

PROJECT MANUAL

**WYTHE COUNTY COURTHOUSE
RENOVATION**

**345 SOUTH FOURTH STREET
WYTHEVILLE, VA 24382**

May 16, 2023

Architect's Project No. 2023004.1

**Bid/Construction
Documents**



Blacksburg
1116 South Main Street
Blacksburg, Virginia 24060
540•552•2151

Charleston
222 Lee Street West
Charleston, West Virginia
25302
304•342•0159
www.zmm.com

Martinsburg
5550 Winchester Avenue Berkeley
Business Park, Suite 5
Martinsburg, West Virginia 25405
304•342•0159

MAY 16, 2023

PROJECT MANUAL

WYTHE COUNTY COURTHOUSE
RENOVATION

345 SOUTH FOURTH STREET
WYTHEVILLE, VIRGINIA 24382



ZMM
ARCHITECTS ENGINEERS
1116 SOUTH MAIN STREET
BLACKSBURG, VIRGINIA 24060

COMMISSION NO. 2023004.1

WYTHE COUNTY COURTHOUSE
RENOVATION
345 SOUTH FOURTH STREET
WYTHEVILLE, VIRGINIA 24382

00001 - COVER SHEET
00002 - TITLE SHEET
00003 - TABLE OF CONTENTS

BIDDING REQUIREMENTS, CONTRACT FORMS, AND CONDITIONS OF THE CONTRACT

00004 - DRAWING INDEX
00020 - INVITATION TO BID
00100 - INSTRUCTIONS TO BIDDERS
00300 - FORM OF PROPOSAL
 SCC REGISTRATION REQUIREMENTS
00500 - STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR (A101, AIA)
00610 - PERFORMANCE BOND (A312, AIA)
00620 - PAYMENT BOND (A312, AIA)
00630 - BID BOND (A310, AIA)
00650 - CERTIFICATE OF INSURANCE (G715, AIA)
00700 - GENERAL CONDITIONS (A201, AIA)
00800 - SUPPLEMENTAL GENERAL CONDITIONS
00900 - ADDENDA

SPECIFICATIONS

DIVISION 01 - GENERAL REQUIREMENTS

011000 - SUMMARY OF THE WORK
012100 - ALLOWANCES
012500 - SUBSTITUTION PROCEDURES
 SUBSTITUTION REQUEST (AFTER BID)
012600 - CONTRACT MODIFICATION PROCEDURES
 CCD FORM
 RFI FORM
012900 - PAYMENT PROCEDURES
013100 - COORDINATION
013200 - CONSTRUCTION PROGRESS DOCUMENTATION
013233 - PHOTOGRAPHIC DOCUMENTATION
013300 - SUBMITTAL PROCEDURES
 SUBMITTAL COVER SHEET
014000 - QUALITY REQUIREMENTS
 DEFICIENCY LOG
 FIELD REPORT LOG
015000 - TEMPORARY FACILITIES AND CONTROLS
016600 - PRODUCT REQUIREMENTS
017300 - EXECUTION
017700 - CLOSEOUT PROCEDURES
 PUNCH LIST

GUARANTEE REPORT FORM
EXTRA MATERIALS LIST

017800 - WARRANTIES

017900 - DEMONSTRATION AND TRAINING

DIVISION 02 - EXISTING CONDITIONS

024119 - SELECTIVE DEMOLITION

DIVISION 03 - CONCRETE

NOT USED

DIVISION 04 - MASONRY

NOT USED

DIVISION 05 - METALS

NOT USED

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

NOT USED

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

079200 – JOINT SEALANTS

DIVISION 08 - OPENINGS

081100 – STEEL DOORS AND FRAMES

082110 – FLUSH WOOD DOORS

087100 – DOOR HARDWARE

088000 – GLAZING

DIVISION 09 - FINISHES

092216 – NON-STRUCTURAL METAL FRAMING

092900 – GYPSUM BOARD

095113 – ACOUSTICAL PANEL CEILINGS

096513 – RESILIENT BASE AND ACCESSORIES

096519 – RESILIENT TILE FLOORING

099123 – INTERIOR PAINTING

DIVISION 10 - SPECIALTIES

101423 – INTERIOR SIGNS

102600 – WALL AND DOOR PROTECTION

DIVISION 11 - EQUIPMENT

NOT USED

DIVISION 12 - FURNISHINGS

NOT USED

DIVISION 13 - SPECIAL CONSTRUCTION

NOT USED

DIVISION 14 - CONVEYING EQUIPMENT

NOT USED

DIVISION 22 – PLUMBING

NOT USED

DIVISION 23 - HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

230593 - TESTING, ADJUSTING AND BALANCING FOR HVAC

230713 - DUCT INSULATION

233113 - METAL DUCTS

233713.13 - AIR DIFFUSERS

DIVISION 25 - INTEGRATED AUTOMATION AND HVAC CONTROL

NOT USED

DIVISION 26 - ELECTRICAL

NOT USED

DIVISION 27 - COMMUNICATIONS

NOT USED

DIVISION 31 - EARTHWORK

NOT USED

DIVISION 32 - EXTERIOR IMPROVEMENTS

NOT USED

DIVISION 33 - UTILITIES

NOT USED

DRAWING INDEX - 00004

WYTHE COUNTY COURTHOUSE
RENOVATION
345 SOUTH FOURTH STREET
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<u>SHEET NO.</u>	<u>TITLE</u>
G001	TITLE SHEET

ZMM
ARCHITECTS ENGINEERS
1116 South Main Street
Blacksburg, Virginia 24060
(540) 552-2151

WYTHE COUNTY COURTHOUSE
RENOVATION
345 SOUTH FOURTH STREET
WYTHEVILLE, VIRGINIA 24382

1. You are invited to bid on a general contract for Wythe County, Virginia consisting of a Renovation to the Wythe County Courthouse located at 345 South Fourth Street, Wytheville, VA 24382. All bids shall be on a lump sum basis.

2. A **mandatory** pre-bid conference will be held on June 15, 2023 beginning at 10:00 A.M. in the Board Room of the Wythe County Administration Offices, 340 South Sixth Street, Wytheville, VA 24382. The pre-bid conference will provide an opportunity to answer questions and explain any items requiring further clarification.

3. Drawings and specifications may be examined at the Office of the Architect/Engineer and at the following locations:

Valley Construction News
426 Campbell Avenue SW
Roanoke, VA 24016

Jeanette Giordano
The Blue Book Bldg. & Construction Network
800 E. Main Street
Jefferson Valley, NY 10535

Builders Exchange of Tennessee
300 Clark Street
Knoxville, TN 37921

DODGE Data & Analytics
3315 Central Avenue
Hot Springs, AR 71913

ConstructConnect
30 Technology Parkway South
Suite 100
Norcross, GA 30092-2912

Construction Journal
400 SW 7th Street
Stuart, FL 34994

4. Plans and specifications can be obtained via download from ShareFile **at no cost**. Contact ggoetz@zmm.com for ShareFile access. Upon receipt of valid email address, ZMM will provide a password with instructions on accessing and downloading plans and specifications. Hard copies of plans and specifications can be obtained from ZMM upon receipt of a nonrefundable check in the amount of \$100.00. Plans and specifications can be shipped for additional charge. Contact ZMM for further details.

