the General Conditions is modified, or any paragraph, subparagraph or clause thereof is modified or deleted by these Standard Modifications, the unaltered provisions of the General Conditions shall remain in effect.

ARTICLE 1 GENERAL PROVISIONS

Delete Subparagraph 1.1.1 and substitute the following:
1.1.1 The Contract Documents are enumerated in the AIA A101-2017 (also the "A101") and consist of the A101, AIA A201 Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid and Addenda relating to bidding requirements, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the AE. The Contract Documents are intended to be complementary and interpreted in harmony so as to avoid conflict, with words and phrases interpreted in a manner consistent with construction and design industry standards. In the event inconsistencies, conflicts, or ambiguities between or among the Contract Documents are discovered after execution of the Agreement, Contractor and Owner shall attempt to resolve any ambiguity, conflict or inconsistency informally, recognizing that the Contract Documents shall take precedence in the order set forth in the Agreement, or if no order is set forth therein, as follows:

.1 Addenda, Modifications or Change Orders to this Agreement

.2 Supplemental conditions, if any

.3 BEAUFORT-A101, City of BEAUFORT Standard Modifications to AIA Document A101-2017 (referred to individually as "BEAUFORT-A101" and collectively with AIA Document A101-2017 as the "Agreement").

.4 AIA Document A101-2017 (referred to individually as "A101" or the "Agreement" and referred to collectively with BEAUFORT-A101 as the "Agreement").

.5 BEAUFORT-A201, City of BEAUFORT Standard Modifications to AIA Document A201-2017 (referred to individually as "BEAUFORT A201" and collectively with AIA Document A201-2017 as the "General conditions" or "Conditions of the Contract").

.6 AIA Document A201-2017 (referred to individually as "A201" "General conditions" or "Conditions of the Contract" and referred to collectively with BEAUFORT-A201 as the "General conditions" or "Conditions of the Contract").

.7 Construction Drawings and Specifications identified in the Contract Documents

.8 Other Exhibits to the Agreement not listed in this Subparagraph 1.1.1

.9 Invitation to bid and addenda

.10 Notice to Proceed

.11 Invitation for Bids/Information for Bidders

.12 Contractor's Bid

Add the following Clause 1.1.5.1 to Subparagraph 1.1.5:

1.1.5.1 Where only part of the Work is indicated, similar parts are considered repetitive. Where any detail is shown, and components thereof are fully described, similar details not fully described are deemed to incorporate similar material and construction.

Add the following Subparagraph 1.1.9:

1.1.9 NOTICE TO PROCEED A document issued by the Owner to the Contractor fixing the date on which the Contract time will commence for the Contractor to begin the prosecution of the Work in accordance with the requirements of the Contract Documents.

Add the following Subparagraph 1.110:

1.1.10 AE The appropriately licensed Design Professional retained by the Owner for the Project and identified in the Agreement. Wherever the word "Architect" is used in the Contract documents, it shall mean AE.

Add the following to Subparagraphs 1.2.1 & 1.4.1:

1.2.1 In the event of inconsistencies between the Contract Documents and applicable standards, codes, and ordinances, the Contractor shall:

1.2.1.1 provide the better quality or greater quantity of Work; or,
1.2.1.2 comply with the more stringent requirement; either or both in accordance with the AE's interpretation.

1.4.1 The Owner assumes no responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this Contract, unless that understanding, or representation is expressly stated in this Contract.

Add the following Subparagraph 1.5.3:
1.5.3 The Owner shall retain all common law, statutory and other reserved rights, in addition to the limited use copyright, in accordance with the contract between the Owner and the A*E* for this Project.

ARTICLE 2 OWNER

Delete the last sentence of paragraph 2.1.1 and substitute the following:

Delete Subparagraph 2.1.2 in its entirety:

Delete the second sentence of Subparagraph 2.2.3 and substitute the following:

2.2.3 Subject to the Contractor's obligations, including those in Subparagraphs 1.5.2 and 3.2.1, the Contractor shall be entitled to rely on the accuracy of information furnished by the Owner pursuant to this Subparagraph, but shall exercise proper precautions relating to the safe performance of the Work. Neither the Owner nor the A*E* shall be required to conduct investigations or to furnish the Contractor with any information concerning subsurface characteristics or other conditions of the areas where the Work is to be performed beyond that which is provided in the Contract Documents.

Delete the word "...under..." in the last sentence of Subparagraph 2.2.4 and substitute **"...which is within..."**

Delete Subparagraph 2.2.5 and substitute the following:

2.2.5 The Contractor will be furnished, free of charge, two (2) sets of the Drawings and Project Manual and will be furnished, at actual cost to the Contractor, as many additional copies as he may require.

Delete Subparagraph 2.4 and substitute the following:

2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, and fails, within a seven-day period after receipt of written notice from the Owner, to provide the resources needed to achieve correction of such default or neglect with diligence and promptness, the Owner may, in addition to and without prejudice to other remedies the Owner may have, proceed to correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the AE's additional services made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor or its Surety shall pay the difference to the Owner. If the Contractor defaults on such payment or neglects to execute a Change Order, the Owner may, in addition to and without prejudice to other remedies the Owner may have, including but not limited to termination pursuant to Article 14 of the General Conditions, issue an appropriate Change Directive, and carry out the remaining work after giving the Contractor a seven-day written notice.

Add the following Subparagraph 3.2.5:

3.2.5 The Contractor acknowledges that it has taken steps reasonably necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to (1) conditions bearing upon transportation, disposal, handling, and storage of materials; (2) the availability of labor, water, electric power, and roads; (3) uncertainties of weather, river stages, tides, or similar physical conditions at the site; (4) the conformation and conditions of the ground; and (5) the character of equipment and facilities needed preliminary to and during work performance. The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the Owner, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to the Agency.

Add the following Subparagraph 3.2.5.1 to Paragraph 3.2:

3.2.5.1 The Owner shall be entitled to deduct from the Contract Sum amounts paid to the AE for the AE to evaluate and respond to the Contractor's unreasonable requests for information, where such infor-

mation was available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation.

3.3.1 Delete sentences 3, 4 and 5 and insert the following:

If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give advance written notice to the Owner and AE, informing the Owner and the AE of the alternate means, methods, techniques, sequences or procedures the Contractor intends to utilize in the performance of the Work, and, unless the Owner or the AE takes exception to the proposed means, methods, techniques, sequences or procedures, the Contractor shall proceed with the Work.

Add the following clauses to Subparagraph 3.4.1:

3.4.1.1 The Contractor shall not allow the use of asbestos containing products, whether temporary or permanent and whether or not incorporated or to be incorporated in the work, even if the products are nonfriable and/or contain minimal amounts of asbestos, and even though such products may still be legally installed.

3.4.1.2 The Contractor shall not allow the use of lead materials in public water applications. Lead free solder, flux and pipe must be used in all public drinking water and waste water applications. Lead free solder and flux are defined as containing less than 0.2% lead, while valves, pipes and appurtenances must contain less than 8.0% lead.

Add the following to the end of Subparagraph 3.4.2:

By making requests for substitutions, the Contractor:

.1 represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified, except as specifically indicated by the Contractor;
.2 represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified;
.3 certifies that the cost data presented is complete and includes all related costs under this Contract except the AE's redesign costs, and waives all claims for additional costs related to the substitution which subsequently become apparent, and
.4 will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

Add the following Subparagraph 3.4.4 to Paragraph 3.4:

3.4.4 The Owner shall be entitled to deduct from the Contract Sum amounts paid to the AE to evaluate the Contractor's proposed substitutions and to make agreed-upon changes in the Drawings and Specifications made necessary by the Owner's acceptance of such substitutions.

ARTICLE 3 CONTRACTOR

Add the following Subparagraph 3.6.1:
3.6.1 The Contractor's attention is directed to Title 12, Chapter 9, SC Code of Laws, as amended, concerning withholding tax for nonresidents, employees, contractors and subcontractors.

Add the following two sentences to Subparagraph 3.7.1:

The Owner shall pay fees for public or private water, gas, electrical, and other utility extensions at the site. The Contractor shall secure and arrange for all necessary utility connections.

Add the following Clause to Subparagraph 3.7.4:
3.7.4.1 Any adjustment, including reasonable overhead and profit, in the Contract Sum, or to the Contract Time made pursuant to this Subparagraph shall be determined in accordance with Paragraph 7.5.

Delete the last sentence of Clause 3.8.2.3 and substitute the following:
3.8.2.3 The amount of the Change Order shall reflect the difference between actual costs under Clause 3.8.2.1, as documented by invoices, and the allowance amounts.

Delete 3.9.3 and replace with the following:
3.9.3 The Contractor's superintendent and necessary assistants shall be acceptable to the Owner. The Contractor shall notify the Owner, in writing, of any proposed change in superintendent, including the reason therefore, prior to making such change. The superintendent shall not be changed except with the consent of the Owner, unless the superintendent ceases to be in the Contractor's employ.

Add the following Clauses to Subparagraph 3.10.1:

This schedule shall:

3.10.1.1 indicate the dates for the start and completion of the various elements of the Work.
3.10.1.2 be affirmed or revised upon execution of a Change Order that affects time.
3.10.1.3 provide a graphic representation of activities and events that will occur during performance of the Work in sufficient detail, and as acceptable to the Owner to show the sequencing of the various trades for each floor level, wing or work area;
3.10.1.4 identify each phase of construction and occupancy; and,
3.10.1.5 set forth dates that are critical in ensuring the timely and orderly completion of the Work in accordance with the requirements of the Contract Documents (hereinafter referred to as "Milestone Dates").

Add the following sentence to Subparagraph 3.11:

3.11 Prompt delivery to the AE of the materials and items specified above, in good order, shall be a condition precedent to the Contractor receiving a Certificate of Substantial Completion.

Add the following Subparagraph 3.15.3 to Paragraph 3.15:

3.15.3 Metals that are removed from the Project site that are deemed to be unusable by the Owner shall be removed from the project area and delivered to a site designated by the Owner. Such metals include but are not limited to copper pipe, copper pipe fittings, metal studs, stainless steel, voice and data cable, cast iron, and electrical wire.

Add the following Subparagraph to Paragraph 3.18:

3.18.3 The obligations of the Contractor under this Paragraph 3.18 shall not extend to the liability of the AE, the AE's consultants, and agents and employees of any of them arising out of: (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications; or (2) the giving of or the failure to give directions or instructions by the AE, the AE's consultants, and agents and employees of any of them provided such giving or failure to give is the primary cause of the injury or damage.

ARTICLE 4 AE

Insert the following after the last sentence of Subparagraph 4.2.1:

4.2.1 Notwithstanding these responsibilities, no act or omission by the AE shall be considered a waiver of any of the Owner's rights or interests.

Add the following Clause to Subparagraph 4.2. 1:

4.2.1.1 Any reference in the Contract Documents to the AE's taking action or rendering a decision within a "reasonable time" is understood to mean no more than fourteen (14) days, unless otherwise specified in the Contract Documents or otherwise agreed to by the parties.

Delete the first sentence of Subparagraph 4.2.2 and substitute the following:

4.2.2 The AE, as a representative of the Owner, shall visit the site as necessary to fulfill its obligations to the Owner for inspection services, if any, and, at a minimum, to assure conformance with the AE's design as shown in the Contract Documents and to observe the progress and quality of the various components of the Contractor's Work. The AE shall: (1) keep the Owner informed about the progress and quality of the Work completed; (2) endeavor to guard the Owner against defects and deficiencies in the Work; and (3) determine if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents.

Add Clause 4.2.2.1 to Subparagraph 4.2.1:

4.2.2.1 The Contractor shall reimburse the Owner for compensation paid to the AE for additional site visits made necessary by the fault, neglect or request of the Contractor.

In Subparagraph 4.2.5 after the word "...of..." insert the words* "...the Work completed and correlated with*...".

Delete Subparagraph 4.2.11 and substitute the following:

4.2.11 The AE will, in the first instance, interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of either the Owner or Contractor. Upon receipt of such request, the AE shall promptly notify the non-requesting party in writing of the details of such request. The AE's response to such requests will be made in writing within any time limits agreed upon. If no agreement is made concerning the time within which interpretations required of the AE shall be furnished in compliance with this Paragraph 4.2, then delay shall not be recognized on account of failure by the AE to furnish such interpretations until fourteen (14) days after written request is made for them. An instruction that the AE may issue to the Contractor shall constitute an interpretation of the Contract Documents and shall not be construed as an act of supervision.

***In the first sentence of Subparagraph 4.2.12 change "..intent of.."to* "...design as Indicated in..."**

Add the following Subparagraph 4.2.15:

4.2.15 In the Specifications or on the Drawings, where the words "as directed," "'as required," "as approved," "as permitted" or words of like effect are used, it is to be understood that direction, requirement, approval or permission of the AE is intended. Similar words, such as "approved," "acceptable" "satisfactory," or words of like import mean approved by, acceptable to, or satisfactory to the AE.

ARTICLE 5 SUBCONTRACTORS

Add the following to Paragraph 5.1:

5.1.3 The Contractor shall not change a Subcontractor , person or entity previously selected except for reasonable cause and in agreement with the Owner. The request for substitution shall be made to the Owner in writing.

In the first sentence of Subparagraph 5.2.1 change "...award of the Contract.."* to "...posting of the 'Notice of Intent to Award' of the Contract, or a Request for Substitution pursuant to Subparagraph 5.2.4...". *In the second sentence of Subparagraph 5.2.1, delete the words "...or the Architect".

In the third sentence of Subparagraph 5.2.1, delete the words "...or Architect...".

In the first sentence of Subparagraph 5.2.2, delete the words "...or Architect.."

In the first sentence of Subparagraph 5.2.3, delete the words "-or Architect..." in both instances where they appear. In the first sentence of Subparagraph 5.2.3 change the phrase: "If the proposed but rejected Subcontractor was reasonably capable of performing the Work . . ." to read as follows:

If the proposed but rejected Subcontractor met the specified qualifications and was demonstrably capable of performing the Work . . .

In Subparagraph 5.2.4, delete the words "...or Architect...".

Add the following sentence to Subparagraph 5.2.4:
The Contractor's Request for Substitution must be made to the Owner in writing, accompanied by supporting information.

Delete all words after "...prejudice such rights ... " in the second sentence of Subparagraph 5.3.

Add the following Subparagraph 5.3.1:

5.3.1 Without limitation on the generality of the foregoing, each Subcontract agreement and each Sub-subcontract agreement shall include, and shall be deemed to include, the following:

5.3.1.1 An agreement that the Owner is a third-party beneficiary of the Subcontract (or Sub-subcontract), entitled to enforce any rights thereunder for its benefit, and that the Owner shall have the same rights and remedies against the Subcontractor (or Sub-subcontractor) as the Contractor (or Subcontractor) has, including but not limited to the right to be compensated for any loss, expense, or damage of any nature whatsoever incurred by the Owner resulting from any breach of representations and warranties, expressed or implied, if any, arising out of the agreement and any error, omission, or negligence of the Subcontractor (or Sub-subcontractor) in the performance of any of its obligations under the agreement; and,
5.3.1.2 A requirement that the Subcontractor (or Sub-subcontractor) promptly disclose to the Contractor (or Subcontractor) any defect, omission, error, or deficiency in the Contract Documents or in the Work of which it has, or should have had, knowledge; and,
5.3.1.3 The following Paragraphs, or Subparagraphs as appropriate, of the Conditions of the Contract: 3.2, 3.18, 5.4, 13.1.1, 13.13, 14.3 and 14.4.

Insert the following Subparagraph 5.3.2:

5.3.2 The Contractor shall assure the Owner, by affidavit or in such other manner as the Owner may approve, that all agreements between the Contractor and its Subcontractor incorporate the provisions of Subparagraph 5.3.1 as necessary to preserve and protect the rights of the Owner and the AE under the

Contract Documents with respect to the work to be performed by Subcontractors so that the subcontracting thereof will not prejudice such rights.

Insert the following Subparagraph 5.3.3:

5.3.3 Upon request, the Contractor shall provide to the Owner copies of all executed or issued subcontracts, purchase orders and other documents related to the Work.

Delete the last sentence of Subparagraph 5.4.1 and replace with the following:

Each subcontract shall specifically provide that the Owner shall only be responsible to the Subcontractor for those obligations of the Contractor that accrue subsequent to the Owner's exercise of any rights under this conditional assignment.

Insert the following new Clause to Subparagraph 5.4.1:

5.4.1.3 Subcontractors assigned to the Owner agree to perform assigned portions of the Work in accordance with the Contract Documents.

Add the following sentence to the end of Subparagraph 5.4.2:

“The equitable adjustment shall be limited to direct costs.”

Delete the last sentence of Subparagraph 5.4.3.

ARTICLE 7 CHANGES IN THE WORK

Add Subparagraph 7.2.2:

7.2.2 Agreement on any Change Order shall constitute a release by the Contractor of the Owner for any and all liability under this Contract attributable to such facts or circumstances giving rise to the Change Order.

Add the following Subparagraph 7.2.3:

7.2.3 The Contractor shall not proceed with the Work of the Change Order until the Change Order is approved by the Owner in writing. All Change Orders shall be submitted on Form AIA G701 Contract Administration Change Order with appropriate documentation attached.

Delete the first sentence of Subparagraph 7.3.1 and substitute the following:

A Construction Change Directive is a written order which directs a change in the Work and states a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both, and which is prepared by the AE on Form AIA G701 Contract Administration Change Order, and signed by the AE, the Contractor, if it agrees with the terms of the Directive, and the Owner.

Insert as the first sentence in Subparagraph 7.3.3 the following:

7.3.3 Any adjustment in the Contract Sum, including reasonable overhead and profit made pursuant to Paragraph 7.3 shall be determined in accordance with Paragraph 7.5 of this Contract.

Delete Subparagraph 7.3.7 and substitute the following:

7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the AE as provided in Clause 7.5.1.5, on the basis of reasonable expenditures and savings to those performing the Work attributable to the change, including allowances for reasonable overhead and profit.

Delete Subparagraph 7.3.8 in its entirety and insert the following:

When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase or net decrease, if any, with respect to that change.

Insert the following Subparagraph 7.3.11:

7.3.11 If the Contractor defaults or neglects to execute a Change Directive, the Owner may carry out the Work in accordance with Paragraph 2.4 and Article 6.

Insert the following Paragraph 7.5:

7.5 PRICE ADJUSTMENTS

7.5.1 METHODS OF ADJUSTMENT**.** Any adjustment in the Contract Sum made pursuant to this Paragraph 7.5 shall be consistent with this Contract and shall be arrived at through whichever one of the following ways is the most valid approximation of the actual cost to the Contractor.

7.5.1.1 by agreement on a fixed price adjustment;
7.5.1.2 by unit prices specified in the Contract or subsequently agreed upon;
7.5.1.3 by the costs attributable to the event or situation covered by the relevant clause, including profit if otherwise allowed, all as specified in the Contract; or subsequently agreed upon;
7.5.1.4 in such other manner as the parties may mutually agree; or,
7.5.1.5 in the absence of agreement by the parties, through a unilateral initial determination by the AE of the costs attributable to the event or situation covered by the clause, including profit if otherwise allowed, all as computed by the AE in accordance with Clause 7.5.3.2.

7.5.2 Final Agreement. When any adjustment in the Contract Sum made pursuant to clauses in this Contract becomes final (e.g., by agreement or dispute resolution), the adjustment shall be computed and documented on Form AIA G701 Contract Administration Change Order.