5. All bids must be accompanied by a Bid Bond, executed by the Bidder and an acceptable Surety, in an amount equal to 5% of the bid, made payable to Wythe County, Virginia. A performance bond, payment bond and a material and labor bond will be required and the cost shall be included in the bid price.

6. Bidders are required under Title 54.1, Chapter 11, Code of Virginia (1950), as amended, to be licensed as a "Class A Contractor" before submitting a bid of one hundred twenty thousand (\$120,000) dollars or more; or to be licensed as a "Class B Contractor" before submitting a bid of ten thousand (\$10,000) dollars or more but less than one hundred twenty thousand (\$120,000) dollars; or be licensed as a "Class C Contractor" before submitting a bid of no more than ten thousand dollars (\$10,000). Each Bidder will be required to give their State Registration Number on their proposal. All non-resident contractors and subcontractors bidding the work described herein shall register with the Department of Labor and Industry under the provisions of Section 40.1-30 of the Code of Virginia.

7. Bids shall be received until 2:00 P.M. local prevailing time on Thursday, June 29, 2023, to the attention of Johnny D. Kincer, PE CEM, Wythe County Engineer, 340 South Sixth Street, Wytheville, VA 24382, at which time bids will be opened publicly and read aloud. Bids received after this time will not be accepted. All interested parties are invited to attend.

8. Bids shall be binding for a period of sixty (60) days from the date on which bids are opened.

Wythe County, Virginia
Johnny D. Kincer, PE CEM
Wythe County Engineer

WYTHE COUNTY COURTHOUSE
RENOVATION
345 SOUTH FOURTH STREET
WYTHEVILLE, VIRGINIA 24382

ZMM
ARCHITECTS ENGINEERS
1116 South Main Street
Blacksburg, Virginia 24060

To be considered, bids must be made in accordance with these Instructions to Bidders.

A. Documents

1. Plans and specifications can be obtained via download from ShareFile **at no cost**. Contact bmckinney@zmm.com for ShareFile access. Upon receipt of valid email address, ZMM will provide a password with instructions on accessing and downloading plans and specifications. Hard copies of plans and specifications can be obtained from ZMM upon receipt of a nonrefundable check in the amount of \$100.00. Plans and specifications can be shipped for additional charge.

2. No partial sets will be issued.

B. Obligation of Bidder

1. By submitting a bid, the bidder covenants and agrees that they are satisfied from their own investigation of the conditions to be met, that they fully understand their obligation and that they will not make any claim for, or have right to cancellation or relief from the contract because of any misunderstanding or lack of information.

C. Questions

1. Submit all questions and comments about the drawings and specifications to the Architect/Engineer in writing to 1116 South Main Street, Blacksburg, VA 24060 or via e-mail to bmckinney@zmm.com. Replies will be issued as addenda to the drawings and specifications and will become part of the contract. Addenda will be posted on the ZMM **ShareFile** website. Planholders who have obtained authorization to download drawings and specifications from the ZMM **ShareFile** website will also have access to the "Addenda" folder where all addenda will be posted. Immediately report any technical problems with the ZMM **ShareFile** website by calling the office of ZMM at (540) 552-2151. The ZMM **ShareFile** website will send notifications to the authorized Contractors when addenda are posted on the website. Planholders shall submit a valid email address to the office of ZMM when requesting plans and specifications. This email address shall have open security settings to allow receipt of addenda notifications generated from the ZMM **ShareFile** website (example: mail@sf-notifications.com). It is the Planholder's responsibility to visit the ZMM **ShareFile** website and download the addenda. ZMM shall not be held responsible for email notifications not received by Planholders. Addenda posted on the ZMM **ShareFile** website may be accessed by any party, at any time. New addenda may be posted, and new addendum notification emails sent to Planholders up to 24 hours prior to bid opening.

D. Substitutions

1. Approvals and/or Submittals Prior to Bidding: The Bid Documents shall not require samples, shop drawings, or similar materials to be submitted for approval prior to receipt of bids. Bids shall be based upon the materials and equipment as indicated in the Contract Documents. No substitutions will be approved prior to bidding.

2. Approvals of Submittals: The specifications contain sufficient information to describe to the Contractor and bidders the performance and quality standards that will be used to evaluate the submittals.

3. Brand Names: Brand names may be utilized in the contract documents.

4. Equal Materials, Equipment or Assemblies: **Unless otherwise stated in the specifications**, other brand, make or manufacturer of a product, assembly or equipment which in the opinion of the Architect/Engineer is the equal of that specified, considering quality, capabilities, workmanship, configuration, economy of operation, useful life, compatibility with design of the work, and suitability for the intended purpose, may be accepted. The Contractor may submit to the Architect/Engineer a request for substitution during the shop drawing submittal phase. All such requests shall be submitted in writing and shall be accompanied by a Substitute Request Cover Sheet, itemized list of deviations from specified product, complete manufacturer's literature, specifications, and cutsheets covering the proposed substitute materials and the manufacturer's recommendations for installation. It shall be understood that the burden of proof for a substitute or an "or equal" material shall be on the Contractor.

E. Basis of Bid

1. The bidder must include the base bid, all alternate bid items, all unit prices, and all other items shown on the bid forms; failure to comply may be cause for rejection.

F. Preparation of Bids

1. Bids shall be made on unaltered bid forms as furnished in Section 00300 - FORM OF PROPOSAL. Fill in all blank spaces. Bids shall be signed with name typed below signature. Where bidder is a corporation, bids must be signed with the legal name of the corporation, followed by the name of the state of incorporation and the legal signature of an officer authorized to bind the corporation to a contract.

2. No bids shall be withdrawn for a period of sixty (60) days after the scheduled bid opening time.

G. Bid Security

1. Bid security shall be made payable to Wythe County, Virginia in the amount of 5% of the total bid sum. Security shall be a bid bond issued by a surety licensed to conduct business in the State of Virginia. The successful bidder's security will be retained until he has signed the contract and furnished the required performance and payment bonds. The owner reserves the right to retain the security of the next two lowest bidders until the lowest bidder enters into contract or until sixty (60) days after the bid opening, whichever is shorter. All other bid securities will be returned as soon as practicable. If any bidder refuses to enter in a contract, the Owner will retain his bid security as liquidated damages, but not as a penalty. The amount of bid security retained shall be the difference between the bid for which the bond was written and the next low bid in accordance with Title 2.2, Chapter 43, Part 36 of the Virginia Code.

H. Performance, Payment and Material and Labor Bonds

1. The successful bidder, if awarded the contract, shall provide a proper performance and payment bond, covering up to the full amount of the contract price as security for the faithful performance of all work under the contract and payment of all charges in connection therewith. Cost of said bond to be included in base bid. The failure of the bidder to whom the award is made to execute the agreement and supply the

required bonds within ten (10) business days after award of contract or within such extended period as the Owner may grant, shall constitute a default and the Owner may award the next lowest bidder in succession and charge against the defaulting bidder the difference up to the total amount of the bidder's bid security.

I. Subcontractors

1. Names of the principal subcontractors must be listed as called for in the Form of Proposal. No change in this list may be made after the bid unless approved by the Architect/Engineer. Subcontractors and material suppliers, other than those listed in the Form of Proposal, shall be submitted to the Architect/Engineer for approval within 10 days after execution of the contract.

J. Submittal

1. Submit bid in a sealed opaque envelope. Identify the envelope with: A) Project Name; B) Name of Bidder; C) Registered Virginia Contractor Number; D) Bid Date. If bids are forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in the Form of Proposal with the notation "BID ENCLOSED" on the face thereof.

K. Modification and Withdrawals

1. Modification of bids already submitted will be considered if delivered prior to the time fixed for opening of bids. Written modifications may be delivered by mail or by the bidder personally or his properly identified representative or messenger. Telephonic and FAX modifications will not be considered. Modifications shall not reveal the original or revised bid. Delivery of modifications shall be the responsibility of the bidder.

L. Negotiation with Lowest Responsive and Responsible Bidder

1. The Public Body may negotiate with the apparent low bidder in accordance with Title 2.2, Chapter 43, Part 18 of the Virginia Public Procurement Act.

M. Withdrawal of Bid Due to Error

1. A bidder may withdraw his bid from consideration in accordance with Virginia Code Title 2.2, Chapter 43, Part 30 of the Virginia Public Procurement Act.

N. State Sales Tax

1. Bidders should be aware of the sales tax as applicable to the State of Virginia.

O. Opening

1. Bids will be opened as called for in the Invitation to Bid.

P. Award

1. The contract will be awarded to the lowest responsible bidder complying with the conditions of the Form of Proposal. The lowest bid does not refer to the lowest base bid, but the lowest total bid comprising the base bid plus or minus any/or all alternate bid items accepted, and not necessarily in the order in which they appear in the Form of Proposal.

Q. Execution of Contract

1. The Owner reserves the right to accept any bid and to reject any and all bids, and to waive any irregularities or informality in bids received whenever such waiver or rejection is in his own best interest.

2. Each bidder shall be prepared, upon written notice of bid acceptance, to commence work within fifteen (15) days following receipt of official written order from the Owner to proceed, or on date stipulated in such order.

3. The accepted bidder shall assist and cooperate with the Owner in preparing the Formal Contract Agreement between Owner and Contractor, Stipulated Sum, A.I.A. Document A101, 2017 Edition, and within fifteen (15) days following its presentation shall execute same and return it to the Architect/Engineer for distribution to Owner.

R. State of Virginia Requirements

The Code of Virginia, Title 2.2, Chapter 43, Part 11 requires each contract for more than \$10,000 to include provisions 1 and 2 below:

1. During the performance of this contract, the Contractor agrees as follows:
 - a. The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin, except where religion, sex or national origin is a bona fide occupational qualification reasonably necessary to the normal operation of the Contractor. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of the nondiscrimination clause.
 - b. The Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, will state that such Contractor is an equal opportunity employer.
 - c. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.

2. The Contractor will include the provisions of the foregoing paragraphs a, b, and c in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor. (1982, C. 647.)

SCC Registration

The SCC Registration requirement (attached to Form of Proposal) shall apply to this project.

S. Federal Requirements

1. No contractor or subcontractor shall, during the performance of this contract, knowingly employ an unauthorized alien, as defined by the Federal Immigration Reform and Control Act of 1986.

WYTHE COUNTY COURTHOUSE
RENOVATION
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WYTHEVILLE, VIRGINIA 24382

Johnny D. Kincer, PE CEM
Wythe County Engineer
Wythe County Administration Offices – Board Room
340 South Sixth Street
Wytheville, VA 24382

Pursuant to and in accordance with your "Invitation to Bid" and "Instructions to Bidders" relating thereto, the undersigned agrees to furnish all labor and materials and to perform all work necessary for construction of **Wythe County Courthouse Renovation**, Wytheville, Virginia, in accordance with the contract documents (drawings, specifications and addenda) as prepared by ZMM ARCHITECTS ENGINEERS, dated March 9, 2023, for the lump sum price of:

BASE BID:

_____ Dollars (\$ _____).

ADDITIVE BID ITEMS:

Additive Bid Item #1: Replace existing detention toilet/lavatory combo fixtures. See new work note 24, sheet A102

_____ Dollars (\$ _____).

UNIT PRICES

The bidder shall submit unit prices in the following schedule for all items listed below.

The following unit prices shall be used in determining additions to or deductions from the contracts when authorized changes in the work are directed. They shall apply when such changes involve materials, specifications, methods, and designs the same as those required in similar work and/or specified. Unit prices shall include the furnishing of all labor and materials, complete in place, and overhead and profit, unless otherwise noted. Unit prices provided shall apply to any project bid, unless otherwise specified.

	<u>Addition/Deduction (Same Value)</u>
A. New Vinyl Composition Tile	\$_____ per sq. ft.
B. New Vinyl Base	\$_____ per lin. ft.

- C. New SATC (Type A) \$_____ per sq. ft.
- D. Miscellaneous Fabricated Steel \$_____ per pound
- E. Reinforcing Steel \$_____ per pound

In submitting this bid, I agree:

1. To hold my bid valid for a period of sixty (60) days.
2. To accept the provisions of the Instructions to Bidders regarding disposition of bid security.
3. To enter into and execute a contract, if awarded on the basis of this bid, and to furnish performance bond and payment bond in accordance with Article 11.1.2 of AIA A201- General Conditions of the Contract for Construction.
4. To accomplish the work in accordance with the contract documents.
5. That I have examined the contract documents and the site.
6. To complete the entire work within 150 consecutive calendar days from date of Notice to Proceed.

The names of all subcontractors as listed below are required to be submitted to the Architect/Engineer's office within two business days after the bids are due.

Subcontractors for the following work shall be as listed (**Note:** List only **one** for each category):

Masonry: _____

Plumbing: _____

HVAC: _____

Electrical: _____

Addenda can be retrieved via ShareFile.

I acknowledge access to the following addenda:

Number _____ Dated _____

The successful vendor certifies that the vendor, all principals and subrecipients, are not suspended or debarred from providing the services described in this contract. Further, Wythe County, Virginia reserves the right to review the List of Parties Excluded From Federal Procurement or Nonprocurement Programs to determine that the successful vendor, including all principals and subrecipients, has not been suspended or debarred from providing the services described in this contract.