7.5.3 DOCUMENTATION OF COST REASONABLENESS

7.5.3.1 CONTRACTOR'S CHANGE ORDER PROPOSAL. The Contractor shall submit a written proposal for review by the AE and the Owner. The proposal shall be submitted to the Owner's representative within the time limits specified in Subparagraph 15.1.2. All costs claimed by the Contractor shall be justifiable compared with prevailing industry standards, as adjusted for local cost conditions. Costs shall be properly itemized and supported by substantiating data sufficient to permit evaluation before commencement of the pertinent performance or as soon thereafter as practicable.

7.5.3.2 CONSTRUCTION CHANGE DIRECTIVES**.** For a Construction Change Directive wherein the proposed method of compensation is actual costs and pending the collection and evaluation of actual costs as required by Clause 7.5.1.3, the Contractor shall estimate the value of the changed work. The Contractor shall itemize the estimated cost into building components and shall use the labor, material and equipment unit direct costs as listed in the most current issue of the Construction Cost Data Book most applicable to the nature of the changed work, as published by R.S. Means, with a cost index adjusted for the project locale. The Contractor shall also be permitted to add overhead, and profit as shown in Subpara-

graph 7.5.4. Where the Contractor does not properly itemize the proposed costs as requested, the AE shall provide the Owner with the itemization and this amount shall be the initial basis for compensation under Subparagraph 7.3.8. Upon conversion of the Construction Change Directive to a Change Order, the AE's cost for providing this itemization shall be deducted from the final adjustment in the Contract Sum as described in Clause 7.3.9.

7.5.4 AGREED OVERHEAD AND PROFIT RATES

7.5.4.1 For any adjustment to the Contract Sum for which overhead and profit may be recovered, the Contractor agrees to charge and accept, as full payment for overhead and profit, the following percentage of cost attributable to the change in the Work. The percentage cited below shall be considered to include all indirect costs including, but not limited to: field and office managers, supervisors and assistants, incidental job burdens, small tools, and general overhead allocations. “Commission" is defined as profit on work performed by others. The total allowable combined percentage for overhead, profit, and commission including all subcontractor and sub-subcontractor overhead, profit and commission shall not exceed 10% of the actual cost of work as defined in Subparagraph 7.3.3.

7.5.4.2 Using the percentage stated, any adjustment to the Contract Sum for deleted work shall include any overhead, profit and/or commission attributable to the cost for the deleted Work.

7.5.4.3 If the Contractor initiates a Change Order proposal and the Owner is not obligated to pay for all or any part of the proposal, then the Contractor shall be responsible for any AE's fees to evaluate and process that Change Order proposal. Compensation shall be based on the Owner's contract with the AE and the rates for Additional Services contained therein and shall be withheld from the final payment to the Contractor.

7.5.5 COST OR PRICING DATA

7.5.5.1 The Contractor shall submit cost or pricing data for all element of changed work (other than Unit Price Work), and shall certify that, to the best of its knowledge and belief, the cost or pricing data submitted is accurate, complete, and current as of a mutually determined specified date prior to the date of the pricing. This data shall be itemized and supported by substantiating data sufficient to permit evaluation before commencement of the pertinent Work, or as soon thereafter as practicable, and shall be justifiably compared with prevailing industry standards. As requested by the AE or the Owner, the Contractor's submittal shall provide an itemized breakdown of all increases and decreases in the Contract for the Contractor and each subcontractor (at any tier) in at least the following detail: material, equipment and supply quantities and costs; direct labor hours and rates for each trade; the associated FICA, FUTA, SUTA, and Worker's Compensation Insurance; equipment hours and rates, and costs of premiums for bonds and insurance, permit fees and sales, use or similar taxes related to the Work.

ARTICLE 8 TIME

Delete Subparagraph 8.1.2 and substitute the following:

8.1.2 The Date of Commencement of the Work is the date established in the Notice to Proceed. The date shall not be postponed by the failure to act of the Contractor or of persons or entities for which the Contractor is responsible.

Add the following to paragraph 8.2.3
8.2.3 Any time the project falls behind the projected schedule by more than ten (10) days, the Contractor shall provide a “recovery schedule” within five (5) days to the Owner. This “recovery schedule” shall be approved by the AE and the Owner.
Add the following Subparagraph 8.2.4:

8.2.4 Failure by the Contractor to commence actual physical work on the project within seven (7) days from the Date of Commencement, as established in the Notice to Proceed, will entitle the Owner to consider the Contractor in substantial breach of its obligations under this Contract. In this event, the Owner may withdraw the Notice to Proceed and terminate the Contract in accordance with the Contract Documents.

Add the following subparagraph 8.2.5:

8.2.5 Final Completion shall be achieved within 30 days of the established date of Substantial Completion, unless otherwise amended by Change Order.

In Subparagraph 8.3.1 change "..mediation and arbitration..." to* "...dispute resolution..."*.

Add the following Clauses to Subparagraph 8.3.2:

.1 Claims for extensions of construction time due to adverse weather conditions shall include the U.S. Weather Bureau Climatological Reports for the months involved plus a report indicating the average precipitation, temperature, etc., for the past 5 years from the nearest reporting station. The 5-year average will determine the number of adverse weather days which the Contractor would normally expect to encounter. Extensions of time may be requested for any month of construction for days lost, which affects the critical path of construction, due to adverse weather in excess of the expected lost time. It is responsibility of the Contractor to maintain a Project daily weather log and to obtain the verification and initials of the AE's representative on a monthly basis. The Contractor shall transmit these logs and 5-year weather data averages to the AE monthly. All claims for weather delay shall be reported within 30 days of the incident which effected the critical path. The AE will make weather delay determinations by comparing verified Contractor's logs with the 5-year averages over the duration of the Project. All approved weather delays will be reported to the Contractor and to the Owner and shall be accumulated and granted in 1 or more Change Order. Contract time shall not be shortened by weather conditions which are more advantageous than had be predicted.
.2 Extension of time shall be Contractor's sole remedy for delay except as noted in 8.3.2.5 below or unless the same shall have been caused by acts constituting intentional interference by the Owner with Contractor's performance of the work and where and to the extent that such acts continue after Contractor's notice to Owner of such interference. Owner's exercise of any of its rights under Article 12 CORRECTION OF WORK regardless of the extent of number of such changes, or Owner's exercise of any correction or re-execution of any defective work, shall not under any circumstances by construed as intentional interference with Contractor's performance of the Work.
.3 Extensions of Contract Time due to unusual adverse weather conditions shall not entitle the Contractor to claims for cost due to extended project overhead.
.4 No claims for extension of time will be considered when based on delays caused by conditions existing at the time bids or proposals were received, and of which the Contractor might be reasonably expected to have knowledge at the time of bidding or proposing, or upon delays caused by failure on the part of the Contractor to anticipate properly the reasonable requirements of the Work contracted for as to materials, labor and equipment. The parties acknowledge that the Contractor has performed no invasive or destructive testing of the conditions existing at the time bids or proposals were received, the Contractor has made a visual inspection of the existing conditions, and the Contractor acknowledges that it knows of no claims for extension of time, delay or additional costs that are due or pending as a result of any concealed or other site conditions existing as of the date of this Agreement.
.5 When Contractor shall be permitted an adjustment in the Contract Sum as set forth in this Paragraph 8.3.2 and as determined in accordance with Paragraph 7.5, Contractor's entitlement to such adjustment shall apply only if the Delays, either individually or taken in the aggregate, cause the Contract Time to be increased by more than seven (7) days.

ARTICLE 9 PAYMENTS AND COMPLETION

Add the following to Subparagraph 9.2.1:

9.2.1 If the project spans over two (2) fiscal years, a cash flow schedule shall be submitted.

Insert the following new subparagraph 9.2.2:

9.2.2 As requested by the AE, the Contractor and each Subcontractor shall prepare a trade payment breakdown for the Work for which each is responsible, such breakdown being submitted on a uniform standardized format approved by the AE and Owner. The breakdown shall be divided in detail sufficient to exhibit areas, floors, and/or sections of the Work, and/or by convenient units and shall be updated as required by either the Owner or the AE as necessary to reflect:

9.2.2.1 the description of Work (listing labor and material separately);

9.2.2.2 the total value;

9.2.2.3 the percent and value of the Work completed to date;

9.2.2.4 the percent and value of previous amounts billed; the current percent completed, and amount billed; and,

9.2.2.5 the current percent completed, and amount billed. Any schedule of values or trade breakdown that fails to include sufficient detail, is unbalanced, or exhibits "frontloading" of the value of the Work, shall be rejected. If either the schedule of values or trade breakdown had been initially approved and subsequently used, but later was found improper for any reason, then sufficient funds shall be withheld from future Applications for Payment to ensure an adequate reserve (exclusive of normal retainage) to complete the Work.

Add the following sentence to Subparagraph 9.3.1:

“The Contractor's Application for Payment shall be in a form acceptable to the Owner. The AE will authorize, as provided in Paragraph 9.4 and until the final pay request, monthly payments equal to ninety (90%) of the portion of the Contract Sum properly allocable to labor, material and equipment incorporated in the Work, and allocable to material and equipment suitably stored for the month.”

Add the following to Subparagraph 9.3.2:

Rental equipment such as, but not limited to, mobile equipment, pans, forms, scaffolding, compressors, etc., shall not be considered material stored.

Add the following Subparagraph 9.3.3.1:

Contractor’s Application and Certification for Payment shall be in the form of the AIA G702, “Application and Certification for Payment”.

Delete Subparagraph 9.6.7 in its entirety.

In Subparagraph 9.7 delete the words “…plus interest as provided in the contract documents…” in the last sentence and add the following:

9.7. “which shall be accomplished as provided in Paragraph 7.5. As used in this Subparagraph, the phrase "dispute resolution order" includes any decision rendered pursuant to Paragraph 15.3. The Owner may pay interest on delayed certified progress payments to the Contractor in accordance with Paragraph 8.2 of the Agreement.

Add the following Clauses to Subparagraph 9.8.3:

9.8.3.1 Inspection and testing shall take place at a time(s) mutually agreeable to the Contractor, AE, Owner and Building Official if applicable.

9.8.3.2 The inspection shall include a demonstration by the Contractor that all equipment, systems and operable components of the Work function properly and in accordance with the Contract Documents. The Contractor shall furnish access for the inspection and testing as provided in this Contract. The inspection and testing shall determine whether Substantial Completion has been accomplished and shall result in the AE's issuance of a written list of Unfinished Work and Defective Work, commonly referred to as a "punch list", each item of which must be finished and corrected prior to Final Completion.

9.8.3.3 The AE and its Consultants shall conduct all Substantial Completion inspections. The Owner may elect to have other persons of its choosing also to participate in the inspections. Representatives of the State Fire Marshal's Office, the Building Official and other authorities having jurisdiction may be present, at their sole discretion, at the Substantial Completion inspection or otherwise inspect the completed Work and advise the Owner whether the Work meets their respective requirements.

9.8.3.4 If the inspection discloses any item which is not in accordance with the requirements of the Contract Documents and will prevent the Owner from occupying or utilizing the Work for its intended use, the Contractor shall complete or correct such item upon notification by the AE. The Contractor shall then submit a request for a follow-up inspection by the AE to determine Substantial Completion.

9.8.3.5 The Contractor shall proceed promptly and diligently to complete and correct items on the list of Unfinished or Defective Work. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

9.8.3.6 If more than one Substantial Completion inspection is required**,** the Contractor shall reimburse the Owner for all costs of reinspection or, at the Owner's option, the costs may be deducted from payments due to the Contractor.

Delete the last sentence of Subparagraph 9.8.5 and add the following Clauses:

“Upon such acceptance and consent of surety, if any, the Owner shall make payment sufficient to increase the total payments to ninety-eight percent (98%) of the Contract Sum, less such amounts as the AE shall determine for incomplete Work and unsettled claims.”

Add the following Clauses to Subparagraph 9.10.1:

9.10.1.1 Final Completion shall be achieved no later than thirty (30) days after Substantial Completion unless otherwise stated in the Contract Documents or modified by a Change Order. Failure of the Contractor to achieve Final Completion within the time allowed under this Subparagraph shall entitle to Owner to consider the Contractor in substantial breach of its obligations under this Contract.

9.10.1.2 Representatives of the State Fire Marshal's Office, the Building Official and other authorities having jurisdiction may be present at the Final Completion inspection or otherwise inspect the completed Work and advise the Owner whether the Work meets their respective requirements for the Project.

9.10.1.3 The Contractor shall then submit a request for a follow-up inspection to determine Final Completion. If more than one Final Completion inspection is required, the Contractor shall reimburse the Owner for all costs of re-inspection or, at the Owner's option, the costs may be deducted from payments otherwise due to the Contractor.

9.10.1.4 Approval of Work at or as a result of any inspection required herein shall not release the Contractor or its surety from responsibility for complying with the Contract.

Add the following Clause to Subparagraph 9.10.4:

9.10.4.4 faulty or defective Work appearing after the date of Substantial Completion.

In Subparagraph 9.10.5, after the word "...those.." insert the phrase **"...specific claims in stated amounts that have been...".**

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

Add the following clause 10.2.2.1:

10.2.2.1 In the event that review, inspection or other action by regulatory agencies or other parties results in the imposition of fines, fees, or other costs due to the failure of the Contractor to comply with said applicable laws, ordinances, rules, regulations and lawful orders, the Contractor shall hold harmless the Owner from all consequences arising from the Contractor's noncompliance.

Add the following clause 10.2.4.1:

10.2.4.1 When use or storage of explosives, or other hazardous materials, substances or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall give the Owner reasonable advance notice.

In Subparagraph 10.3.1 after the word "...persons ...", insert the words "...or **serious losses to real or personal property...".**

Add the following Clause to Subparagraph 10.3. 1*:*

10.3.1.1 The Owner and Contractor hereby agree that this Paragraph shall apply only to hazardous, toxic or radioactive materials or substances subject to the regulations of agencies having jurisdiction, such as, but not limited to, the S.C. Department of Health and Environmental Control (SCDHEC), the U.S. Environmental Protection Agency (USEPA) and the U.S. Nuclear Regulatory Commission (USNRC).

Add the following Clauses to Subparagraph 10.3.2:

10.3.2.1 Any adjustment in the Contract Sum, including reasonable overhead and profit, made pursuant to this Subparagraph shall be determined in accordance with Paragraph 7.5 of this Contract.

10.3.2.2 The Work in the affected area shall be resumed immediately following the occurrence of any of the following events: (a) the Owner causes remedial work to be performed that results in the absence of materials or substances; or (b) the Owner and the Contractor, by written agreement, decide to resume performance of the Work; or (c) the Work may safely and lawfully proceed, as determined by an appropriate governmental Owner or as evidenced by a written report to both the Owner and the Contractor, which is prepared by an environmental engineer reasonably satisfactory to both the Owner and the Contractor.

10.3.2.3 For the purposes of this Contract, the term "rendered harmless" shall be interpreted to mean that measured levels of verified hazardous, toxic or radioactive materials or substances are less than the applicable standards established by authorities having jurisdiction. In no event, however, shall the Owner have any responsibility for any substance or material that is brought to the Project site by the Contractor, any Subcontractor, any material supplier, or any entity for whom any of them is responsible, unless such materials or substances were expressly required by the Contract Documents. The Contractor agrees not to use any fill or other materials to be incorporated into the Work that are hazardous, toxic, or radioactive, or made up of any items that are hazardous, toxic, or radioactive.

Delete Subparagraph 10.3.3 in its entirety.

ARTICLE 11 INSURANCE AND BONDS

Add the following Clauses 11.1.2.1 through 11.1.2.6 to Subparagraph 11.1.2:

11.1.2.1 Contractor's and Subcontractor's Insurance: Before commencing the Work, and until completion and final acceptance of the Work, the Contractor shall procure and maintain, at its own expense, the insurance coverages described below. Before starting the Work, Contractor shall furnish a Certificate of Insurance, in a form acceptable to Owner, evidencing the Contractor's compliance with the Agreement's insurance requirements. All insurance policies are to be written through a company duly authorized to transact that class of insurance within the jurisdiction of the Project site and shall be with insurance companies acceptable to Owner and with A.M. Best Rating of A minus or better. The Certificates and policies for the Commercial General Liability and Business Automobile Liability Policy shall name Owner, and if requested, Owner's agents, as Additional Insureds for completed and ongoing operations on a primary and non-contributory basis. All Insurance Certificates shall state policy numbers, dates of expiration, policy limits, and provide that the insurance will not be cancelled or changed unless Owner has been given written notice at least thirty (30) days prior to the date of the proposed change or cancellation. If the Contractor fails to procure or maintain required insurance coverages, Owner shall have the right, but not the obligation, to procure and maintain the required insurance for and in the name of the Contractor, and Contractor shall pay the cost thereof and furnish all necessary information to make effective and maintain such insurance. Contractor shall not commence work until all insurance requirements are met.

11.1.2.2 Required Insurance Coverages: The insurance coverages to be provided include those as set forth below unless modified in an Insurance Exhibit attached to the Agreement:

11.1.2.2.1 Commercial General Liability Insurance with limits of $1,000,000.00 per occurrence/$1,000,000 aggregate Bodily Injury and Property Damage Liability. This coverage must, at a minimum, include coverage and/or endorsements for premises operations, products/completed operations, contractual liability assumed by Contractor under this Agreement, personal injury, advertising injury and broad form Property Damage (including coverage for explosion, collapse and underground hazards), and independent Contractor coverages. All liability policies must be written on an "occurrence" basis. Such policy shall not contain Endorsement, CG 22 94 10 01. The Commercial General Liability and Automobile Liability insurance required herein shall protect the Contractor and the Owner against liability from damages growing out of any Contractor operations (including the operation of all automobiles, trucks, and other vehicles owned or rented) in connection with the performance of this Agreement, as well as liability arising after the completion of the Contractor's operations.

11.1.2.2.2 Motor Vehicle Liability Insurance with bodily injury limits of $1,000,000.00 and property damage limits of $1,000,000.00 or a combined single limit of $1,000,000.00.

11.1.2.2.3 Worker's Compensation in accordance with, and providing coverages meeting or exceeding the limits required by, the laws of the State of South Carolina jurisdiction, and Employer's Liability Insur-

ance with the following minimum limits: $100,000 Per Accident, $100,000 Per Disease for Each Employee, $500,000 aggregate.

11.1.2.2.4 Excess or Umbrella Liability Insurance with a policy limit of $1,000,000.00 per occurrence and aggregate.

11.1.2.5 Sub-Contractor Insurance: If Contractor elects, with Owner's approval, to subcontract any portion of the Work to another Contractor, Contractor shall require of such Subcontractor insurance coverage similar to that required of Contractor hereunder and shall furnish to Owner evidence that such insurance coverages are currently in effect. Moreover, Contractor shall require any such Subcontractor to name Contractor and Owner as additional insureds on Subcontractor's Commercial General Liability Insurance and will provide Contractor with a waiver of subrogation form from such sub-Contractors worker's compensation carrier. Failure of Contractor to require Subcontractor to obtain the coverages required herein or to furnish Owner evidence of such coverage shall be grounds for termination for default.

11.1.2.6 The Contractor shall furnish one copy of each Certificate of Insurance herein required attached to each copy of the Agreement, plus three additional copies of each Certificate of Insurance herein required, which shall specifically set forth evidence of all coverages set forth above. The Contractor shall furnish to the Owner copies of any endorsements that are subsequently issued amending coverage or limits.