CRIMINAL BACKGROUND CERTIFICATION

The Contractor shall provide certification that he or she has not been convicted of a felony or any offense involving the sexual molestation or physical or sexual abuse or rape of a child and whether he or she has been convicted of a crime of moral turpitude. To protect the safety of employees, Contractor certifies to Wythe County, VA that none of Contractor=s employees, whether new or current, full-time or part-time, permanent or temporary, who will be present on the Site or other property and may have any contact with employees, (i) have been convicted of a felony, any offense involving sexual molestation, physical or sexual abuse or rape of a child, or a felony involving lying, cheating or stealing; or (ii) have been the subject of a founded case of child abuse or neglect.

Contractor shall conduct an investigation of the criminal history, sex offender status and agency determinations of child abuse of each employee who will be present on the Site or other property and may have contact with Wythe County employees. Contractor shall conduct all such investigations with the written consent of affected employees and in compliance with all applicable laws. Contractor certifies that it has conducted such an investigation for all current employees who will be involved in the work to be performed pursuant to this Agreement, and will conduct such an investigation for any future employees who will be involved in the Work to be performed pursuant to this Agreement. Contractor shall keep records of all investigations and shall make such records available to Wythe County, VA upon request.

If any employee of Contractor who will be present on the Site or other property and may have contact with employees is arrested for, charged with, or convicted of any such offense, or becomes the subject of a child abuse investigation, Contractor shall notify the Superintendent of the arrest, charge, conviction or investigation within forty-eight (48) hours after Contractor is made aware of the arrest, charge, conviction or investigation. Wythe County, VA reserves the right to exclude such employee from positions that may involve contact between such employee and Wythe County employees, or to exclude such individual from the property entirely.

Contractor shall include the provisions regarding criminal background certifications in all contracts with its subcontractors who will provide goods or services for Wythe County, if any, so that such provisions are binding on all such subcontractors of Contractor.

Failure by Contractor or one of its subcontractors to conduct investigations or to make the certifications required by this provision may constitute a breach of this Agreement and grounds for termination or rescission of the Agreement. (Code of Virginia ' 22.1-296.1)

The following (attached) must be completed and attached as a part of this Form of Proposal:

SCC REGISTRATION REQUIREMENTS

Registered as a contractor under Title 54.1, Chapter 11, Code of Virginia

State Registration Number _____

Name of Firm

Address

Address

Legal Name of Corporation

State of Incorporation

By _____ (Officer Authorized Signature)

By _____ (Printed Name)

Title _____

Date _____

Phone _____

Email _____

Federal Tax ID # _____

WYTHE COUNTY, VIRGINIA

340 South Sixth Street
Wytheville, VA 24382
Telephone: (276) 223-4500

Compliance with Virginia Law for Transacting Business in Virginia.

The undersigned hereby agrees, if this Bid/Proposal is accepted by Wythe County, VA, for such services and/or items that the undersigned has met the requirements of the Virginia Code Section 2.2-4311.2

Please complete the following by checking the appropriate line that applies and providing the requested information:

- A. Bidder/offeror is a Virginia business entity organized and authorized to transact business in Virginia by the SCC and such bidder's/offeror's Identification Number issued to it by the SCC is _____. (The SCC number is **NOT** your federal ID number).
- B. Bidder/offeror is an out-of-state (foreign) business entity that is authorized to transact business in Virginia by the SCC and such bidder's/offeror's Identification Number issued to it by the SCC is _____.
- C. Bidder/offeror does not have an Identification Number issued to it by the SCC and such bidder/offeror is not required to be authorized to transact business in Virginia by the SCC for the following reason(s):

Please attach additional sheets of paper if you need to explain why such bidder/offeror is not required to be authorized to transact business in Virginia.

Legal Name of Company (as listed on W-9)

Legal Name of Bidder

Date

Authorized Signature

Print or Type Name and Title

VIRGINIA STATE CORPORATION COMMISSION (SCC)
INFORMATION REQUIRED

The attention of each Bidder is directed to Virginia Code Section 2.2-4311.2 (effective July 1, 2010) which requires a bidder or offeror organized or authorized to transact business in the Commonwealth of Virginia pursuant to Title 13.1 or Title 50 of the Code of Virginia, as amended, or as otherwise required by law, shall include in its bid or proposal the Identification Number issued to such bidder or offeror by the Virginia State Corporation Commission (SCC).

Furthermore, any bidder or offeror that is not required to be authorized to transact business in the Commonwealth of Virginia as a domestic or foreign business entity under Title 13.1 or Title 50 or as otherwise required by law shall include in its bid or proposal a statement describing why the bidder or offeror is not required to be so authorized.

For more information and answers to your questions please contact the Virginia State Corporation Commission (SCC). Website: <http://www.scc.virginia.gov/index.aspx>

SCC General Information

804-371-9967

Frequently Asked Questions: <http://www.scc.virginia.gov/clk/befaq/forinva.aspx#a1>

Email: sccinfo@scc.virginia.gov

Contact Information: <http://www.scc.virginia.gov/contact.aspx>

WYTHE COUNTY COURTHOUSE
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WYTHEVILLE, VIRGINIA 24382

A. General

1. The "Standard Form of Agreement Between Owner and Contractor", A.I.A. Form A101, 2017 Edition, of the American Institute of Architects, is a part of this Project Manual to the same extent as if bound herein. Copies of this document may be inspected at or received from the office of the Architect/Engineer upon request.

WYTHE COUNTY COURTHOUSE
RENOVATION
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WYTHEVILLE, VIRGINIA 24382

A. General

1. The "Performance Bond", A.I.A. Form A312, 2010 Edition, of the American Institute of Architects, is a part of this Project Manual to the same extent as if bound herein. Copies of this document may be inspected at or received from the office of the Architect/Engineer upon request.

WYTHE COUNTY COURTHOUSE
RENOVATION
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WYTHEVILLE, VIRGINIA 24382

A. General

1. The "Payment Bond", A.I.A. Form A312, 2010 Edition, of the American Institute of Architects, is a part of these specifications to the same extent as if bound herein. Copies of this document may be inspected at or received from the office of the Architect/Engineer upon request.

WYTHE COUNTY COURTHOUSE
RENOVATION
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A. General

1. The "Bid Bond", A.I.A. Form A310, 2010 Edition, of the American Institute of Architects, is a part of this Project Manual to the same extent as if bound herein. Copies of this document may be inspected at or received from the office of the Architect/Engineer upon request.

WYTHE COUNTY COURTHOUSE
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WYTHEVILLE, VIRGINIA 24382

A. General

1. The "Supplemental Attachment for Accord Certificate of Insurance", A.I.A. Form G715, 2017 Edition, of the American Institute of Architects, is a part of this Project Manual to the same extent as if bound herein. Copies of this document may be inspected at or received from the office of the Architect/Engineer upon request.

WYTHE COUNTY COURTHOUSE
RENOVATION
345 SOUTH FOURTH STREET
WYTHEVILLE, VIRGINIA 24382

A. General

1. The "General Conditions of the Contract for Construction", A.I.A. Form A201, 2017 Edition, of the American Institute of Architects, is a part of these specifications to the same extent as if bound herein. Copies of this document may be inspected at or received from the office of the Architect/Engineer upon request.

WYTHE COUNTY COURTHOUSE
RENOVATION
345 SOUTH FOURTH STREET
WYTHEVILLE, VIRGINIA 24382

01. General Conditions:

The "General Conditions of the Contract for Construction", A.I.A. Document A201-2017, Articles 1-15, inclusive, are a part of the contract and are incorporated herein.

02. Supplements:

The following supplements modify, change, delete, or add to the General Conditions. Where any part of the General Conditions are modified or voided by these articles, the unaltered provisions of that part shall remain in effect.

ARTICLE 1 - GENERAL PROVISIONS

- 1.5.2 Change "pursuant to Sections 1.7 and 1.8" to read "pursuant to Section 1.7"
- 1.7 Delete 2nd sentence.
- 1.7.1 New Subparagraph: "Use of ZMM ARCHITECTS ENGINEERS Document Management System Required:
- .1 The Contractor shall use the internet-based document management system prescribed by ZMM. Currently, this system is ShareFile, and it's use and access by the Contractor is free of charge. At it's sole discretion, ZMM may change document management systems prior to final ratification of the Contract for Construction. Any document management software will be free of charge for the Contractor to access and use. The Contractor may also grant access to the document management system, free of charge, to their subcontractors, suppliers, etc.
 - .2 The Contractor shall utilize the document management system for the following tasks throughout the project:
 - .a All submittals to ZMM. This includes, but may not be limited to shop drawings, schedules, field reports, cost proposals, formal project correspondence, RFI's, CCD's, etc.
 - .3 ZMM will provide a user guide with specific requirements and instructions. The Contractor may request a copy of this document from ZMM prior to bid."
- 1.8 Delete in its entirety.

ARTICLE 2 - OWNER

- 2.3.6 Delete in its entirety and substitute the following:

"Drawings, specifications, and addenda will be provided to the Contractor in digital format via ShareFile. The Contractor will be responsible for printing his/her own drawings, specifications, and addenda for execution of the work."

ARTICLE 3 - CONTRACTOR

- 3.2.5 New Subparagraph: "Should conflict occur in Contract Documents and the Bidder does not ask for and obtain a written decision, before submission of bid, as to which method or material will be required, then it shall be deemed that the Bidder has based his bid on the more expensive way of performing the work."
- 3.7.4 Delete in its entirety.
- 3.8.2 Item .2 change to read - "Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the allowances; and"
- 3.9 **Superintendent**
- 3.9.4 New Subparagraph: "The Contractor's superintendent shall give special attention to all phases of work nearing completion, and shall remain on the job site, in active control of work, until all phases of the work have been completed, tested, cleared, and accepted by the Owner or his representative. The superintendent shall not be a foreman and shall not perform or supervise any manual labor. The superintendent shall have 10 years experience as a superintendent."
- 3.9.5 New Subparagraph: "Should the superintendent at any time, in the opinion of the Architect/Engineer or Owner, fail to perform his duties satisfactorily, he shall be removed from the project upon request of the Architect/Engineer and a suitable replacement employed. The replacement shall be approved by the Owner and the Architect/Engineer."
- 3.9.6 New Subparagraph: "The Contractor shall have on-site, for the duration of his work, a competent superintendent capable of the following:
- .1 Supervising the tradesmen and any subcontractors.
 - .2 Reading and interpreting the Contract Documents.
 - .3 Orderly coordination of his work with the Architect/Engineer in the daily execution of The Work.
 - .4 Laying out his work.
 - .5 Representing the Contractor with the Owner and Architect/Engineer in the daily execution of The Work.
 - .6 Controlling and establishing good quality in the completed work.
 - .7 A resumé on the Contractor's proposed superintendent must be submitted to and approved by the Owner and the Architect/Engineer prior to assignment to the project.
 - .8 After acceptance of the Contractor's superintendent, he may not be transferred from this project without written permission from the Architect/Engineer."
- 3.9.7 New Subparagraph: "The Superintendent employed by the Contractor shall have a minimum of ten (10) years successful commercial experience as the primary Superintendent on projects of similar size and complexity as the Work. The Contractor shall submit to the Architect a resume and other supporting documentation showing that the proposed Superintendent is competent and has the minimum work experience required to execute the Work. The Owner reserves the right to request additional supporting documentation regarding the proposed Superintendent's qualifications and to require the Contractor to propose an alternate Superintendent who better meets the requirements contained in this Article, as may reasonably

be determined by the Owner. The Contractor shall notify the Architect and Owner in writing of any proposed replacement of the Superintendent. The Contractor shall not replace a competent Superintendent without prior or written approval from the Owner. The requirements contained in this Article shall apply to any proposed replacement Superintendent, regardless if the proposed tenure is to be temporary or permanent."

3.9.8 New Subparagraph: "The Contractor shall employ a Project Manager to be assigned to the Work. The Project Manager employed by the Contractor shall have a minimum of ten (10) years successful commercial experience as Project Manager on projects of similar size and complexity as the Work. The Contractor shall submit to the Architect a resume and other supporting documentation showing that the proposed Project Manager is competent and has the minimum work experience required to execute the Work. The Owner reserves the right to request additional supporting documentation regarding the proposed Project Manager's qualifications and to require the Contractor to propose an alternate Project Manager who better meets the requirements contained in this Article, as may reasonably be determined by the Owner. The Contractor shall notify the Architect and Owner in writing, of any proposed replacement of the Project Manager. The Contractor shall not replace a competent Project Manager without prior written approval from the Owner. The requirements contained in this Article shall apply to any proposed replacement Project Manager, regardless if the proposed tenure is to be temporary or permanent. The Project Manager shall not act as the Superintendent or replacement for the Superintendent without written approval from the Owner."

3.10 **Contractor's Construction and Submittal Schedules**

3.10.4 New Subparagraph: "Within fifteen (15) business days of award of the contract, the Contractor shall submit a Construction Schedule to the Architect and Owner for review. The Architect and Owner shall review the schedule and offer any comments they have in writing within ten (10) business days. Such review and comments shall be for informational purposes only and shall not constitute endorsement of any errors or omissions that may appear in the schedule, nor shall it constitute a review of the Contractor's means and methods.