Delete Paragraph 11.3 and substitute the following:

11.3 PROPERTY INSURANCE

11.3.1 Unless otherwise provided, the Owner shall purchase and maintain property insurance in the amount of the
initial Contract Sum as well as subsequent modifications thereto for the entire Work at the site on a replacement cost
basis. Such property insurance shall be maintained until final payment has been made as provided in Paragraph 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Paragraph 11.3 to be covered, whichever is earlier. This insurance shall only cover the work owned by the Owner at the time of loss.

11.3.2 Property Insurance shall be written using a 'Builders Risk Coverage Form' with the following attached forms
and endorsements:

11.3.2.1 Causes of Loss - Special Form; (Risks of Direct Physical Loss unless the loss is excluded or limited by the Form)

11.3.2.2 Causes of Loss - Earthquake Form; and

11.3.2.3 Flood Insurance.

11.3.3 Covered Property is the Building Under Construction described in the Policy Declarations owned by the Agency at the time of loss and includes:

11.3.3.1 Foundations;

11.3.3.2 If intended to become a permanent part of the building or structure described in the Declarations, the following property located in or on the building or structure or within 100 feet of its premises:
(1) Fixtures, machinery and equipment used to service the building; and

(2) Building materials and supplies used for construction;

11.3.3.3 If not covered by other insurance, temporary structures built or assembled on site, including cribbing, scaffolding and construction forms.

11.3.4 Replacement of insured damaged work shall be covered by an appropriate Change Order. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

11.3.5 The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

113.6 The Contractor shall provide adequate insurance to protect the interests of the Contractor, Subcontractor, and Sub-subcontractor in the work.

11.3.7 The Contractor shall be responsible for the deductible in the Owner's policy. The policy is written with a deductible of $1,000 for each occurrence.

Delete Subparagraph 11.4.1 in its entirety and insert the following Subparagraphs 11.4.1 and 11.4.2:

11.4.1 If the Contractor's work as set forth in the Scope of Work exceeds $50,000.00, Contractor shall provide payment and performance bonds in the full amount of the Contract Sum. The payment and performance bonds, if any, shall name Owner as the oblige. Such bonds must be secured by cash or must be issued by a surety company licensed in the State of South Carolina with an "A" minimum rating of performance as stated in the most current publication of "Best Key Rating Guide, Property Liability". Upon execution of the Contract Documents, the Contractor shall furnish to the Owner a Performance Bond and a separate Labor and Material Payment Bond in a form acceptable to the Owner. The bonds shall guarantee the Contractor's faithful performance of the Contract and payment of all obligations arising thereunder. The bonds shall remain in force until the Work has been completed and accepted by the Owner, the provisions of all guarantees required by these Contract Documents have been fulfilled, and the warranty periods and period for correction of the Work as provided in the Contract Documents have expired, or the period for filing mechanics' liens has expired, whichever occur latest, after which time the bonds shall lapse. The Contractor shall bear all costs in connection with the bonds as a part of the Contract. One executed copy of each bond shall be attached to each executed copy of the Contract Documents prior to the execution of the Contract Documents by the Owner.

11.4.2 The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

Add Subparagraph 11.4.3 as follows:

11.4.3 The Contractor shall keep the Surety informed of the progress of the Work, and, where necessary, obtain the Surety's consent to, or waiver of:

11..4.3.1 notices of changes in the Work;

11.4..3.2 requests for reduction or release of retention;

11.4.4.3 requests for final payment; and

11.4.3.4 any other item required by the Surety.

The Owner may, in its sole discretion, inform the Surety of the progress of the Work and obtain consents as necessary to protect the Owner's rights, interest, privileges, and benefits under and pursuant to any bond issued in connection with the Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

Delete Subparagraph 12.1.1 and insert the following:

12.1.1 If a portion of the Work is covered contrary to the requirements specifically expressed in the Contract Documents, including inspections of work-in-progress required by all authorities having jurisdiction over the Project, then the portion of Work so covered shall, upon demand of the AE or the Owner having jurisdiction, be uncovered for observation and be replaced at the Contractor's expense without change in the Contract Time.

Add the following Clause 12.2.1.1:
If, prior to the date of Substantial Completion, the Contractor, a Subcontractor, or anyone for whom either is responsible, uses or damages any portion of the Work, including, without limitation, mechanical, electrical, plumbing, and other building systems, machinery, equipment, or other mechanical device, the Contractor shall cause such item to be restored to "like new" condition at no expense to the Owner.

In the third sentence of Clause 12.2.2.1, delete the phrase "...and to make a claim for breach of warranty...'

Add the following Clause 12.2.2.1.1 to Subparagraph 12.2.2.1:

12.2.2.1.1 Leakproof Envelope Provision: The one-year period for correction of Work shall be extended to a two-year period for all exterior envelope elements of the Work should one or more fail to serve as a leakproof water and/or air barrier due to Contractor’s failure to conform the Work to the Contract Documents. The Contractor’s responsibility under this Clause shall extend to the repair of all damage to the building and building contents resulting from such failure.

Delete the words “one-year” from Subparagraphs 12.2.2.2, 12.2.2.3 and 12.2.5.

***At the end of Clause 12.2.2.3, add the phrase* '...unless otherwise provided in the Contract Documents."**

Add the following Clause 12.2.2.4 to Subparagraph 12.2.2:

12.2.2.4 Upon request by the Owner and prior to the expiration of one year from the date of Substantial Completion, the AE will conduct and the Contractor shall attend a meeting with the Owner to review the facility operations and performance.

ARTICLE 13 MISCELLANEOUS PROVISIONS
Delete Subparagraph 13.1.1 and substitute the following:

13.1.1 The Contract shall be governed by and construed in accordance with the laws of the State of South Carolina, and any suit, action or proceeding arising out of or relating to the Contract shall be governed by the laws of the State of South Carolina.

In the second sentence of Subparagraph 13.2.1, delete the phrase "Except as provided in Subparagraph 13.2.2,..." and capitalize "...neither...".

Delete Subparagraph 13.2.2 in its entirety.

Add the following Subparagraphs to Paragraph 13.3:

13.3.1 Unless otherwise permitted herein, all notices contemplated by the Contract Documents shall be in writing and shall be deemed duly given:

13.3.1.1 upon actual delivery to the person identified in the A101, if delivery by hand; or,

13.3.1.2 upon receipt by the transmitting party of confirmation or reply, if delivery is by facsimile, telex or telegram; or,

13.3.1.3 upon receipt by the person identified in the Agreement, if delivery is by deposit into the United States mail, certified mail, return receipt **requested.**

13.3.2 Each such notice shall be sent to the respective party at the address provided in the Agreement, or to any other address as the respective party may designate by notice delivered pursuant hereto.

Add Subparagraph 13.4.3 as follows:

13.4.3 Notwithstanding Subparagraph 9.10.4, the following provisions (as amended) of the Contract Documents shall survive termination for whatever cause, expiration or completion:

1.5 Ownership and Use of Drawings, Specifications and Other Instruments of Service;
3.5 Warranty
3.17 Royalties, Patents and Copyrights
3.18 Indemnification
7.5.5 Cost or Pricing Data
10.2.2.1 Protection of Persons and Property
11.1 Contractor's Liability Insurance
11.4 Performance and Payment Bond
12.2 Correction of Work
13.1 Governing Law
13.4 Rights and Remedies
15 Claims & Disputes

Add the following to Subparagraph 13.5.5:

The Contractor shall give the AE timely notice in advance of tests, inspections or approvals.

Add the following Subparagraph to Paragraph 13.6:

13.6.1 Payments made under the Contract Documents are subject to the requirements of Title 29, Chapter 6 of the South Carolina Code of Laws, as amended.

Add the following Paragraph 13.8:

13.8 Drug Free Workplace and Drug Testing

13.8.1 Notice Of Requirement: Drug Free Workplace Act. The Contractor shall comply with the requirements of Title 44, Code of Laws of South Carolina, as amended; with the respect to maintaining a drug-free workplace, and shall provide such certifications of compliance as the Owner may require.

13.8.2 The Contractor shall provide documentation to the Owner that all employees of the Contractor, a Subcontractor, anyone directly or indirectly employed by them nor anyone for whose acts they may be liable (also referred to herein as “Project Personnel”), shall have completed pre-employment drug screening consistent with the requirements of employees of the Owner or otherwise acceptable to the Owner.

13.8.3 Any Project Personnel involved in an accident on the Project site involving property damage greater than $10,000 in value or personal injury must complete at the Contractor's expense drug screening consistent with the requirements of employees of the Owner or otherwise acceptable to the Owner within twenty-four hours of the accident. The Contractor shall provide documentation to the Owner that such testing has occurred.

13.8.4 The Contractor warrants and represents that all Project Personnel shall comply with drug testing for particularized suspicion of drug use consistent with the policy for Owner’s employees or otherwise acceptable to the Owner, at the Contractor's expense.

Add the following Paragraph 13.9:

13.9 CANCELLATION AFTER AWARD
This Contract may be canceled after award, but prior to issuance of the Notice to Proceed. In such event, the Contractor shall recover, as its sole remedy, its reasonable bid preparation costs.

Add the following Paragraph 13.10:

13.10 BANKRUPTCY
In the event the Contractor enters into proceedings relating to bankruptcy, whether voluntary or involuntary, the Contractor agrees to furnish written notification of the bankruptcy to the Owner. This notification shall be furnished within five (5) days of the initiation of the proceedings relating to the bankruptcy filing. This notification shall include the date on which the bankruptcy petition was filed, the identity of the court in which the bankruptcy petition was filed, and a listing of all State contracts against which final payment has not been made. This obligation remains in effect until final payment under this Contract.

Add the following Paragraph 13.11:

13.11 Contractor certifies that it will comply with the applicable requirements of Title 8, Chapter 14 of the South Carolina Code of Laws and agrees to provide to the Owner upon request any documentation required to establish either: (a) that Title 8, Chapter 14 is inapplicable both to Contractor and its subcontractors or sub-subcontractors; or (b) that Contractor and its subcontractors or sub-subcontractors are in compliance with Title 8, Chapter 14. Pursuant to Section 8-14-60, "A person who knowingly makes or files any false, fictitious, or fraudulent document, statement, or report pursuant to this chapter is guilty of a felony, and, upon conviction, must be fined within the discretion of the court or imprisoned for not more than five years, or both." Contractor agrees to include in any contracts with its subcontractors language requiring its subcontractors to (a) comply with the applicable requirements of Title 8, Chapter 14, and (b) include in their contracts with the sub-subcontractors language requiring the sub-subcontractors to comply with the applicable requirements of Title 8, Chapter 14.

Add the following Paragraph 13.12:

13.12 UNIT PRICE WORK

13.12.1 Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, the initial Contract Sum will be deemed to include an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as identified in the Con-

tract. The estimated quantity for each item of Work represents the Owner's best estimate of the amount of each item to be required of the Contractor, but the amounts are not guaranteed, and are solely for the purpose of comparison of Bids and determining an initial Contract Sum. Determinations of the actual quantities and classifications of Unit Price Work performed by the Contractor will be made by the AE as described below.

13.12.2 Each unit price will be deemed to include an amount considered by the Contractor to be adequate to cover the Contractor's total costs, including overhead and profit, for each separately identified item.

13.12.3 The AE will review with the Contractor its preliminary determinations on such matters before rendering a written decision or issuing a recommendation on the Contractor's Applications for Payment. The AE*'s* written decisions or recommendations will be final and binding on the Agency and the Contractor, except as modified by the AE to reflect changed factual conditions or more accurate data. The AE's written decisions or recommendations shall serve as the AE's initial decision.

Add the following Subparagraph 13.13:

13.13 PROCUREMENT OF MATERIALS BY OWNER.
The Contractor accepts assignment of, and liability for, all purchase orders and other agreements for procurement of materials and equipment that are identified as part of the Contract Documents. The Contractor shall be responsible for such pre-purchased items, if any, as if the Contractor were the original purchaser. The Contract Sum includes, without limitation, all costs and expenses in connection with delivery, storage, insurance, installation, and testing of items covered in any assigned purchase orders or agreements. All warranty and correction of the Work obligations under the Contract Documents shall also apply to any pre-purchased items, unless the Contract Documents specifically provide otherwise.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

In Subparagraph 14.1.1, change "...30..." to* "...sixty (60)". *Delete Clause 14.1.1.4.

In Subparagraph 14.1.3, delete all words after "...Work executed..." and add:
Any adjustment to the Contract Sum made pursuant to this Subparagraph shall be made in accordance with the requirements of Paragraph 7.5, provided, however, that in no event shall Contractor be entitled to payment related to those portions of the Work not executed.

Delete Subparagraph 14.2.1 and substitute the following:

14.2.1 The Owner may terminate the Contract, or any separable part of it, if the Contractor.

14.2.1.1 fails to complete the Work within the time specified in the Contract Documents, including any authorized adjustments; or,

14.2.1.2 fails to prosecute the Work, or any separable part of the Work, with the diligence, resources and skill that will ensure its completion within the time specified in the Contract Documents, including any authorized adjustments; or,

14.2.1.3 fails to make payment to Subcontractors for materials or labor in accordance with Title 29, Chapter 6 of the South Carolina Code of Laws, as amended, and the respective agreements between the Contractor and the subcontractors; or,

14.2.1.4 persistently disregards laws, ordinances, or rules, regulations or orders of a public Owner having jurisdiction; or,

14.2.1.5 fails to comply with any of the other material provisions of this Contract.

Delete Subparagraph* 14.2.2, *but not the subordinate Clauses (*14.2.2.1 -- 14.2.2.3*) and substitute the following:

14.2.2 The Owner's right to terminate this Contract under Subparagraph 14.2.1 may be exercised if the Contractor does not cure such failure within seven (7) days (or more if authorized in writing by the Owner) after receipt of the notice from the Owner specifying the general nature of the failure. The Owner shall notify the Contractor's surety within a reasonable time. When terminating pursuant to Paragraph 14.2, the Owner may, without prejudice to any other rights or remedies of the Owner, and subject to any prior rights of the surety**:**

Insert "...including Liquidated Damages, If any,..." after the phrase "...other damages..." in the first sentence of Subparagraph 14.2.4.

Insert the following to Subparagraph 14.3.2 after the second sentence:
Any adjustment to the Contract Sum made pursuant to this Subparagraph shall be made in accordance with the requirements of Paragraph 7.5.

Add after Paragraph 14.2.4 the following:

14.2.5 The rights of the Owner to suspend or terminate as herein provided shall be cumulative and not exclusive and shall be in addition to any other remedy provided by law.

Delete Subparagraphs* 14.4.1 and 14.4.2 *and substitute the following:

14.4.1 The performance of Work under this contract may be terminated by the Owner in whole, or from time to time in part, whenever the Owner shall determine that such termination is in the best interest of the Owner. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of Work under the contract is terminated, and the date upon which such termination becomes effective.

14.4.2 After receipt of Notice of Termination the Contractor shall complete the performance of the Work not terminated, if any, and shall stop all other Work under the contract on the date and to the extent specified in the Notice of Termination.

In Subparagraph 14.4.3 delete the phrase "...,along with reasonable overhead and profit on the Work not executed ".

Add the following Paragraph 14.5:
If Owner improperly terminates the Agreement for cause, the termination for cause will be converted to a termination for convenience in accordance with the provisions of Paragraph 14.4.

ARTICLE 15 CLAIMS AND DISPUTES

Insert the following after the second sentence of Subparagraph 15.1.1:
A voucher, invoice, payment application or other routine request for payment that is not in dispute when submitted is not a Claim under this definition.

Add the following sentence to Subparagraph 15.1.2:

Time Limits for Filing Claims. Claims by either party arising prior to the date final payment is due must be initiated within twenty-one (21) days after occurrence of the event giving rise to such Claim or within twenty-one (21) days after the claimant first recognizes the condition giving rise to the Claim, whichever is later, except as stated for adverse weather days in Clause 15.1.5.2. By failing to give written notice of a Claim within the time required by this Subparagraph, a party expressly waives its claim.

Add the following to Subparagraph 15.1.5.1:
Claims for an increase in the Contract Time shall be based on one additional calendar day for each full calendar day that the Contractor is prevented from working.

Add the following Clauses 15.1.5.3 and 15.1.5.4 to Subparagraph 15.1.5:

15.1.5.3 Claims for increases in the Contract Time shall set forth in detail the circumstances that form the basis for the Claim, the date upon which each cause of delay began to affect the progress of the Work, the date upon which each cause of delay ceased to affect the progress of the Work and the number of days' increase in the Contract Time claimed as a consequence of each such cause of delay. The Contractor shall provide such supporting documentation as the Owner may require including, where appropriate, a revised construction scheduled indicating all the activities affected by the circumstances forming the basis of the Claim.

15.1.5.4 The Contractor shall not be entitled to a separate increase in the Contract Time for each one of the number of causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due solely to the fault of the Contractor.

Delete Subparagraph 15.1.6 in its entirety and substitute the following:

15.1.6 CLAIMS FOR LISTED DAMAGES.
Notwithstanding any other provision of the Contract Documents, including Subparagraph 1.2.1, and subject to Paragraph 15.1.4, the Contractor and Owner waive Claims against each other for Listed Damages arising out of or relating to this Contract. The Listed Damages are:

15.1.6.1 Damages incurred by the Owner for rental expenses, for losses of use prior to Final Completion, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and for attorney's fees, insurance and interest (excluding post judgment); and,

15.1.6.2 Damages incurred by the Contractor for principal office expenses and overhead, including, but not limited to, the compensation of personnel stationed there, rent, utilities and office equipment; for losses of financing, business and reputation; for loss of profit except anticipated profit arising directly from the Work; and for attorney's fees, insurance and interest (excluding post judgment).

15.1.6.3 This mutual waiver is applicable, without limitation, to all Listed Damages due to either party's termination in accordance with Article 14.

15.1.6.4 This mutual waiver does not apply to the extent such Listed Damages are covered by any insurance provided pursuant to this Agreement and/or relating to the Project.

Add the following to Subparagraph 15.1.7:

15.1.7 If a Claim has been resolved, the AE will prepare or obtain appropriate documentation and forward a copy of the documentation to the Owner.

Insert the following Subparagraph 15.1.8:

15.1.8 Waiver of Claims Against the AE. Notwithstanding any other provision of the Contract Documents (including paragraph 1.2.1), but subject to a duty of good faith and fair dealing, the Contractor waives all claims against both the AE and any other design professionals who provide design and/or project management services to the Owner, either directly or as independent contractors/subcontractors to the AE, for Listed Damages arising out of or relating to this Contract. The Listed Damages are damages incurred by the Contractor for principal office expenses and overhead (including, but not limited to, the compensation of personnel stationed there, rent, utilities, and office equipment), for losses of financing, business and reputation, for loss of profit other than anticipated profits arising directly from the Work, and for attorney's fees, insurance, and interest (excluding post judgment).

Insert the following Subparagraph 15.1.9:

15.1.9 DECISIONS OF THE AE. Claims, including those alleging an error or omission by the AE, shall be referred initially to the AE for decision. An initial decision by the AE shall be required as a condition precedent to resolution of all claims between the Contractor and Owner arising prior to the date Final Payment is due, unless thirty (30) days shall have passed after the Claim has been referred to the AE, with no decision by the AE. The AE will not decide disputes between the Contractor and persons or entities other than the Owner.