The Construction Schedule shall be a comprehensive, fully developed, horizontal Gantt chart type. The schedule shall begin at the Notice to Proceed date and end no later than the contractual date of completion. Contract date shall not be changed by submission of a schedule that shows an early completion date.

- .1 Activities: At a minimum, the schedule shall show the following:
 - .a Activity Duration: Define activities (tasks) so no activity duration is longer than twenty (20) days.
 - .b Procurement Activities: Include procurement activities as separate activities in the schedule. Procurement activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - .c Submittal Review Time: Include review and at least one resubmittal into the schedule for each submittal listed on the Submittal Log in the specifications. Review periods shall be the maximum time allowed by the specifications. There shall be no time extensions granted for submittals that require more than one resubmittal.
 - .d Startup, Balancing, Testing and Commissioning Activities: Indicate all activities associated with systems and equipment Startup, Balancing, Testing and Commissioning, including training of Owner's personnel. Each system and piece of equipment subject to these activities shall be represented as a separate activity in the schedule.

- .e Punch Lists, including Above Ceiling Inspections: Indicate punch lists as milestones in the schedule. Include separate activities for completing punch list work within time limits prescribed by the Contract Documents.
- .f Substantial Completion: Indicate completion in advance of date established for Substantial Completion, allowing time for Architect's administrative procedures necessary for certification of Substantial Completion.
- .g Final Completion: Indicate time for punch list work, submittals and administrative procedures between Substantial Completion and Final Completion.
- .2 Constraints: Include constraints and work restrictions indicated in the Contract Documents, including the prescribed Monday-Thursday work week and Friday make-up day.
- .3 Critical Path: Indicate the critical path tasks throughout the project. Alert the Owner and Architect if the critical path changes and why it changed.
- .4 Float: Indicate float for each activity. The project owns the float and it may be used by either the Contractor, the Owner, or the Architect without affecting the critical path, and without penalty.
- .5 Percent Complete: Indicate percent complete for all activities."

3.10.5 New Subparagraph: "For purposes of calculating the additional days due to inclement weather, the normal work week for this project will be Monday through Thursday, 10 hours per day. Starting and quitting times will be established at the first jobsite meeting. Friday will be used as a makeup day for any time lost during the week due to inclement weather or other progress delays. Any Contractor working extended additional hours in a particular week due to his work being behind will be responsible for any overtime costs incurred by the Owner and the Clerk-of-the-Works, who may be required to work these extended hours to support his work. Delays due to a single weather day experienced Monday through Thursday will not be allowed if Friday is utilized or could have been utilized as a makeup day."

3.11 Documents and Samples at the Site

Delete "upon completion of the Work" and insert "prior to final payment".

3.12 Shop Drawings, Product Data and Samples

3.12.11 New Subparagraph: "Shop drawings and samples shall be dated and shall contain: name of project, description or names of equipment, materials and items, and complete identification of locations at which materials or equipment are to be installed. Cut sheets of materials showing items to be used shall be submitted."

3.12.12 "Unless otherwise specified, electronic shop drawing submittals are preferred, but if hard copies are submitted, the number of shop drawings, product data, and the number of samples which the Contractor shall submit and, if necessary, resubmit, is the number that the Contractor requires to be retained, plus **one** which will be retained by the Architect/Engineer, plus **two** that will be retained by the Owner."

3.15 Cleaning Up

3.15.3 New Subparagraph: "Clean all areas affected by the work to the satisfaction of the Owner. Remove broken or scratched glass and replace with new glass. Remove paint droppings, spots, and dirt from finished surfaces. Clean plumbing fixtures, hardware, floors, electrical switches and switchplates, and equipment. Contractor shall keep interior of the building free of stored

or unattended combustible materials. All glass shall be cleaned 5 days before acceptance by the Owner."

ARTICLE 4 - ARCHITECT

4.2.2 Add the following sentence:

"The Contractor shall reimburse the Owner for compensation paid to the Architect for additional site visits made necessary by the fault, neglect or request of the Contractor."

4.2.8.1 New Subparagraph: "No change in the work will give rise to an increase in the contract sum without a change order, and the Contractor waives any claim for such an increase based upon unjust enrichment, course of dealings or implied or express acceptance."

ARTICLE 7 - CHANGES IN THE WORK

7.2 Change Orders

7.2.2 New Subparagraph: "In subparagraphs 7.1.1, 7.1.2 and 7.1.3, the allowance for overhead in direct labor cost shall be 46.7% (FICA, FUI, SUI, Workmen's Compensation, Vacation, Holidays, Sick, Health Insurance, Life Insurance, 401K); the allowance for overhead in direct material and equipment cost shall be the current sales tax where the project is located; the allowance for overhead and profit combined, included in the total cost to the Owner, shall be based upon the following schedule: For the Contractor, for work performed by his own forces, 20% of the cost; for the Contractor, for work not performed by his own forces, 10% of the cost; for subcontractors, for work performed by his own forces, 20% of the cost. Cost to which overhead is applied shall be limited to the following: cost of materials, including sales tax and cost of delivery; cost of labor, including social security, and unemployment insurance (labor cost may include a pro rata share of foreman's time only in the case where an extension of contract time is granted due to the change), workman's compensation insurance, vacation, holidays, sick, health insurance, life insurance, and 401K, rental value of special power tools and equipment required specifically for this work. Rental of tools and equipment required for general work can be charged only in the case where an extension of contract time is granted due to the change. Overhead shall include the following: bond premiums, supervision, superintendence, wages of timekeepers, watchmen and clerks, small tools, incidentals, general office expenses, and all other expenses not included in "cost". If the net value of a change results in a credit from the Contractor or subcontractor, the credit given shall be the net cost plus overhead and profit. The cost as used herein shall include all items of labor, materials, and equipment."

7.3.1 Delete in its entirety and substitute the following:

"Construction Change Directives (CCD) - A Construction Change Directive is a written request for pricing from the Architect or, when signed by the Owner, a directive to carry out the work prescribed by the CCD. The Owner, by Construction Change Directive, without invalidating the Contract, orders changes in the work within the general scope of the contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly by Change Order at a later date. The Owner may sign the CCD, ordering the work to commence, as prescribed in Item 1. or 2. below:

1. Upon receipt of and agreement to the Contractor's proposed cost/credit and/or adjustment of Contract Time. The Architect has the authority to request cost and time

proposals of the Contractor without written consent of the Owner, however, the Owner's signature is required on the CCD as authorization for the work to proceed.

2. The Architect and Owner may both sign a CCD to direct the Contractor to proceed with work immediately. Costs and time will be negotiated and agreed to at a later date.

When a CCD is issued by the Architect to request pricing, the Contractor shall submit cost and time proposals within ten (10) business days of the date of the CCD. If work prescribed by the CCD may immediately impact the critical path, the Contractor shall notify the Architect and Owner immediately and shall submit the cost and time proposal in less than ten (10) business days, in order to mitigate or otherwise minimize the impact of the potential change on critical path activities. The Contractor shall track the cost and time proposal using the CCD number only.

The Contractor may initiate a Cost Proposal when he believes there is cause to do so. Contractor's cost proposals shall be tracked by sequential numbers preceded by "CP". The Architect will review and respond to the Contractor initiated cost proposals within ten (10) business days. Failure of the Contractor to submit a Contractor initiated cost proposal within thirty (30) calendar days of cause for the alleged cost shall render the claim for additional compensation null and void. Once the Architect agrees to the terms of a Contractor initiated Cost Proposal, he shall create a Construction Change Directive (CCD) and obtain Owner and Contractor signatures as formal approval of the terms of the Cost Proposal. In lieu of a CCD, the Architect may include Contractor initiated Cost Proposals in a Change Order, as incorporation into the Contract."

- 7.3.2 Add the following: "A Construction Change Directive may also be used in the absence of total agreement on cost and time, as provided in Paragraph 7.3.4."
- 7.3.6 Delete in its entirety.
- 7.3.7 Change last sentence to read as follows: "Such agreement shall be recorded at a later date as a Change Order."
- 7.3.10 Add the following to the last sentence: ", and may not be issued until later in the project if there exists a Contingency Allowance, or other allowances, from which to draw from for the cost of the Construction Change Directive."

ARTICLE 8 - TIME

- 8.3 **Delays and Extensions of Time** - Delete in its entirety and substitute the following:

"8.3 **Delays and Extensions of Time**

- 8.3.1 Contract time stipulated under other sections of the Contract Documents may be extended by Change Order to provide an additional work day for each full work day that the Contractor is prevented from working by reason of one or more of the following causes:
 - .1 Unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not limited to, catastrophes and/or acts of God, acts of another Contractor in the performance of a separate contract with the Owner, epidemics, quarantine restrictions, strikes or freight embargoes;
 - .2 An unusual amount of severe weather to such an extent as to be definitely abnormal and beyond conditions that may be reasonably anticipated. For the purpose of this

contract, a total of three (3) working days per calendar month shall be anticipated as "normally bad or severe weather", and such time will not be considered justification for an extension of time: No weather delay extensions will be considered unless, in the opinion of the Architect/Engineer, the weather condition affected the critical path adequately to justify a delay;

- .a Claims for delay due to inclement weather shall be made by the 10th of the month following the month of the delay. No additional compensation for weather delays shall be granted.
 - .b Other claims shall be made no more than ten (10) calendar days after the commencement of the delay.
 - .c Claims made beyond these time limits shall be null and void.
 - .d Requests for extension of time shall be fully documented by including copies of daily logs, letters, shipping orders, delivery tickets, and other supporting information.
 - .e Normal working days are based on a four day week, Monday through Thursday, 10 hours per day.
 - .f Delays due to a single weather day experienced Monday through Thursday will not be allowed if Friday is utilized or could have been utilized as a makeup day.
- .3 All claims for delays shall be evaluated by the Architect using the most recent construction schedule in possession of the Architect at the time of the delay and a construction schedule revised by the Contractor, demonstrating the delay. The schedules must exhibit that the change, or weather, affected critical path tasks or used more than the available float for a task or tasks to justify an extension in contract time.
- .4 Where phased construction is prescribed by the Contract Documents, approved contract time extensions shall extend the duration of the phase in which the delay occurred. Durations of other phases will remain unchanged, and the dates of substantial and final completion shall be extended.
- .5 Stoppage of work, ordered by Owner or Architect/Engineer, for reasons over which Contractor has no control. The Contractor shall, within ten (10) days after the beginning of such delay notify the Owner and Architect/Engineer in writing of the cause of the delay. The Architect/Engineer will then ascertain the facts and extent of delay, and notify the Contractor within ten (10) working days of the Owner's decision in the matter. Notice of delay and requests for extension of time shall set forth the cause, and number of additional working days the Contractor desires the contract extended.
- .6 With the exception of overhead and profit allowed where changes in the work occur, no additional compensation will be allowed for time extensions.

8.3.2 No claims for extension of time will be considered when based on delays caused by conditions existing at the time bids were received, and of which the Contractor might be reasonably expected to have full knowledge at the time of bidding, or upon delays caused by failure on the part of the Contractor to anticipate properly the requirements of the work contracted for as to materials, labor and equipment. All claims for extension of time shall be made in writing to the Architect/Engineer within the time limits prescribed by the Contract Documents; otherwise they shall be waived.

8.3.3 Completion date stipulated under other sections of the Contract Documents may be extended by Change Order to compensate for additional work that may be ordered by the Owner, provided such work is over and beyond the scope of work covered by original contract, and is of such nature as to materially affect the date of completion."

ARTICLE 9 - PAYMENTS AND COMPLETION

9.3 **Applications for Payment**

9.3.4 New Subparagraph: "Amount payable monthly to be ninety-five percent (95%) of amount of work in place, or materials stored on the site on the first day of the month. If the Contractor is behind schedule, or there are quality problems, the Owner may retain up to 10%. The retainage may not be reduced or released by the Owner until the project is fully completed and accepted by the Owner."

9.5 **Decisions to Withhold Certification**

9.5.1 Add the following:

.8 if the construction schedule is not properly maintained and/or if revised construction schedules are not submitted to the Owner and the Architect at least twice monthly, coinciding with progress meetings unless otherwise agreed upon by the Owner and Architect.

.9 failure to process Construction Change Directives, Change Orders, Shop Drawing submittals, or other material associated with the Contract for Construction within time limits established by the Contract Documents, or if no time limits are established, within a reasonable amount of time to avoid delays and allow sufficient review time for the Owner and Architect."

9.5.3.1 New Subparagraph: "The Owner shall not be in breach for withholding payment so long as it does so in good faith based upon a bona fide dispute. The Contractor may not stop work during the pendency of a bona fide dispute. Until the dispute is resolved, the associated sum shall be placed in escrow."

9.9 **Partial Occupancy or Use**

9.9.1.1 New Subparagraph: "When the Contractor is ready for final inspection, he shall give notice to the Architect/Engineer, with a copy to the Owner in the following words:

"The work on the contract for (show name of project as it appears in the Form of Agreement), having been fully completed, except as stipulated herein below, it is requested that a final inspection be made promptly by the Architect/Engineer. The following work is incomplete through no fault or negligence of the Contractor: (list any work the Contractor regards as exceptionable and after each item substantiate why its incompleteness is not due to his fault or negligence.)"

No final inspection shall be made until such time as the Architect/Engineer and the Owner have received a letter in the exact form indicated above."

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

10.3.3 Delete in its entirety.

Add the following new paragraphs:

"10.5 **General**

- 10.5.1 All phases of work under this contract shall conform to the applicable requirements of the Occupational Safety and Health Act (Public Law 91-596) as adopted by the U.S. Department of Labor."