Delete Paragraphs 15.2 through 15.4.4.3 and replace with the following:

15.2 Contractor and Owner agree to attempt to resolve disputes in the first instance using a partnering approach.

15.2.1 Should disputes arise during the course of this Project, the representatives identified in Paragraphs 8.3 and 8.4 of the Agreement, along with the AE, shall attempt to resolve the dispute among themselves.

15.2.2 If the dispute is not resolved within seventy-two (72) hours, the Project Executive of the Contractor and the Owner’s Director of Purchasing (or her designee) shall attempt to resolve the dispute.

15.3 Should the Contractor and Owner be unable to resolve a dispute, it will be referred to mediation per rules to be established by mutual agreement, or failing such agreement, the mediation shall be administered by the American Arbitration Association in accordance with its Construction Industry Procedures.

15.4 If mediation fails, then claims, disputes, or other matters in question between the parties to this Agreement arising out of or relating to this Agreement or breach thereof shall be tried before the Court of Common Pleas for BEAUFORT City, South Carolina, which will preside without a jury. The Contractor and Owner expressly waive their right to a jury trial with respect to any claims, disputes, or other matters in question between the Contractor and Owner arising out of or relating to this Agreement or breach thereof. Any legal proceeding arising out of or relating to this Agreement shall include, by consolidation, joinder, or joint filing, any additional person or entity not a party to this Agreement to the extent necessary to the final resolution of the matter in controversy.

15.5 The Contractor shall include mediation provision identical to Paragraph 15.3 and a litigation provision identical to Paragraph 15.4 in its agreements with Subcontractors, Sub-Subcontractors, and suppliers.

END OF SECTION 007300

Qualifications of Bidder

Contractor (low bidder) to submit required Qualifications Submittals before Notice of Intent to Award is issued to the apparent responsive low bidder. Low bidder must submit required Qualifications within 5 business days. Contractor must be qualified and approved by Architect and Owner prior to award of contract.

- See Qualifications Submittals in the following Sections:
  - 014000- Quality Requirements
  - 040310- Cleaning of Historic Masonry
  - 040513- Mortar and Structural Repair and Repointing
  - 076100- Sheet Metal Roofing
  - 077123- Gutters and Downspouts
  - 090120- Stucco Repairs and Replacement
  - 099000- Architectural Coatings
  - 099133- Mineral Silicate Painting/Coatings

Summary of Specification Sections Requiring Submittals for

Contractor/Subcontractor Experience

QUALITY REQUIREMENTS Section: 014000

- Historic Treatment Qualifications: Submit documentation of past project experience that meet the work experience outlined in the RFP and specifications.

CLEANING OF HISTORIC MASONRY Section: 040310

Required Experience

- Work Experience: Employ skilled workers that have experience dealing with cleaning historic building materials. Technicians employed to carry out work must have a minimum of five years' experience working with and cleaning historic buildings.

Submittal

- Qualifications: Submit documentation of workers project experience that meets minimum the five-year work experience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years, including contact names and phone numbers.

MORTARS FOR STRUCTURAL REPAIRS AND REPOINTING Section: 040513

Required Experience

- Contractor must have a minimum of five (5) years demonstrated experience working on projects of similar scope, that employed hydraulic lime mortars. Contractor to have a working knowledge of the Secretary of the Interior's Standards for Treatment of Historic Properties.

Submittal:

- Contractor Qualifications: Submit documentation of contractors past project experience that meets the work experience outlined in the specification. Provide two (2) references from an architect/engineer/owner who has worked on a similar project, using natural hydraulic lime repointing mortars, with the offeror in the last five years.

SHEET METAL ROOFING Section: 076100

Required Experience

- Employs skilled workers who have (5) years' experience installing custom fabricate sheet metal roofing similar to that required for this project and whose products have a record of successful in-service performance. Furnish names of owners and architects of three buildings on which applicator has installed satisfactory roof similar to type herein specified.

Submittal

- Submit documentation of welder's past project experience the meets the work experience outlined in the specification. Provide references for a minimum of three (3) projects completed on which applicator has installed satisfactory sheet metal roofs similar to type specified.

GUTTERS AND DOWNSPOUTS Section: 077123

Required Experience

- Sheet Metal Flashing Fabricator and Installer Qualifications: Employs skilled workers who have (5) years' experience and custom fabricate sheet metal gutters similar to that required for this Project and whose products have a record of successful in-service performance. Furnish names of owners and architects of two buildings on which applicator has installed satisfactory internal gutters similar to type herein specified. All welders must be certified by AWS specifically for the welding procedures as outlined in this specification. Minimum certification is AWS 6G Stainless.

Submittal

- Stainless Steel Gutter Installer- Welding certificates from AWS. Minimum Requirement: AWS 6G Stainless.
- Submit documentation of welder's past project experience the meets the work experience outlined in the specification. Provide references for a minimum of two (2) projects completed on which applicator has installed satisfactory internal gutters similar to type specified.

STUCCO REPAIRS AND REPLACEMENT Section: 090120

Required Experience

- Contractor and lead mason to perform the work in this section shall have at least five (5) years demonstrated experience working with natural cement stuccos. Contractor to have a working knowledge of the Secretary of the Interior's Standards for Treatment of Historic Properties. Experience only in new stucco work is insufficient experience for work.

Submittal

- Qualifications: Submit documentation of mason's past project experience that meets the work experience outlined in the specification. Provide references for a minimum of two (2) projects completed in the last five years that employed natural cement stuccos, including contact names and phone numbers. Submit resume of lead mason.

ARCHITECTURAL COATINGS Section: 099000

Submittal

- Submit documentation of painters past project experience that meet the work experience outlined in the specification. Provide references for a minimum of five years' experience painting. Submit resume of lead painter.

MINERAL SILICATE PAINTING/COATINGS Section: 099133

Required Experience

- Qualifications: Submit documentation of painters past project experience that meets minimum the work experience outlined in the specification (five years of experience in matching and touching up existing painting). Provide references for a minimum of two (2) projects completed in the last five years, including contact names and phone numbers. Projects must include installation of mineral silicate paint/coating systems.

Submittal

- Provide evidence Applicator is a firm having a minimum of five (5) years of successful application experience with projects similar in type and scope to that required for this Project and having passed a product certification training course provided by the manufacturer prior

to the execution of this unit of work. Qualified painting specialist must have a minimum of two projects that include the installation of mineral silicate paint/coatings systems.

ALTERNATES:

Provide the following BID ALTERNATES:
Refer to Specification Section 012300 "Alternates" for additional information.

Alternate No. 1 – New Sheathing Layer (lower roofs only):

ADD the sum of _____ Dollars ($_____).

Alternate No. 2 –Roofing XPS Rigid and Tapered Insulation (lower roofs only):

ADD the sum of _____ Dollars ($_____).

Alternate No. 3 – Delete Upper Roof Complete:

DEDUCT the sum of _____ Dollars ($_____).

Alternate No. 4 – Painting Stucco:

DEDUCT the sum of _____ Dollars ($_____).

Alternate No. 5 – Painting Metal Leader heads, Backplates, Downspouts, and Accessories:

DEDUCT the sum of _____ Dollars ($_____).

Offeror Firm / Company Name _____

UNIT PRICES:

Provide the following UNIT PRICES:
Refer to Specification Section 012200 "Unit Prices" for additional information.

NO.	ITEM	UNIT OF MEASURE	INCLUDED IN BASE BID	ADD	DEDUCT
1	Stucco Repair	SF	Refer to Drawings/ Specs		
2	Paint Stucco	SF	Refer to Drawings/ Specs		
3	Roof Decking	SF	35% of lower roofs, 25% of upper roof		

Offeror Firm / Company Name _____

2018-104 CITY OF BEAUFORT
ARSENAL ROOF REPLACEMENT PROJECT

CONTACTS

Owner:

City of Beaufort
1911 Boundary Street
Beaufort, SC 29902

Paul McGee
Owner Representative
Email: Pmcgee@cityofbeaufort.org

Architect:

Meadors Inc.
PO Box 21758
Charleston, South Carolina 29413
Tel: 843.723.8585
Fax: 843.577.3107

Betty Prime, AIA
Project Architect
Email: betty@meadorsinc.com
Tel: 843.532.7291

Kalen McNabb
Conservator
Email: kalen@meadorsinc.com
Tel: 843.509.8170

Hazardous Materials Consultant:

Trident Environmental Services, Inc.
500 Oak Brook Lane Suite E
Summerville, South Carolina 29485
Tel: 843.873.3648
Fax: 888.266.2040

Kevin Leedy
Hazardous Materials Consultant
Email: kevinleedy@tridentenvironmental.com
Tel: 843.670.9987

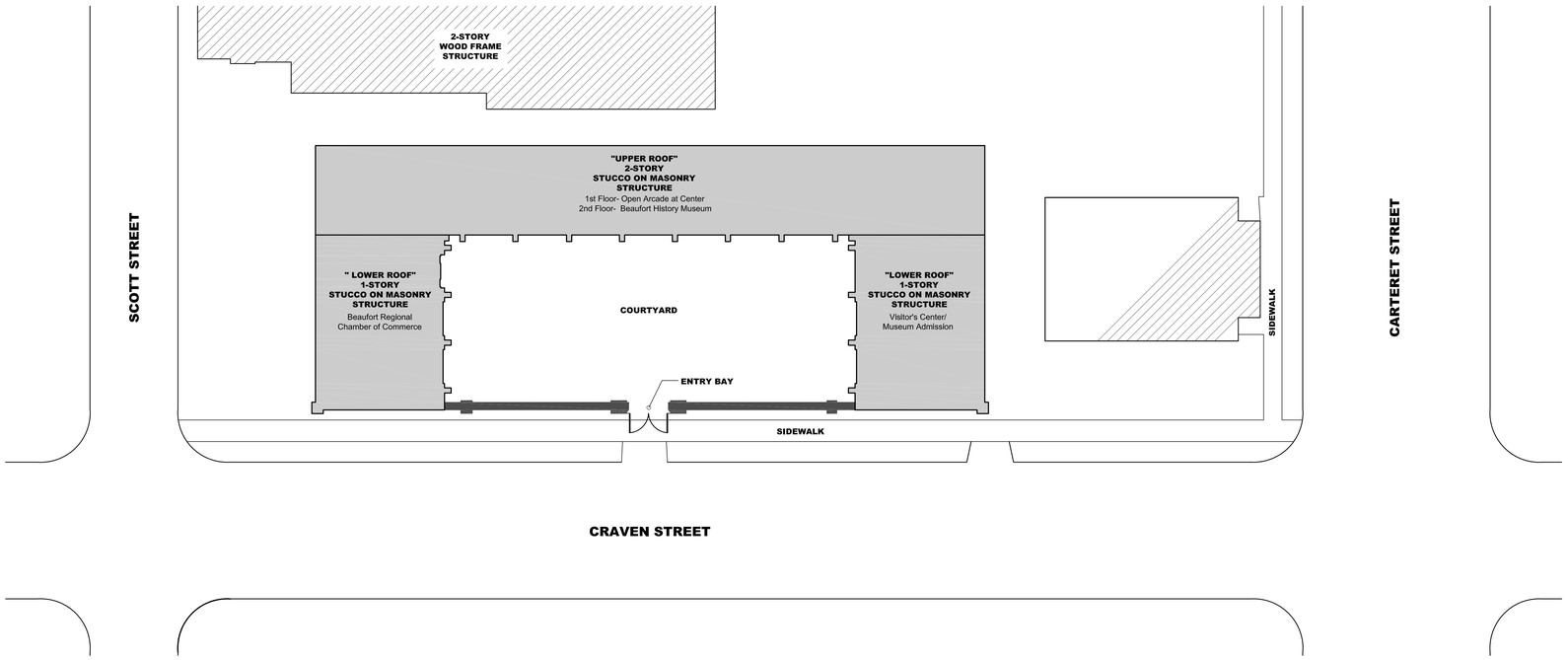
DRAWING LIST

PROJECT LOCATION

Beaufort Arsenal/Beaufort History Museum
713 Craven Street
Beaufort, SC 29902

PROJECT DESCRIPTION

The Beaufort Arsenal is an iconic local historic site and a major contributing structure in the City of Beaufort's National Historic Landmark District. The scope of work for this project includes: removal of the existing membrane roofs including insulation down to the roof deck, installation of two new single-ply membrane roofs at the 1-story wings (including insulation, tapered insulation, cover board, and flashings), installation of one new standing seam roof, flashings, and stainless-steel gutter at the 2-story main building. Scope includes cleaning, repairing, and painting designated sections of the masonry wall on the east and west 1- story wings, and repairing gutters and downspouts.



1 A00 SITE PLAN - ARSENAL COMPLEX
SCALE: 1/16" = 1'-0"

MEADORS
SINCE 1984
2811 AZALEA DRIVE ■ CHARLESTON, SC ■ 843.723.8585

STATE OF SOUTH CAROLINA
MEADORS, INC.
Charleston, SC
100192
REGISTERED ARCHITECTS

STATE OF SOUTH CAROLINA
BETTY PRIME
Charleston, SC
8919
REGISTERED ARCHITECT

CITY OF BEAUFORT
ARSENAL ROOF
REPLACEMENT PROJECT
713 CRAVEN STREET
BEAUFORT, SC 29902

BID
DOCUMENTS

PROJ. NO.	18-0059
ISSUE DATE:	08/01/18

REVISIONS

#	DATE	NOTES

COVER/TITLE
SHEET

T100

NOT FOR CONSTRUCTION

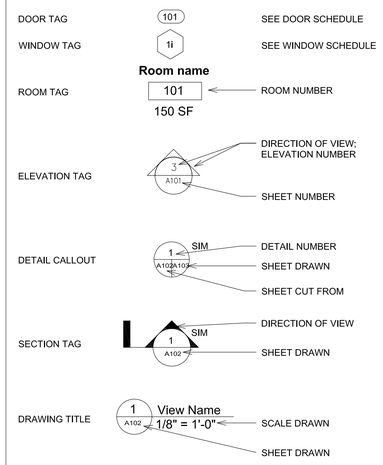
GENERAL NOTES

1. THE BUILDING IS LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES, CARE SHALL BE TAKEN TO PROTECT THE BUILDING AND PROPERTY FROM DAMAGE DURING THE WORK. ALL EFFORT SHALL BE MADE TO PROTECT, RETAIN, AND PRESERVE AS MUCH EXISTING ORIGINAL MATERIAL AS POSSIBLE. NEW MATERIAL MUST MATCH THE ORIGINAL IN LOCATION, SIZE, MATERIAL, PROFILE (WHERE APPLICABLE) AND INSTALLATION METHOD.
2. THE TERM "WORK" AS USED IN THESE NOTES SHALL INCLUDE ALL PROVISIONS AS DRAWN OR SPECIFIED IN THESE DOCUMENTS AS WELL AS ALL OTHER PROVISIONS SPECIFICALLY INCLUDED BY THE OWNER IN THE FORM OF DRAWINGS, SPECIFICATIONS, AND WRITTEN INSTRUCTIONS AND APPROVED BY THE ARCHITECT.
3. THE TERM "CONTRACTOR" AS USED IN THESE NOTES SHALL REFER TO THE GENERAL CONTRACTOR OR TO THE SUB-CONTRACTORS.
4. SCOPE OF WORK. THE CONTRACTOR SHALL INCLUDE AND PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, TRANSPORTATION, TAXES, PERMITS, AND FEES AND PAY ALL EXPENSES INCURRED IN THE PROPER COMPLETION OF WORK UNLESS SPECIFICALLY NOTED TO BE THE WORK OF OTHERS. CONTRACTOR SHALL PERFORM ALL WORK NECESSARY FOR PRODUCING A COMPLETE, HABITABLE PROJECT.
5. BEFORE CONSTRUCTION BEGINS, THE CONTRACTOR SHALL VISIT THE SITE TO VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS AND SHALL NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.
6. IF THE CONTRACT DRAWINGS AND SPECS ARE FOUND TO BE UNCLEAR, AMBIGUOUS OR CONTRADICTORY, THE CONTRACTOR SHALL REQUEST CLARIFICATION FROM THE ARCHITECT IN WRITING BEFORE PROCEEDING WITH THAT PART OF THE WORK.
7. THE ARCHITECT SHALL HAVE UNRESTRICTED ACCESS TO THE SITE DURING CONSTRUCTION OF THE PROJECT. IF A CONDITION EXISTS, THAT REQUIRES OBSERVATION OR ACTION BY THE ARCHITECT OR ANY OF THE ARCHITECT'S CONSULTANTS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IN WRITING.
8. CONTRACTOR SHALL BE FAMILIAR WITH PROVISIONS OF ALL APPLICABLE CODES AND SHALL ENSURE THE COMPLIANCE OF THE WORK WITH ALL LOCAL, STATE AND FEDERAL CODES, TRADE STANDARDS AND MANUFACTURER'S RECOMMENDATIONS. IN THE EVENT OF CONFLICT BETWEEN LOCAL, STATE, AND NATIONAL CODES, THE MORE STRINGENT SHALL GOVERN.
9. THESE DOCUMENTS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. SAFETY, CARE OF ADJACENT PROPERTIES DURING CONSTRUCTION, AND COMPLIANCE WITH STATE AND FEDERAL REGULATIONS REGARDING SAFETY ARE THE CONTRACTOR'S RESPONSIBILITY.
10. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION MEANS AND METHODS AS OUTLINED IN THE CONTRACT DRAWINGS AND SPECIFICATIONS, AND ALL SAFETY PROCEDURES AND FOR COORDINATION OF ALL PORTIONS OF THE WORK.
11. INSURANCE: WORKMEN'S COMPENSATION, AS REQUIRED BY LAW AND GENERAL LIABILITY SHALL BE CARRIED BY THE CONTRACTOR, NAMING THE OWNER AND ARCHITECTS AS ADDITIONALLY INSURED.
12. GUARANTEE: THE CONTRACTOR SHALL UNCONDITIONALLY GUARANTEE ALL MATERIALS AND WORKMANSHIP FURNISHED OR INSTALLED BY HIM OR HIS SUBCONTRACTORS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE, UNLESS NOTED OTHERWISE IN THE DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL REPLACE ANY DEFECTIVE WORK WITHIN THAT PERIOD WITHOUT EXPENSE TO THE OWNER AND PAY FOR ALL DAMAGES TO OTHER PARTS OF THE BUILDING RESULTING FROM DEFECTIVE WORK OR ITS REPAIR. THE CONTRACTOR SHALL REPLACE DEFECTIVE WORK WITHIN TEN (10) DAYS AFTER IT IS BROUGHT TO HIS ATTENTION.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK AND THAT OF HIS SUBCONTRACTORS, FOR LOSSES AND DAMAGES TO EQUIPMENT, TOOLS AND MATERIALS USED IN CONJUNCTION WITH THE WORK AND FOR ACTS OF HIS EMPLOYEES AND SUBCONTRACTORS.
14. CLEANING UP: THE CONTRACTOR SHALL AT ALL TIMES KEEP THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIALS AND RUBBISH AND, AT THE COMPLETION OF THE WORK, SHALL REMOVE ALL RUBBISH, IMPLEMENTS, AND SURPLUS MATERIALS, AND LEAVE THE PROJECT CLEAN AND IN SAFE CONDITION.
15. CONTRACTOR TO PROVIDE THE OWNER WITH A LIST OF ALL SUBCONTRACTORS USED, COMPLETE WITH ADDRESSES, PHONE NUMBERS AND COPIES OF ALL WARRANTIES AND OPERATIONS AND MAINTENANCE MANUALS ASSOCIATED WITH ANY COMPONENT INCLUDED AS PART OF THE SCOPE OF WORK.
16. CONTRACTOR SHALL KEEP A RECORD SET OF DRAWINGS ON SITE AND NOTE DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS AND DOCUMENT SPECIAL CONDITIONS THAT ARE EXPOSED. CONTRACTOR SHALL TURN THE RECORD SET OVER TO THE OWNER AT THE COMPLETION OF THE PROJECT.
17. NO OPEN FLAME DEVICES ARE ALLOWED WITHIN THE BUILDING OR ON COMPONENTS STILL ATTACHED TO THE BUILDING UNLESS OTHERWISE SPECIFIED. THIS INCLUDES, BUT IS NOT LIMITED TO, TORCHES, WELDERS OR CIGARETTES.
18. DO NOT SCALE OFF DRAWINGS.
19. THESE DOCUMENTS ARE THE COPYRIGHTED PROPERTY AND INTELLECTUAL PROPERTY OF MEADORS INC. THE DOCUMENTS ARE NOT TO BE REPRODUCED OR UTILIZED FOR ANY PURPOSE OTHER THAN ORIGINALLY INTENDED AS STIPULATED ON THE COVER SHEET AND TITLEBLOCK. USE OF THE DOCUMENTS FOR ANY PURPOSE, SPECIFICALLY STIPULATED OR NOT, SHALL BE GRANTED ONLY VIA AUTHORIZED WRITING BY MEADORS INC.
20. NONE OF THE DOCUMENTS INCLUDED IN DRAWING INDEX ARE INTENDED TO BE CONSIDERED IN ISOLATION OF ONE ANOTHER. ALL PARTIES/ENTITIES UTILIZING THESE DOCUMENTS FOR BIDDING, QUANTITY SURVEY, AND/OR CONSTRUCTION SHALL CONSULT THE GENERAL NOTES AND INFORMATION LOCATED ON THIS SHEET AND ALL GENERAL NOTES ON SHEETS FOR INFORMATION AND CONDITIONS GOVERNING WORK DESCRIBED IN DOCUMENTS LISTED IN THE DRAWING INDEX BEFORE PROCEEDING WITH PROCUREMENT AND/OR CONSTRUCTION. GENERAL INFORMATION AND DATA SHEET(S) AND USE GUIDELINES GOVERNING ALL BIDS AND/OR CONSTRUCTION DOCUMENTS. ALL BIDDERS, SUB-BIDDERS, CONTRACTORS, AND SUB-CONTRACTORS SHALL UTILIZE COMPLETE SETS OF THE BIDDING AND/OR CONSTRUCTION DOCUMENTS IN QUANTIFYING AND CONSTRUCTING. NEITHER THE OWNER NOR ARCHITECT ASSUMES RESPONSIBILITY FOR ERRORS, OMISSIONS, OR MISINTERPRETATIONS RESULTING FROM THE USE OF INCOMPLETE SETS OF BIDDING AND/OR CONSTRUCTION DOCUMENTS.
21. ALL CONSTRUCTION, MATERIALS, AND INSTALLATIONS SHALL CONFORM TO THE IBC 2015 AS WELL AS APPLICABLE STATE AND LOCAL CODES, TRADE ASSOCIATION STANDARDS AND/OR MANUFACTURERS STANDARDS AS ADOPTED. BY THE CITY OF BEAUFORT, SC.
22. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL PERMITS AND APPROVALS FROM ALL PUBLIC AUTHORITIES HAVING JURISDICTION.
23. COORDINATE AREAS FOR LAYDOWN, STORAGE AND PARKING WITH ARCHITECT AND OWNER PRIOR TO BEGINNING WORK.
24. PROVIDE ADEQUATE BLOCKING TO ACCOMPLISH SCOPE OF WORK.

GENERAL DEMOLITION NOTES

A. PLANS ARE GENERAL AND DIAGRAMMATIC IN NATURE. THE PLANS ARE NOT INTENDED TO REPRESENT THE TOTAL SCOPE OF WORK. THESE PLANS DO NOT SHOW EACH ITEM THAT IS REQUIRED TO BE REMOVED. EACH CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL CONDITIONS AS THEY EXIST IN THE FIELD THROUGH SITE INSPECTION AND REVIEW OF THESE DOCUMENTS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE AND COORDINATE THE REMOVAL AND DEMOLITION WORK AS REQUIRED TO ACHIEVE THE FINAL PRODUCT AS INDICATED IN THESE DOCUMENTS.
B. REMOVE, CLEAN, PATCH/REPAIR EXISTING SURFACES/FINISHES AS NECESSARY FOR THE INSTALLATION OF NEWLY SCHEDULED FINISHES. REFER TO KEYED REPAIR PLAN FOR LIMITED SCOPE.
C. THE OWNER AND HIS DESIGNATED REPRESENTATIVES HAVE FIRST RIGHT OR REFUSAL REGARDING SALVAGEABLE ITEMS. CONTRACTOR SHALL COORDINATE WITH OWNER.
D. EXISTING STRUCTURAL SYSTEM SHALL NOT BE REMOVED OR MODIFIED UNLESS APPROVED IN ADVANCE BY THE ARCHITECT AND/OR ENGINEER.
E. REMOVE EXISTING ITEMS AS REQUIRED FOR REUSE IN THE NEW PLAN OR NEW FINISH. CATALOG AND STORE ITEMS IN A SAFE STORAGE AREA SUBJECT TO THE OWNER'S APPROVAL UNTIL THE TIME OF REINSTALLATION. LOST ITEMS SHALL BE REPLACED WITH COMPARABLE NEW ITEM AT NO COST TO THE OWNER.
F. DURING THE COURSE OF DEMOLITION, IF ITEMS OR AREAS OF HISTORIC SIGNIFICANCE ARE DISCOVERED, CONTRACTOR SHALL CEASE WORK ON ITEM OR AREA OF INTEREST AND IMMEDIATELY NOTIFY OWNER'S REPRESENTATIVE AND ARCHITECT.
G. SALVAGED MATERIAL: DOCUMENT ITEMS TO BE SALVAGED BEFORE PERFORMING ANY WORK. ITEMS TO BE MARKED WITH A REMOVABLE LABEL DESIGNATING ORIGINAL LOCATION AND STORED IN AN AREA TO PROTECT THEM FROM DAMAGE OR THEFT.
H. EACH EXISTING HISTORICAL COMPONENT MAY VARY SLIGHTLY IN SIZE, SHAPE, AND DETAIL. VERIFY EACH COMPONENT IN THE FIELD PRIOR TO PERFORMING WORK IN THAT AREA.
I. ANY ITEMS NOT SHOWN TO BE DEMOLISHED THAT ARE DAMAGED SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.
J. ANY ITEMS NOT TO BE RETAINED BY THE OWNER SHALL BE DISPOSED OF BY THE CONTRACTOR PER APPROPRIATE REGULATIONS.
K. DRAWINGS ARE BASED ON UNKNOWN CONDITIONS BELOW GRADE AND WITHIN WALL AND ROOF ASSEMBLIES. FIELD VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS. NOTIFY THE ARCHITECT OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.
L. COORDINATE LOCATION OF CONSTRUCTION BARRICADES AND DUMPSTER WITH OWNER. DUMPSTER SHALL HAVE A COVER TO AVOID WIND-BLOWN DEBRIS ONTO THE SITE.
M. PROVIDE DUST & CONSTRUCTION DEBRIS CONTROL & CONTAINMENT IN AREAS WHERE WORK IS BEING PERFORMED.
N. CLEAN AND RETURN EACH SPACE TO PRE-DEMOLITION CONDITION READY FOR USE BY OWNER PRIOR TO PROCEEDING TO NEXT WORK AREA.
O. THIS PROJECT INVOLVES REMOVAL OF ROOFING. CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND MAINTAINING WEATHER BARRIERS AS NECESSARY TO PREVENT THE INTRUSION OF VERMIN, WATER, AND WEATHER INTO THE BUILDING AND TO PROTECT THE INTEGRITY OF THE BUILDING. TEMPORARY ROOFING AND ENCLOSURES.
P. AVOID DAMAGE TO INTERIOR FINISHES DURING THE COURSE OF WORK. IF NECESSARY, A UTILITY KNIFE SHOULD BE USED TO CAREFULLY SEPARATE ELEMENTS TO BE DEMOLISHED FROM THOSE TO REMAIN.
Q. NOTIFY ARCHITECT PRIOR TO PROCEEDING WITH THE WORK IF MATERIALS ARE EXPOSED THAT ARE DAMAGED AND WERE NOT SCHEDULED FOR REPLACEMENT.
R. DIMENSIONS ON PLANS ARE FOR REFERENCE ONLY. FIELD VERIFY ALL DIMENSIONS.
S. PROVIDE SIGNAGE FOR ACCESS TO BUILDING & MAINTAIN EMERGENCY EGRESS THROUGHOUT CONSTRUCTION.
T. REMOVE ALL FASTENERS, BRACKETS, CONDUITS, WIRES, ETC. THAT ARE NOT IN USE (TYP.)
U. CATALOG, REMOVE, AND PROPERLY STORE ANY/ALL EQUIPMENT AS REQUIRED TO MAKE NECESSARY CHANGES.
V. HAZARDOUS MATERIALS HAVE BEEN IDENTIFIED. SEE HAZARDOUS MATERIALS REPORT IN PROJECT MANUAL.

SYMBOLS LEGEND



APPLICABLE CODES

International Building Code (IBC), 2015 Edition with South Carolina modifications
International Existing Building Code (IEBC), 2015 Edition
International Fire Code (IFC), 2015 Edition with South Carolina modifications
South Carolina Energy Conservation Code (SCECC), 2009 Edition
International Fuel Gas Code, 2015 Edition with South Carolina modifications
International Mechanical Code (IMC), 2015 Edition
International Plumbing Code (IPC), 2015 Edition
National Electrical Code, 2014 Edition, NFPA 70
Americans with Disabilities Act (ADA)
ICC/ANSI A117.1-2017 Accessible and Usable Buildings and Facilities

FASTENER SCHEDULE

CONNECTION	FASTENER	NUMBER/SPACING
WOOD STRUCTURAL PANEL + PART. BOARD SUBFLOOR	SEE NOTE #7	
⅜" - ½"	6d COMMON ANNULAR OR SPIRAL THREAD	6" o.c. EDGES AND 12" o.c. INTERMEDIATE
⅝" - ¾"	8d COMMON OR 6d ANNULAR OR SPIRAL THREAD	6" o.c. EDGES AND 12" o.c. INTERMEDIATE
1" - 1¼"	10d COMMON OR 8d ANNULAR OR SPIRAL THREAD	6" o.c. EDGES AND 6" o.c. INTERMEDIATE
⅜" - ½"	16ga GALV. WIRE STAPLES ⅞" MIN CROWN 1⅜" LENGTH	4" o.c. EDGES AND 7" o.c. INTERMEDIATE
⅝" - ¾"	16ga GALV. WIRE STAPLES ⅞" MIN CROWN 1⅜" LENGTH	2-½" o.c. EDGES AND 4" INTERMEDIATE
WOOD STRUCTURAL PANEL AND PART. BOARD ROOF + WALL SHEATHING		
½" OR LESS	6d COMMON (WALL) 8d COMMON (ROOF)	6" o.c. EDGES AND 12" o.c. INTERMEDIATE
⅝" OR GREATER	8d COMMON	6" o.c. EDGES AND 12" o.c. INTERMEDIATE
⅜" - ½"	16ga GALV. WIRE STAPLES ⅞" MIN CROWN LENGTH OF 1" PLUS THICKNESS	4" o.c. EDGES AND 8" o.c. INTERMEDIATE
⅝" - ¾"	16ga GALV. WIRE STAPLES 1" MIN CROWN LENGTH OF 1" PLUS THICKNESS	2" o.c. EDGES AND 5" o.c. INTERMEDIATE

MEADORS
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2811 AZALEA DRIVE ■ CHARLESTON, SC ■ 843.723.8585

STATE OF SOUTH CAROLINA
MEADORS, INC.
Charleston, SC
100192
REGISTERED ARCHITECTS

STATE OF SOUTH CAROLINA
BETTY PRIME
Charleston, SC
8919
REGISTERED ARCHITECT

CITY OF BEAUFORT
ARSENAL ROOF
REPLACEMENT PROJECT
713 CRAVEN STREET
BEAUFORT, SC 29902

NOT FOR CONSTRUCTION

BID DOCUMENTS

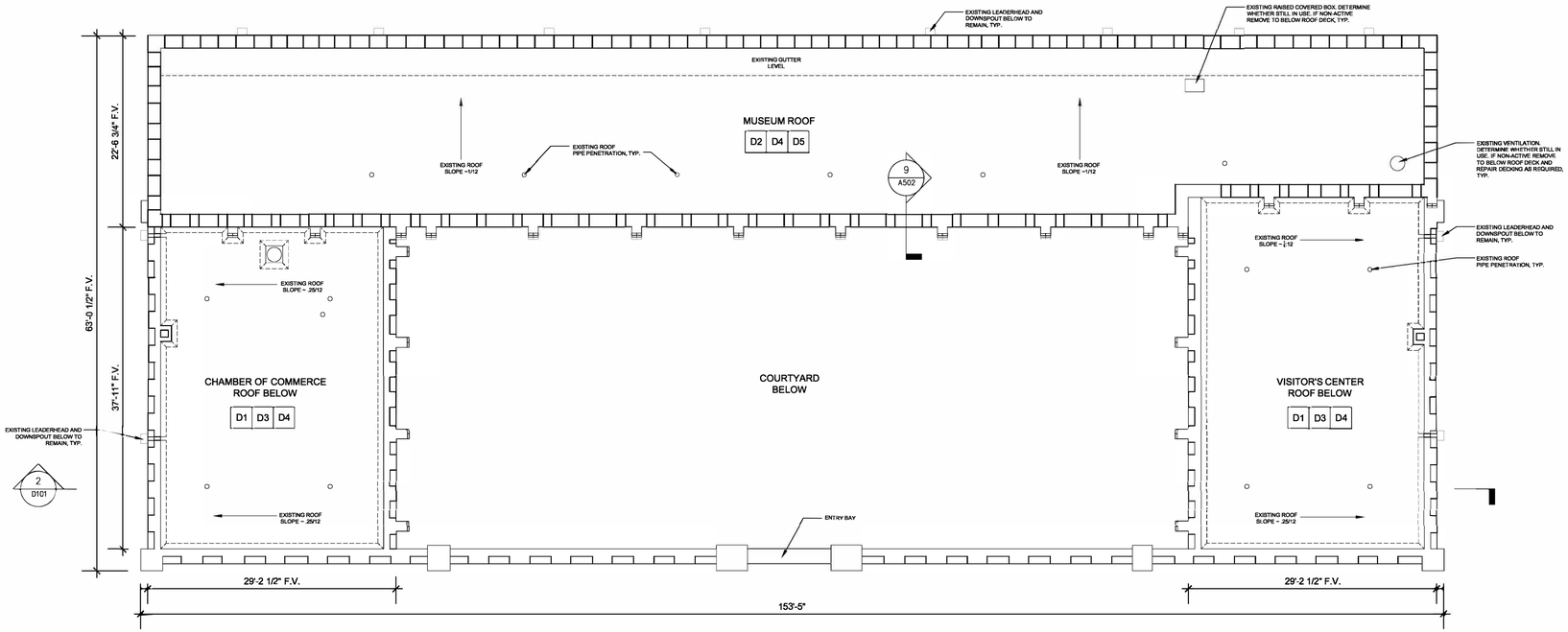
PROJ. NO. 18-0059
ISSUE DATE: 08/01/18

REVISIONS

#	DATE	NOTES

NOTES, ABBREV. & SYMBOLS

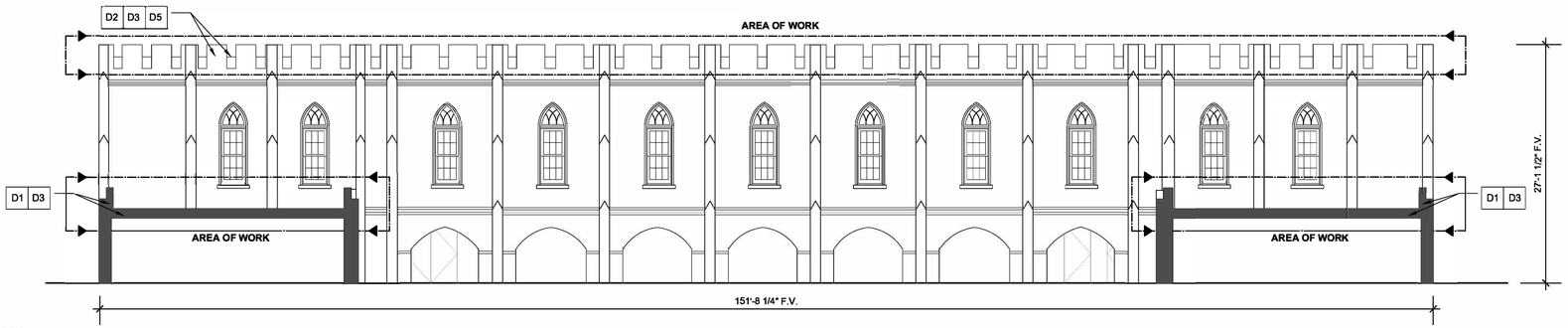
T101



1 D101 **ROOF PLAN- DEMOLITION**

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

N



2 D101 **SOUTH SECTION ELEVATION- DEMOLITION**

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

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ACCEPTED CONSTRUCTION STANDARDS.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL WORK IS IN COMPLIANCE WITH ALL CURRENT ADOPTED BUILDING CODES, ORDINANCES, AND REGULATIONS OF ALL PUBLIC AUTHORITIES HAVING JURISDICTION.
3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL PERMITS AND APPROVALS FROM ALL PUBLIC AUTHORITIES HAVING JURISDICTION.
4. PRIOR TO START OF CONSTRUCTION, VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AND NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.
5. ARSENAL COMPLEX TO REMAIN OPEN DURING CONSTRUCTION.
6. ALL DIMENSIONS TO BE FIELD VERIFIED.
7. ALL ACTIVE VENTS AND EXISTING ROOF PENETRATIONS TO REMAIN. MODIFY EXISTING AS NECESSARY TO COMPLY WITH CURRENT CODES. ABANDONED PIPES, VENTING, AND OTHER MISCELLANEOUS PENETRATIONS NO LONGER IN USE SHOULD BE REMOVED OR CAPPED BELOW ROOF DECK.

GENERAL ELEVATION AND PLAN NOTES

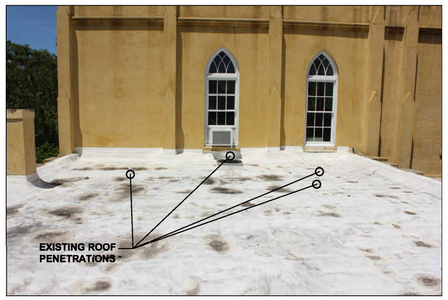
D1. REMOVE MEMBRANE ROOF, INSULATION, AND FLASHING, DOWN TO DECK AND PREP FOR NEW PVC ROOF. REMOVE SCUPPER LINING.

D2. REMOVE MEMBRANE ROOF, INSULATION, AND FLASHING, DOWN TO DECK AND PREP FOR NEW STANDING SEAM METAL ROOF. NOTE: MEMBRANE TO REMAIN ON CRENELLATION WALLS IN AREA NOT DISTURBED FOR INSTALLATION OF NEW STANDING SEAM ROOF. REMOVE EXISTING THRU WALL SCUPPERS.

D3. DETERIORATED AND DAMAGED STUCCO TO BE REMOVED IN LOWER ROOF "AREAS OF WORK". NOTE: TAR ON TOP OF SELECT AREAS OF THE THE LOWER ROOF WALLS CONTAIN NON-FRIABLE ASBESTOS. SEE HAZARDOUS MATERIALS REPORT FOR ADDITIONAL INFORMATION. REMOVE ALL VEGETATION AND DEBRIS.

D4: ALL EXISTING LEADERHEADS TO REMAIN. INTACT DOWNSPOUTS TO REMAIN, DAMAGED OR BENT DOWNSPOUTS TO BE REMOVED FOR REPLACEMENT. REMOVE DETERIORATED CAULK AT LEADERHEAD TO MASONRY JOINTS. REMOVE ALL VEGETATION AND DEBRIS FROM INSIDE AND OUTSIDE OF ALL LEADERHEADS AND DOWNSPOUTS.

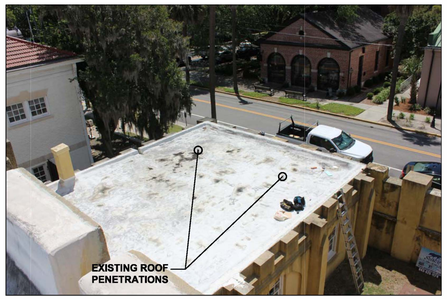
D5: REMOVE EXISTING MEMBRANE GUTTER AND THROUGH WALL SCUPPERS.



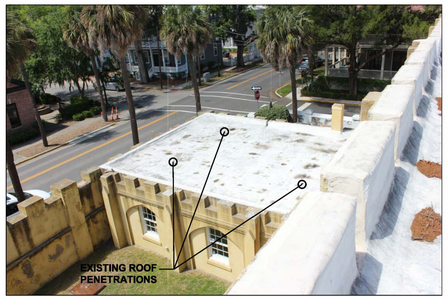
3 D101 **CHAMBER OF COMMERCE ROOF LOOKING SOUTH**

4 D101 **MUSEUM ROOF LOOKING WEST**

5 D101 **MUSEUM ROOF LOOKING EAST**



6 D101 **VISITOR'S CENTER ROOF LOOKING EAST**



7 D101 **CHAMBER OF COMMERCE ROOF LOOKING WEST**

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Charleston, SC
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CITY OF BEAUFORT
ARSENAL WALL
RESTORATION PROJECT
713 CRAVEN STREET
BEAUFORT, SC 29902

NOT FOR CONSTRUCTION

BID DOCUMENTS

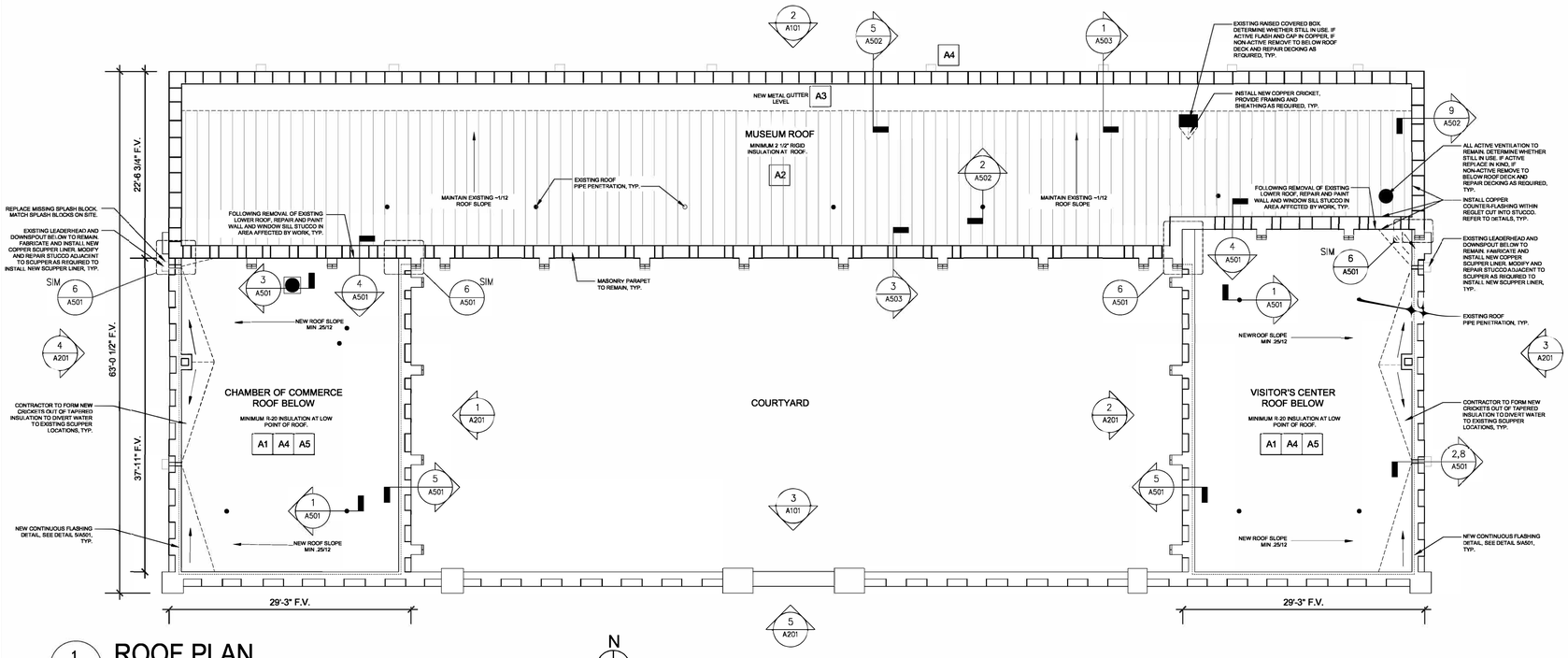
PROJ. NO.	18-0059
ISSUE DATE:	08/01/18

REVISIONS

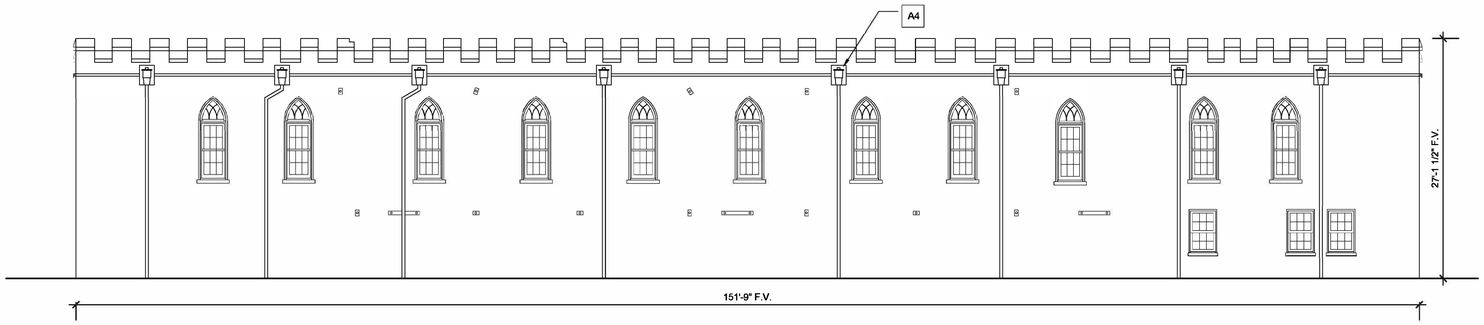
#	DATE	NOTES

DEMOLITION PLAN & ELEVATIONS

D101



1 A101 **ROOF PLAN**
SCALE: 1/8" = 1'-0"



2 A101 **NORTH ELEVATION**
SCALE: 1/8" = 1'-0"

GENERAL CONSTRUCTION NOTES

1. THE INTENT OF THE PROJECT IS TO PROVIDE COMPLETE ROOFING SYSTEMS FOR ALL STRUCTURES (2- SINGLE PLY MEMBRANE ROOFS AT 1-STORY WINGS, 1 STANDING SEAM ROOF AT 2-STORY STRUCTURE). ALL ELEMENTS OF THE ROOFING SYSTEMS ARE TO BE PROVIDED INCLUDING BUT NOT LIMITED TO ALL FLASHINGS, ACCESSORIES AND TERMINATIONS. ALL WORK IS TO BE EXECUTED IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, AND APPLICABLE CONSTRUCTION STANDARDS AND CODES. 3RD PARTY INSPECTIONS PROVIDED BY THE OWNER MAY BE REQUIRED.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL WORK IS IN COMPLIANCE WITH ALL CURRENT ADOPTED BUILDING CODES, ORDINANCES, AND REGULATIONS OF ALL PUBLIC AUTHORITIES HAVING JURISDICTION.
3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL PERMITS AND APPROVALS FROM ALL PUBLIC AUTHORITIES HAVING JURISDICTION.
4. PRIOR TO START OF CONSTRUCTION, VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AND NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.
5. ARSENAL COMPLEX TO REMAIN OPEN DURING CONSTRUCTION.
6. ALL DIMENSIONS TO BE FIELD VERIFIED.
7. ALL ACTIVE VENTS AND EXISTING ROOF PENETRATIONS TO REMAIN. MODIFY EXISTING AS NECESSARY TO COMPLY WITH CURRENT CODES. ABANDONED PIPES, VENTING, AND OTHER MISCELLANEOUS PENETRATIONS NO LONGER IN USE SHOULD BE REMOVED OR CAPPED BELOW ROOF DECK.

GENERAL ELEVATION AND PLAN NOTES

A1: REMOVE EXISTING ROOF COMPLETE, REPLACE DECKING AS REQUIRED (BASE BID: 35%), PREP SUBSTRATE, AND INSTALL WITH NEW PVC ROOF AND COPPER FLASHINGS. INSTALL NEW COPPER SCUPPER LINERS (FABRICATE TO FIT EXISTING OPENINGS).
ALTERNATIVE: INSTALL NEW PLYWOOD SHEATHING ON TOP OF EXISTING DECKING.

A2: REMOVE EXISTING ROOF, REPLACE DECKING AS REQUIRED (BASE BID: 25%), INSTALL NEW PLYWOOD DECK ON TOP OF EXISTING SHEATHING, PREP SUBSTRATE, AND INSTALL NEW STANDING SEAM ROOF AND METAL FLASHINGS.

A3: REMOVE EXISTING MEMBRANE GUTTER SYSTEM COMPLETE. REPLACE DECKING AS REQUIRED (BASE BID: 25%), PREP SUBSTRATE, INSTALL NEW PLYWOOD SHEATHING ON TOP OF EXISTING DECKING, AND INSTALL NEW STAINLESS STEEL GUTTER. INSTALL NEW STAINLESS STEEL THRU WALL SCUPPERS. FABRICATE TO FIT EXISTING OPENINGS.

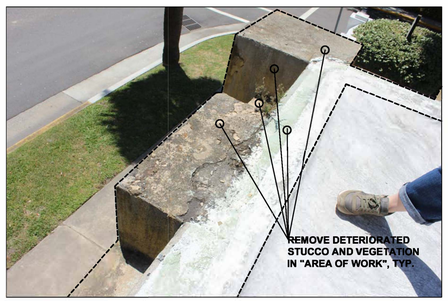
A4: ALL EXISTING LEADERHEADS TO REMAIN. INTACT DOWNSPOUTS TO REMAIN. REPLACE SECTIONS OF DAMAGED OR BENT DOWNSPOUTS IN KIND. LEAKING DOWNSPOUTS TO BE REPAIRED. REPLACE MISSING FASTENERS AND DAMAGED DOWNSPOUT BRACKETS. REMOVE DETERIORATED CAULK AT LEADERHEAD TO MASONRY JOINTS, INSTALL NEW CAULK. PAINT ALL NEW AND DISTRUBED SECTIONS OF LEADERHEADS, DOWNSPOUTS, AND ACCESSORIES COMPLETE.

A5: STUCCO REPAIR WORK:
DETERIORATED AND DAMAGED STUCCO TO BE REMOVED AT LOWER ROOF "AREAS OF WORK" AND REPLACED WITH NEW COMPATIBLE STUCCO. REPOINT MASONRY SUBSTRATE AS REQUIRED. STUCCO PATCHES AND REPAIRS SHALL MATCH EXISTING IN TEXTURE.

INSTALL SLOPED STUCCO WASH ON TOP OF WALL IN DESIGNATED "AREA OF WORK". MINIMUM 3/4" SLOPED WASH. WASH TO BE SLOPED TO DRAIN AWAY FROM ROOF.

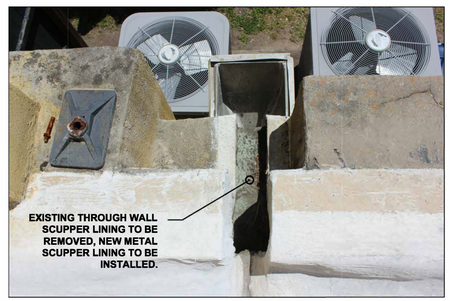
APPLY BIOCIDE AND CLEAN ALL MASONRY IN DESIGNATED AREA OF WORK. REMOVE EFFLORESCENCE.

PREP AND PAINT STUCCO SURFACES IN DESIGNATED "AREA OF WORK".

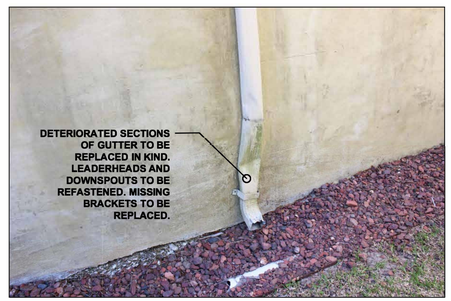


3 A101 CHAMBER OF COMMERCE LOOKING WEST

4 A101 CHAMBER OF COMMERCE LOOKING EAST



5 A101 VISITOR'S CENTER ROOF LOOKING EAST



6 A101 MUSEUM ROOF LOOKING NORTH

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BEAUFORT, SC 29902

BID DOCUMENTS

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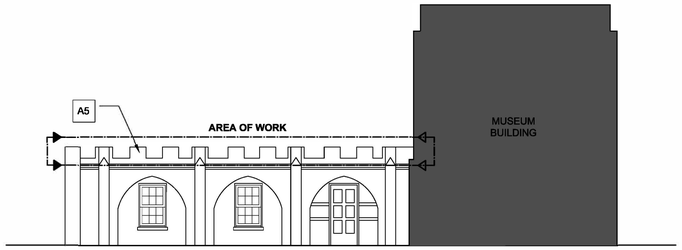
PLAN & ELEVATIONS

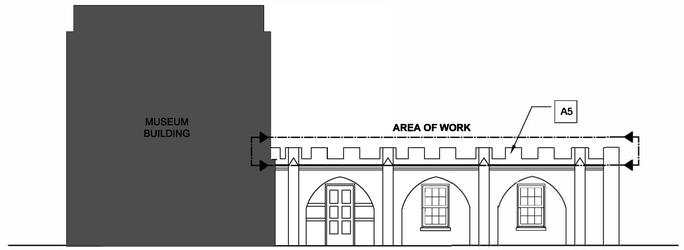
A101

NOT FOR CONSTRUCTION



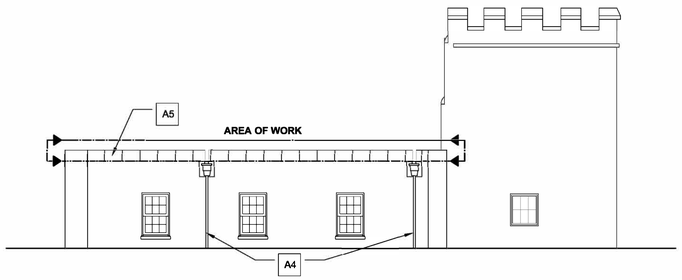
1 A201 EAST ELEVATION- INTERIOR ELEVATION

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



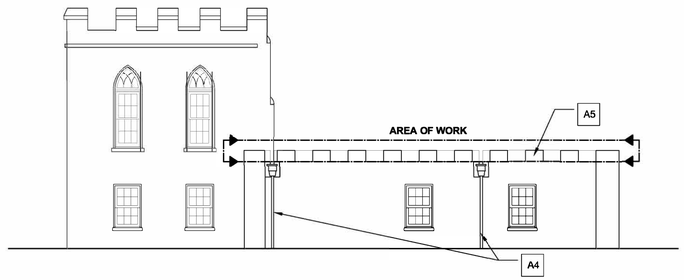
2 A201 WEST ELEVATION- INTERIOR ELEVATION

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



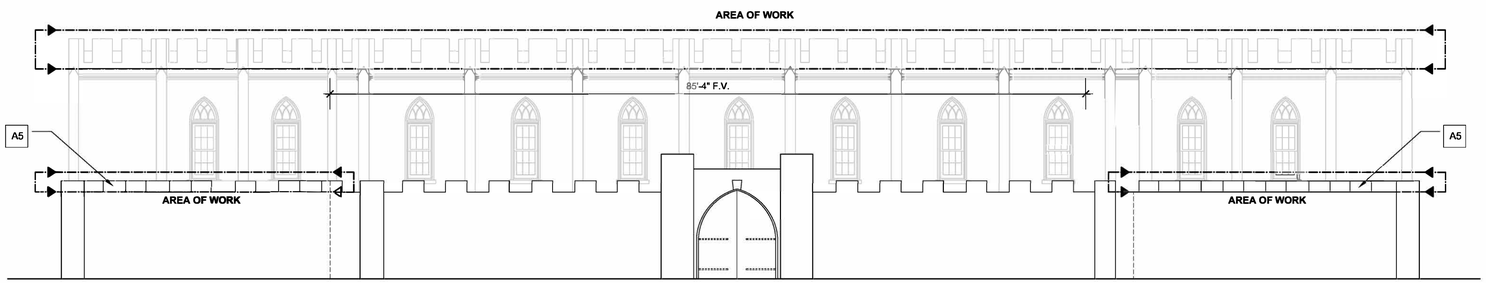
3 A201 EAST ELEVATION- OUTER ELEVATION

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



4 A201 WEST ELEVATION- OUTER ELEVATION

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



5 A201 SOUTH WALL- OUTSIDE ELEVATION

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

GENERAL CONSTRUCTION NOTES

1. THE INTENT OF THE PROJECT IS TO PROVIDE COMPLETE ROOFING SYSTEMS FOR ALL STRUCTURES (2- SINGLE PLY MEMBRANE ROOFS AT 1-STORY WINGS, 1 STANDING SEAM ROOF AT 2-STORY STRUCTURE). ALL ELEMENTS OF THE ROOFING SYSTEMS ARE TO BE PROVIDED INCLUDING BUT NOT LIMITED TO ALL FLASHINGS, ACCESSORIES AND TERMINATIONS. ALL WORK IS TO BE EXECUTED IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, AND APPLICABLE CONSTRUCTION STANDARDS AND CODES. 3RD PARTY INSPECTIONS PROVIDED BY THE OWNER MAY BE REQUIRED.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL WORK IS IN COMPLIANCE WITH ALL CURRENT ADOPTED BUILDING CODES, ORDINANCES, AND REGULATIONS OF ALL PUBLIC AUTHORITIES HAVING JURISDICTION.
3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL PERMITS AND APPROVALS FROM ALL PUBLIC AUTHORITIES HAVING JURISDICTION.
4. PRIOR TO START OF CONSTRUCTION, VERIFY ALL EXISTING CONDITIONS & DIMENSIONS AND NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.
5. ARSENAL COMPLEX TO REMAIN OPEN DURING CONSTRUCTION.
6. ALL DIMENSIONS TO BE FIELD VERIFIED.
7. ALL ACTIVE VENTS AND EXISTING ROOF PENETRATIONS TO REMAIN. MODIFY EXISTING AS NECESSARY TO COMPLY WITH CURRENT CODES. ABANDONED PIPES, VENTING, AND OTHER MISCELLANEOUS PENETRATIONS NO LONGER IN USE SHOULD BE REMOVED OR CAPPED BELOW ROOF DECK.

GENERAL ELEVATION AND PLAN NOTES

A4: ALL EXISTING LEADERHEADS TO REMAIN. INTACT DOWNSPOUTS TO REMAIN. REPLACE SECTIONS OF DAMAGED OR BENT DOWNSPOUTS IN KIND. LEAKING DOWNSPOUTS TO BE REPAIRED. REPLACE MISSING FASTENERS AND DAMAGED DOWNSPOUT BRACKETS. REMOVE DETERIORATED CAULK AT LEADERHEAD TO MASONRY JOINTS, INSTALL NEW CAULK. PAINT ALL NEW AND DISTRUBED SECTIONS OF LEADERHEADS, DOWNSPOUTS, AND ACCESSORIES COMPLETE.

A5: STUCCO REPAIR WORK:
DETERIORATED AND DAMAGED STUCCO TO BE REMOVED AT LOWER ROOF "AREAS OF WORK" AND REPLACED WITH NEW COMPATIBLE STUCCO. REPOINT MASONRY SUBSTRATE AS REQUIRED. STUCCO PATCHES AND REPAIRS SHALL MATCH EXISTING IN TEXTURE.
INSTALL SLOPED STUCCO WASH ON TOP OF WALL IN DESIGNATED "AREA OF WORK". MINIMUM 3/4" SLOPED WASH. WASH TO BE SLOPED TO DRAIN AWAY FROM ROOF.
APPLY BIOCIDE AND CLEAN ALL MASONRY IN DESIGNATED AREA OF WORK. REMOVE EFFLORESCENCE.
PREP AND PAINT STUCCO SURFACES IN DESIGNATED "AREA OF WORK".

6 A201 AREA OF WORK: STUCCO REPAIR, TYP. LOOKING WEST

7 A201 AREA OF WORK: STUCCO REPAIR, TYP. LOOKING WEST

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CITY OF BEAUFORT
ARSENAL WALL
RESTORATION PROJECT
713 CRAVEN STREET
BEAUFORT, SC 29902

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BID DOCUMENTS

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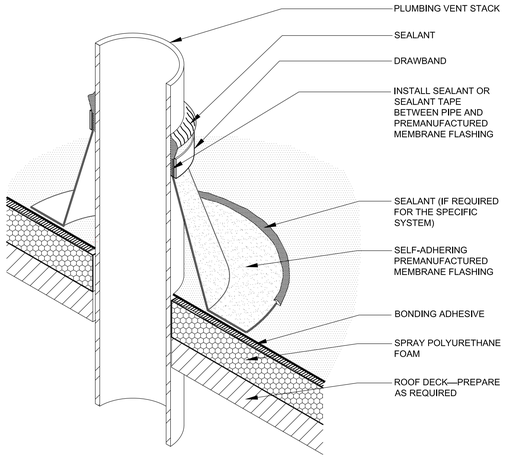
ELEVATIONS

A201

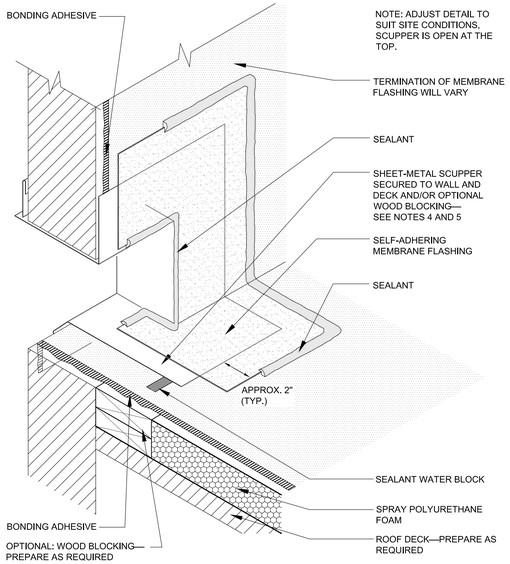


NOTES:

1. VENT STACKS AND OTHER PIPES SHOULD HAVE A MINIMUM OF 12 INCHES OF CLEARANCE ON ALL SIDES FROM WALLS, CURBS AND OTHER PROJECTIONS TO FACILITATE PROPER FLASHING. REFER TO THE INTRODUCTION TO THE CONSTRUCTION DETAILS CHAPTER FOR ADDITIONAL INFORMATION.
2. NRCA RECOMMENDS FLASHINGS BE 8 INCHES HIGH; HOWEVER, NRCA IS AWARE PREMANUFACTURED BOOT FLASHINGS GENERALLY WILL NOT MEET THE HEIGHT REQUIREMENT.
3. REFER TO MANUFACTURERS' SPECIFICATIONS FOR SPECIFIC BASE FLASHING REQUIREMENTS.
4. REFER TO THE INTRODUCTION OF THE CONSTRUCTION DETAILS CHAPTER FOR ADDITIONAL INFORMATION.

PLUMBING VENT [PREMANUFACTURED BOOT]

2016 | *NOT DRAWN TO SCALE* | **SPF(FB)-18**

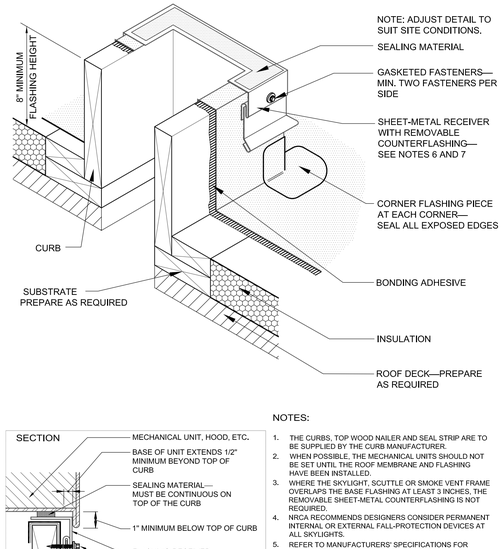


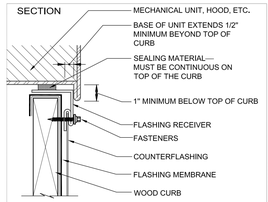
NOTES:

1. THIS DETAIL DOES NOT ALLOW FOR DIFFERENTIAL MOVEMENT BETWEEN THE DECK AND WALL.
2. CONDUCTOR HEAD TO BE 1 INCH MINIMUM BELOW BOTTOM OF THROUGH-WALL SCUPPER.
3. REFER TO MANUFACTURERS' SPECIFICATIONS FOR SPECIFIC BASE FLASHING REQUIREMENTS.
4. REFER TO THE ARCHITECTURAL METAL FLASHING SECTION OF THE NRCA ROOFING MANUAL: ARCHITECTURAL METAL FLASHING, CONDENSATION AND AIR LEAKAGE CONTROL, AND REROOFING FOR DESIGN, JOINERY AND SECUREMENT OPTIONS FOR SCUPPERS.
5. REFER TO THE INTRODUCTION OF THE CONSTRUCTION DETAILS CHAPTER FOR ADDITIONAL INFORMATION.

BASE FLASHING AT THROUGH-WALL SCUPPER

2016 | *NOT DRAWN TO SCALE* | **SPF(FB)-25**





NOTES:

1. THE CURBS, TOP WOOD NAILER AND SEAL STRIP ARE TO BE SUPPLIED BY THE CURB MANUFACTURER.
2. WHEN POSSIBLE, THE MECHANICAL UNITS SHOULD NOT BE SET UNTIL THE ROOF MEMBRANE AND FLASHING HAVE BEEN INSTALLED.
3. WHERE THE SKYLIGHT, SCUTTLE OR SMOKE VENT FRAME OVERLAPS THE BASE FLASHING AT LEAST 3 INCHES, THE REMOVABLE SHEET-METAL COUNTERFLASHING IS NOT REQUIRED.
4. NRCA RECOMMENDS DESIGNERS CONSIDER PERMANENT INTERNAL OR EXTERNAL FALL-PROTECTION DEVICES AT ALL SKYLIGHTS.
5. REFER TO MANUFACTURERS' SPECIFICATIONS FOR SPECIFIC BASE FLASHING REQUIREMENTS.
6. REFER TO THE ARCHITECTURAL METAL FLASHING SECTION OF THE NRCA ROOFING MANUAL: ARCHITECTURAL METAL FLASHING, CONDENSATION AND AIR LEAKAGE CONTROL, AND REROOFING FOR DESIGN, JOINERY AND SECUREMENT OPTIONS FOR COUNTERFLASHINGS.
7. REFER TO THE INTRODUCTION OF THE CONSTRUCTION DETAILS CHAPTER FOR ADDITIONAL INFORMATION.

BASE FLASHING AT WOOD CURB

2016 | *NOT DRAWN TO SCALE* | **SPF(FB)-12**

ROOFING GENERAL NOTES

1. THE INTENT OF THE PROJECT IS TO PROVIDE COMPLETE ROOFING SYSTEMS FOR ALL STRUCTURES (2- SINGLE PLY MEMBRANE ROOFS AT 1-STORY WINGS, 1 STANDING SEAM ROOF AT 2-STORY STRUCTURE). ALL ELEMENTS OF THE ROOFING SYSTEMS ARE TO BE PROVIDED INCLUDING BUT NOT LIMITED TO ALL FLASHINGS, ACCESSORIES AND TERMINATIONS. ALL WORK IS TO BE EXECUTED IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, AND APPLICABLE CONSTRUCTION STANDARDS AND CODES. 3RD PARTY INSPECTIONS PROVIDED BY THE OWNER MAY BE REQUIRED.
2. SPECIAL CARE SHOULD BE TAKEN TO NOT DAMAGE THE EXTERIOR OF THE BUILDING DURING REPAIRS AND NEW WORK. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REPAIRS TO AREAS DAMAGED ON THE BUILDING DURING THE COURSE OF REPAIRS AND NEW WORK. PAINT TO BE TOUCHED UP ON ALL SURFACES AFFECTED BY THE INSTALLATION OF NEW FLASHING.
3. 16 GAUGE STAINLESS STEEL IS DESIGNED AND UTILIZED FOR ALL BUILT-IN GUTTERS AND SCUPPERS. STAINLESS STEEL IS TO BE FULLY WELDED AT ALL SEAMS, CONNECTIONS, AND PENETRATIONS.
4. EXPANSION JOINTS TO BE INSTALLED IN STAINLESS STEEL GUTTER IN ACCORDANCE WITH SMACNA SPECIFICATIONS. SEE DETAIL 4 ON A503.
5. 16 OUNCE COPPER FLASHING IS DESIGNED AND UTILIZED FOR ALL FLASHING AND COUNTER-FLASHING, ETC. COPPER IS TO BE SOLDERED AT ALL SEAMS, CORNERS, AND CONNECTIONS.
6. THE USE OF STAINLESS STEEL AND COPPER IS TO ENSURE THE LONGEVITY AND DURABILITY OF THE MATERIAL IN THE AREAS OF GREATEST CONCERN FOR LEAKS. REFER TO DRAWINGS AND SPECIFICATIONS FOR DETAILS.
7. PVC SINGLE PLY MEMBRANE ROOFING ARE TO BE INSTALLED IN A MANNER CONSISTENT WITH MANUFACTURER'S RECOMMENDATIONS AND AS CALLED OUT IN THE DRAWINGS AND SPECIFICATIONS. ALL SINGLE PLY ROOFING SYSTEMS SHALL BE INSTALLED SO THEY CAN BE MAINTAINED AND REPLACED AS NECESSARY IN THE FUTURE WITHOUT THE NEED FOR ALTERING OR DISASSEMBLING THE STAINLESS STEEL AND COPPER INSTALLATIONS.
8. ALL VENT PIPE COVERS AND VENTILATOR COVERS TO BE REPLACED IN KIND.

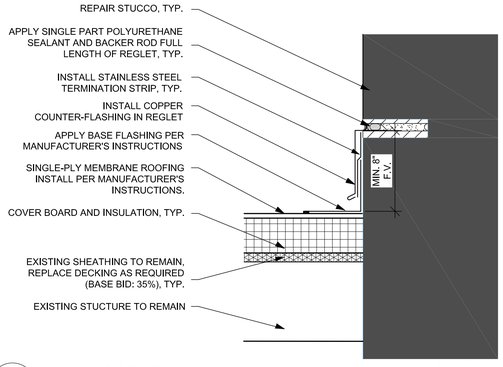
GENERAL SINGLE PLY MEMBRANE NOTES

9. INSULATION: INSTALL ¼" COVER BOARD AND NEW INSULATION. HEIGHT OF SINGLY PLY MEMBRANE ROOF @ HIGHEST POINT TO MAINTAIN ABILITY TO PROPERLY COUNTER-FLASH. MAXIMIZE THICKNESS OF BOARD INSULATION ASSEMBLY (RIGID AND TAPERED). INSULATION TO BE A MINIMUM OF R-20 AT THE LOW POINT OF ROOF, TYP.
10. ALTERNATE: INSTALL NEW PLYWOOD SHEATHING ON TOP OF EXISTING DECKING.

1 A501 PLUMBING VENT/VENTILATION PIPE W/CAP DETAIL
NOT TO SCALE

2 A501 BASE FLASHING AT THROUGH WALL SCUPPER (OPEN)
NOT TO SCALE

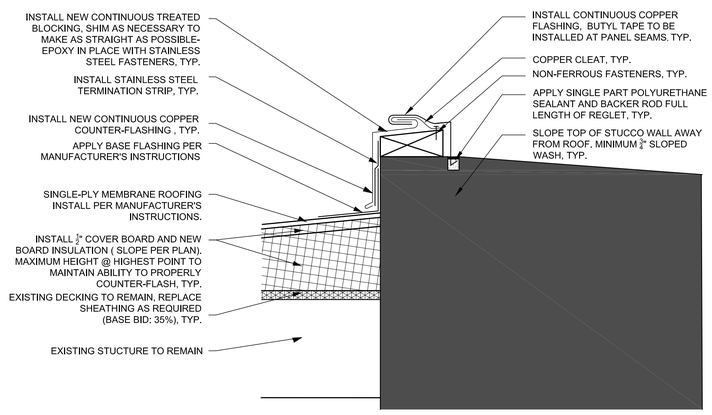
3 A501 BASE FLASHING AT THROUGH WALL SCUPPER (OPEN)
NOT TO SCALE



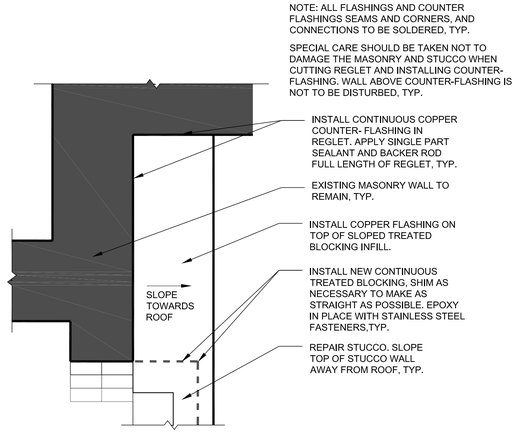
2 A501 PVC ROOF- TYPICAL VERTICAL WALL FLASHING DETAIL
3" = 1'-0"

FABRICATE COPPER THRU WALL SCUPPER LINER, FIT EXISTING OPENING, COUNTER- FLASH AND SOLDER AS REQUIRED TO CREATE A WATER TIGHT TRANSITION BETWEEN THE SINGLE PLY MEMBRANE ROOF AND LEADERHEAD, TYP.

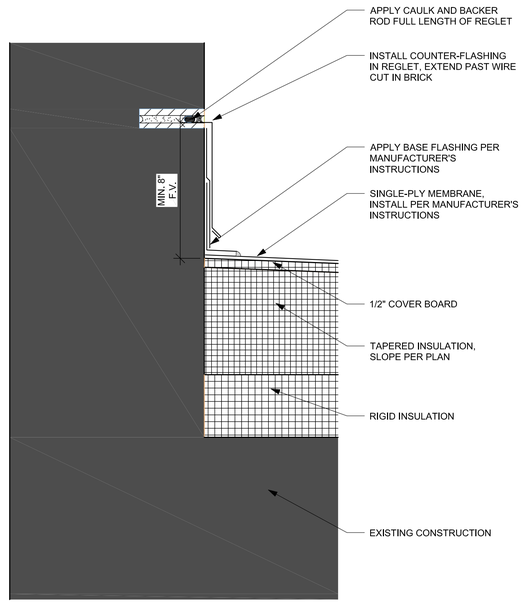
8 A501 PVC ROOF- SCUPPER LINER DETAIL
NTS



5 A501 PVC ROOF- TYPICAL SIDE WALL FLASHING DETAIL
3" = 1'-0"



6 A501 PVC ROOF- SIDE WALL FLASHING DETAIL @ CORNERS
3/4" = 1'-0"



7 A501 PVC ROOF- BASE FLASHING DETAIL
3" = 1'-0"

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ARSENAL WALL
RESTORATION PROJECT
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BID DOCUMENTS

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ISSUE DATE:	08/01/18

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PVC ROOF & FLASHING DETAILS

A501

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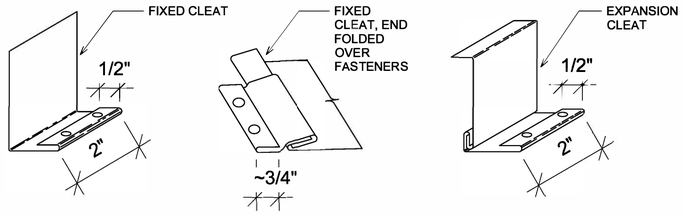
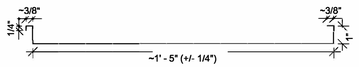
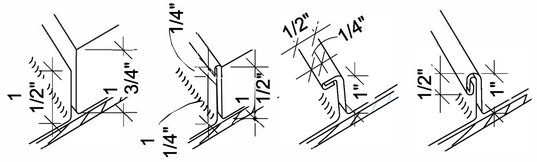


1 A502 COPPER CLEAT TYPES & DETAILS
6" = 1'-0"



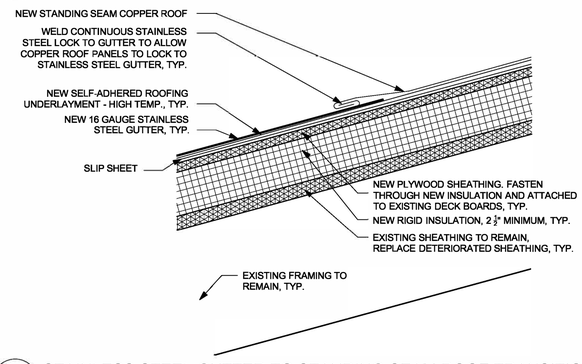
* DIMENSIONS MAY VARY SLIGHTLY BASED ON PAN FORMER

3 A502 COPPER PAN FORM DETAIL
3" = 1'-0"

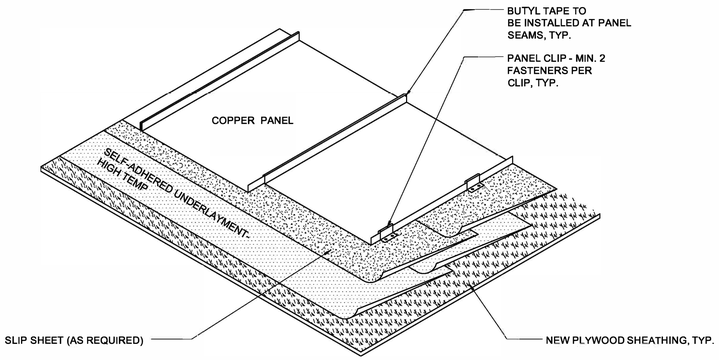


DOUBLE LOCK

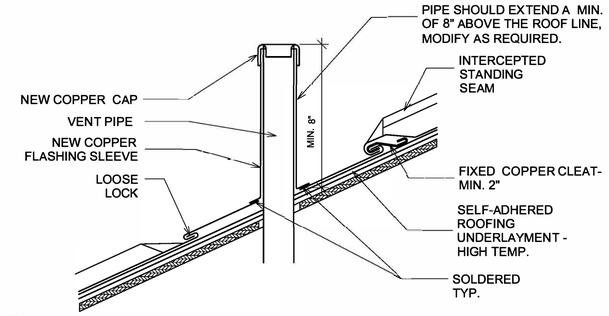
4 A502 COPPER STANDING SEAM DETAILS
6" = 1'-0"



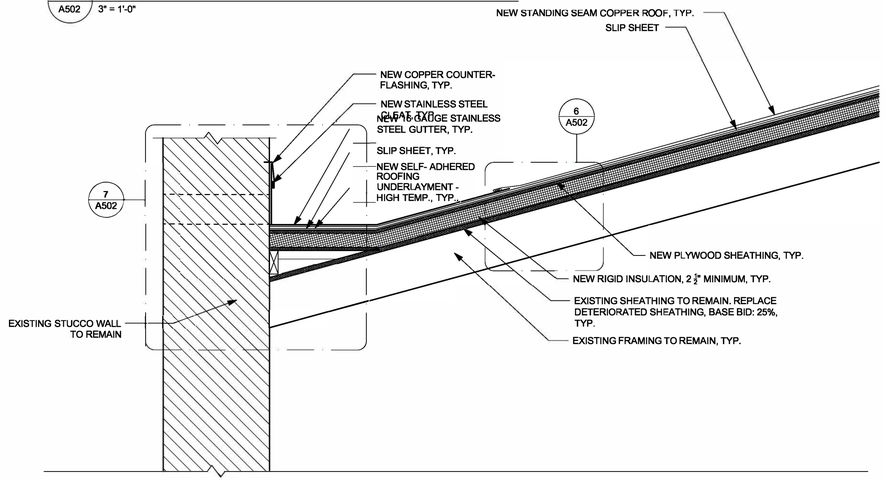
6 A502 STAINLESS STEEL GUTTER TO STANDING SEAM ROOF TRANSITION
3" = 1'-0"



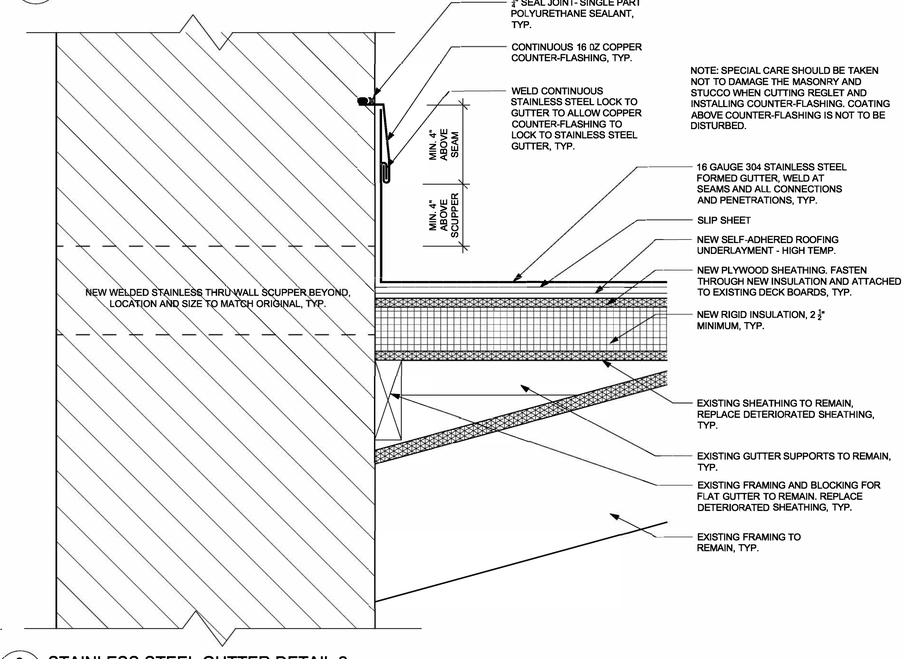
7 A502 COPPER STANDING SEAM OVER NAILABLE DECK
NTS



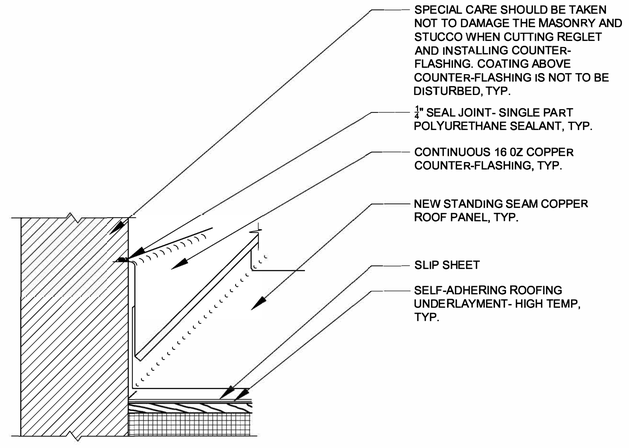
2 A502 STANDING SEAM VENT DETAIL
3" = 1'-0"



5 A502 STAINLESS STEEL GUTTER
1" = 1'-0"



8 A502 STAINLESS STEEL GUTTER DETAIL 2
3" = 1'-0"



9 A502 COPPER STANDING SEAM FLASHING DETAIL AT SIDEWALL
NTS

ROOFING GENERAL NOTES

1. THE INTENT OF THE PROJECT IS TO PROVIDE COMPLETE ROOFING SYSTEMS FOR ALL STRUCTURES (2- SINGLE PLY MEMBRANE ROOFS AT 1-STORY WINGS, 1 STANDING SEAM ROOF AT 2-STORY STRUCTURE). ALL ELEMENTS OF THE ROOFING SYSTEMS ARE TO BE PROVIDED INCLUDING BUT NOT LIMITED TO ALL FLASHINGS, ACCESSORIES AND TERMINATIONS. ALL WORK IS TO BE EXECUTED IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, AND APPLICABLE CONSTRUCTION STANDARDS AND CODES. 3RD PARTY INSPECTIONS PROVIDED BY THE OWNER MAY BE REQUIRED.
2. SPECIAL CARE SHOULD BE TAKEN TO NOT DAMAGE THE EXTERIOR OF THE BUILDING DURING REPAIRS AND NEW WORK. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REPAIRS TO AREAS DAMAGED ON THE BUILDING DURING THE COURSE OF REPAIRS AND NEW WORK. PAINT TO BE TOUCHED UP ON ALL SURFACES AFFECTED BY THE INSTALLATION OF NEW FLASHING.
3. 16 GAUGE STAINLESS STEEL IS DESIGNED AND UTILIZED FOR ALL BUILT-IN GUTTERS AND SCUPPERS. STAINLESS STEEL IS TO BE FULLY WELDED AT ALL SEAMS, CONNECTIONS, AND PENETRATIONS.
4. EXPANSION JOINTS TO BE INSTALLED IN STAINLESS STEEL GUTTER IN ACCORDANCE WITH SMACNA SPECIFICATIONS. SEE DETAIL 4 ON A503.
5. 16 OUNCE COPPER FLASHING IS DESIGNED AND UTILIZED FOR ALL FLASHING AND COUNTER-FLASHING, ETC. COPPER IS TO BE SOLDERED AT ALL SEAMS, CORNERS, AND CONNECTIONS.
6. THE USE OF STAINLESS STEEL AND COPPER IS TO ENSURE THE LONGEVITY AND DURABILITY OF THE MATERIAL IN THE AREAS OF GREATEST CONCERN FOR LEAKS. REFER TO DRAWINGS AND SPECIFICATIONS FOR DETAILS.
7. PVC SINGLE PLY MEMBRANE ROOFING ARE TO BE INSTALLED IN A MANNER CONSISTENT WITH MANUFACTURER'S RECOMMENDATIONS AND AS CALLED OUT IN THE DRAWINGS AND SPECIFICATIONS. ALL SINGLE PLY ROOFING SYSTEMS SHALL BE INSTALLED SO THEY CAN BE MAINTAINED AND REPLACED AS NECESSARY IN THE FUTURE WITHOUT THE NEED FOR ALTERING OR DISASSEMBLING THE STAINLESS STEEL AND COPPER INSTALLATIONS.
8. ALL VENT PIPE COVERS AND VENTILATOR COVERS TO BE REPLACED IN KIND.

GENERAL COPPER NOTES

1. ALL FASTENERS TO BE COPPER OR 300 SERIES STAINLESS STEEL.
2. CLEATS TO BE 16 OZ COPPER- MINIMUM OF 2" WIDE BY 3" LONG WITH MAXIMUM SPACING OF 12" O.C.
3. SECURE CLEATS TO WOOD DECKING WITH TWO COPPER OR 300 SERIES STAINLESS STEEL NAILS OR SCREWS.
4. BUTYL SEALANT TAPE TO BE INSTALLED AT ALL PANEL SEAMS, TYP.

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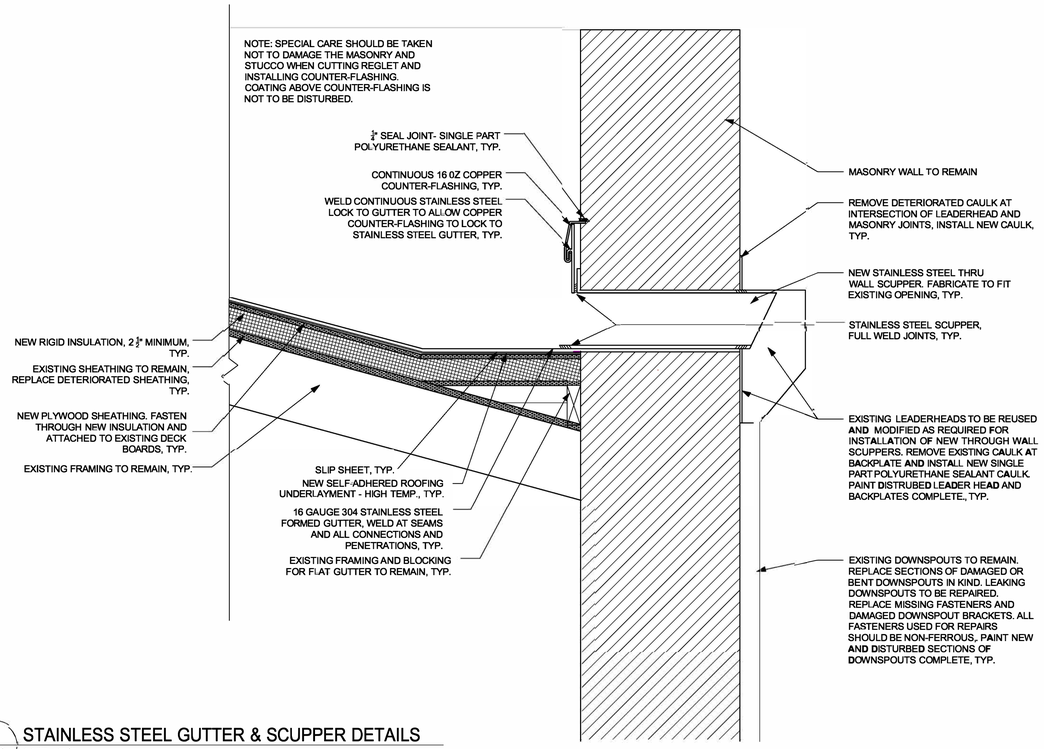
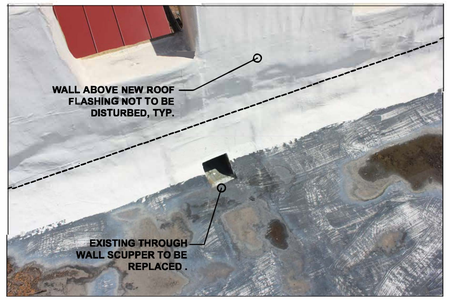
STANDING SEAM ROOF & FLASHING DETAILS

A502



1 / A503 — STAINLESS STEEL GUTTER & SCUPPER DETAILS
1 1/2" = 1'-0"



2 / A503 — MUSEUM ROOF THROUGH WALL SCUPPER

ROOFING GENERAL NOTES

1. THE INTENT OF THE PROJECT IS TO PROVIDE COMPLETE ROOFING SYSTEMS FOR ALL STRUCTURES (2- SINGLE PLY MEMBRANE ROOFS AT 1-STORY WINGS, 1 STANDING SEAM ROOF AT 2-STORY STRUCTURE). ALL ELEMENTS OF THE ROOFING SYSTEMS ARE TO BE PROVIDED INCLUDING BUT NOT LIMITED TO ALL FLASHINGS, ACCESSORIES AND TERMINATIONS. ALL WORK IS TO BE EXECUTED IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, AND APPLICABLE CONSTRUCTION STANDARDS AND CODES. 3RD PARTY INSPECTIONS PROVIDED BY THE OWNER MAY BE REQUIRED.
2. SPECIAL CARE SHOULD BE TAKEN TO NOT DAMAGE THE EXTERIOR OF THE BUILDING DURING REPAIRS AND NEW WORK. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REPAIRS TO AREAS DAMAGED ON THE BUILDING DURING THE COURSE OF REPAIRS AND NEW WORK. PAINT TO BE TOUCHED UP ON ALL SURFACES AFFECTED BY THE INSTALLATION OF NEW FLASHING.
3. 16 GAUGE STAINLESS STEEL IS DESIGNED AND UTILIZED FOR ALL BUILT-IN GUTTERS AND SCUPPERS. STAINLESS STEEL IS TO BE FULLY WELDED AT ALL SEAMS, CONNECTIONS, AND PENETRATIONS.
4. EXPANSION JOINTS TO BE INSTALLED IN STAINLESS STEEL GUTTER IN ACCORDANCE WITH SMACNA SPECIFICATIONS. SEE DETAIL 4 ON A503.
5. 16 OUNCE COPPER FLASHING IS DESIGNED AND UTILIZED FOR ALL FLASHING AND COUNTER-FLASHING, ETC. COPPER IS TO BE SOLDERED AT ALL SEAMS, CORNERS, AND CONNECTIONS.
6. THE USE OF STAINLESS STEEL AND COPPER IS TO ENSURE THE LONGEVITY AND DURABILITY OF THE MATERIAL IN THE AREAS OF GREATEST CONCERN FOR LEAKS. REFER TO DRAWINGS AND SPECIFICATIONS FOR DETAILS.
7. PVC SINGLE PLY MEMBRANE ROOFING ARE TO BE INSTALLED IN A MANNER CONSISTENT WITH MANUFACTURER'S RECOMMENDATIONS AND AS CALLED OUT IN THE DRAWINGS AND SPECIFICATIONS. ALL SINGLE PLY ROOFING SYSTEMS SHALL BE INSTALLED SO THEY CAN BE MAINTAINED AND REPLACED AS NECESSARY IN THE FUTURE WITHOUT THE NEED FOR ALTERING OR DISASSEMBLING THE STAINLESS STEEL AND COPPER INSTALLATIONS.
8. ALL VENT PIPE COVERS AND VENTILATOR COVERS TO BE REPLACED IN KIND.

GENERAL COPPER NOTES

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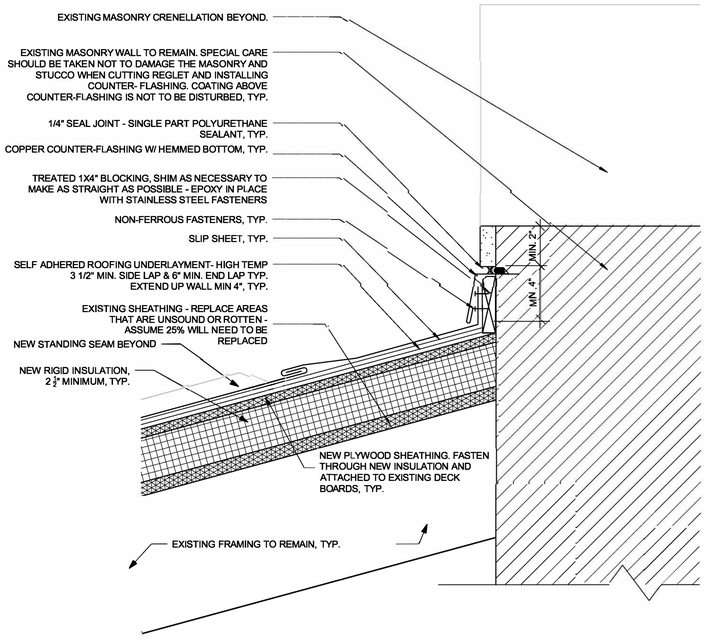
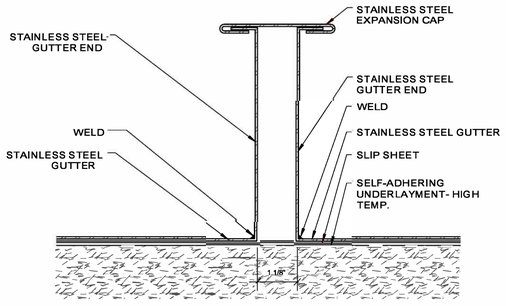
3. SECURE CLEATS TO WOOD DECKING WITH TWO COPPER OR 300 SERIES STAINLESS STEEL NAILS OR SCREWS.
4. BUTYL SEALANT TAPE TO BE INSTALLED AT ALL PANEL SEAMS, TYP.

NOTE: FIELD VERIFY DIMENSIONS FOLLOWING REMOVAL OF EXISTING ROOF. NOTIFY ARCHITECT IF CONDITIONS DO NOT ALLOW FOR INSTALLATION OF COUNTER-FLASHING AS DETAILED.



3 / A503 — COPPER STANDING SEAM - FLASHING TO VERTICAL WALL DETAIL
3" = 1'-0"



4 / A503 — TYPICAL STAINLESS STEEL GUTTER EXPANSION JOINT
6" = 1'-0"

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STANDING SEAM ROOF & FLASHING DETAILS

A503