ARTICLE 11 - INSURANCE AND BONDS

11.1 **Contractor's Insurance and Bonds**

11.1.1.1 New Subparagraphs: "The insurance required by subparagraph 11.1.1 shall be written for not less than any limits of liability required by law or by those set forth below, whichever is greater, and shall include contractual liability insurance as applicable to the Contractor's obligations under paragraph 3.18.

- .1 The Contractor's comprehensive general liability insurance and automobile liability shall be in an amount not less than one million dollars (\$1,000,000) for injuries, including accidental death, to any one person and subject to one million dollars (\$1,000,000) on account of one occurrence.
- .2 Property damage liability insurance shall be in an amount not less than fifty-thousand dollars (\$50,000).
- .3 Liability insurance should include all major divisions of coverage and shall be on a comprehensive general basis, including:
 - .1 Premises - Operations (Including X-C-U)
 - .2 Owner's and Contractor's Protective
 - .3 Products and Completed Operations
 - .4 Contractual - Including specific provision for the Contractor's obligations under paragraph 3.18."

11.1.2.1 New Subparagraph: "The successful bidder, if awarded the contract, shall provide a proper performance and payment bond, covering up to the full amount of the contract price as security for the faithful performance of all work under the contract and payment of all charges in connection therewith. Cost of said bond to be included in base bid. The failure of the bidder to whom the award is made to execute the agreement and supply the required bonds within fifteen (15) days after award of contract or within such extended period as the Owner may grant, shall constitute a default and the Owner may award the next lowest bidder in succession and charge against the defaulting bidder the difference up to the total amount of the bidder's bid security."

11.1.3 Delete in its entirety and substitute therefore: "Furnish in duplicate, certificates herein called for and specifically set forth, evidence of all coverage required by 11.1.1 and 11.1.1.1 and the Contractor shall furnish to the Architect/Engineer copies of any endorsement that is subsequently issued amending coverage or limits."

11.2 Delete in its entirety.

11.5.2 Delete beginning with 4th sentence through the end of the paragraph.

Add the following new paragraphs:

"11.6 **Construction Property Insurance (Builders Risk)**

- 11.6.1 Unless otherwise provided in the Special Conditions, the Contractor agrees to include the interest of the Owner, Contractor(s), subcontractors, and sub-subcontractors in an insurance policy covering all loss to the work, materials, and equipment by perils covered under the "Special" Property form, including theft, malicious mischief and vandalism. The policy will be written by an insurance company licensed to issue such policies in the State of Virginia. The Owner will be furnished a copy of the Certificate of Insurance after the Contract is executed. The Contractor will purchase, pay for, and maintain this insurance throughout the life of this Contract, and therefore, the cost of Builders Risk Insurance **shall be included** in the Contractor's bid.
- 11.6.2 The insurance to be furnished by the Contractor will cover only those materials and equipment which will become a permanent part of the completed project and scaffolding, construction forms and temporary structures if their values are chargeable to the project.
- 11.6.3 The amount of the insurance provided hereunder shall be at all times at least equal to the full value of the work, material and equipment complete and in place (as part of the permanent project) and the value of material and equipment delivered to the site or approved off-site storage locations.
- 11.6.4 The insurance to be provided hereunder shall include coverage for materials and equipment accepted for incorporation into the completed project and stored on the site of the work, stored in an off-site location which has been approved by the Contractor, or in transit.
- 11.6.5 The insurance to be furnished by the Contractor will include a deductible of one thousand dollars (\$1,000.00) per occurrence on all perils of loss with the exception of Flood and Earthquake subject to the insurance policy forms and exclusions. The deductible shall be paid by the Contractor, or Contractor(s) in proportion to their respective portions of loss if the loss affects more than one (1) Contractor or subcontractor.
- 11.6.6 Following any loss which the Contractor believes may be covered by the insurance to be provided hereunder, the Contractor shall immediately notify the Insurance Company and the Owner. The Contractor will report to the insurance company losses on behalf of the Owner. The Contractor shall cooperate with the Owner and the insurer, or its authorized representatives, in their efforts to investigate and settle the claim, including providing any and all requested information, documentation and reports and providing safe access to the site for inspection. Contractors' failure to provide timely notification of loss to the Owner, or Contractors' failure to provide requested and adequate information or documentation, shall not prejudice the Owner in any manner whatsoever.
- 11.6.6.1 The Contractor is responsible for notifying law enforcement or other applicable authorities in the event of a loss and for compiling all pertinent and required information in a timely manner.
- 11.6.6.2 Following a loss, the Contractor shall immediately take all necessary and reasonable steps to protect the property from further damage or loss.
- 11.6.6.3 All costs incurred by the Contractor associated with the loss not covered by the loss settlement shall be borne by the Contractor.
- 11.6.7 Any loss insured under the policy to be provided hereunder shall be adjusted with the Owner and made payable to the Owner as trustee for the insureds, as their interests may appear. The proceeds of any insured loss shall be credited to the Capital Project account of which the

Contract is funded and shall be distributed in accordance with such agreement as the parties in interest may reach. Actual disbursement of insurance proceeds in the agreed upon amounts shall be made by the Owner to the Contractor(s) in accordance with the prevailing standard procedures of the Owner' Business Office.

- 11.6.8 The Owner reserves the right to choose and determine the manner in which any damaged work covered by the insurance provided hereunder shall be replaced or repaired and the extent to which replacement or repair shall be accomplished. In the event the Owner chooses not to replace or repair damaged work, or chooses to have repairs or replacement accomplished by others, the Contractor(s) shall be paid in full by the Owner for the actual value of all work accomplished on the affected portion of the damaged facility prior to the time of the loss. The Contractor(s) shall not have any claim or be entitled to any payment, including loss of profit, for the value of lost or uncompleted work. Nor shall the provision in any way release the Contractor or the Contractor's surety from obligations under the Contract to fully complete the undamaged portions of the project. In the event the Owner chooses to have the repair or replacement of the damaged work performed under this Contract, said work shall be paid for and accomplished in accordance with the Change Order provisions of this Contract.
- 11.6.9 The Owner and the Contractor waive all rights against each other and the subcontractors, sub-subcontractors, officers, agents and employees of each other for damages caused by insured perils to the extent covered by the insurance provided hereunder, except such rights as they may have to the proceeds of such insurance held by the Owner as trustee.
- 11.6.10 If the Owner chooses to occupy or use a portion or portions of the work prior to substantial completion thereof, such occupancy shall not commence prior to a time mutually agreed to by the Owner and Contractor(s) and to which the insurance company or companies providing the Property Insurance have consented by endorsement to the policy or policies. The insurance provided hereunder shall not be canceled or lapsed on account of such partial occupancy. Consent of the Contractor(s) and of the insurance company or companies to such occupancy or use shall not be unreasonably withheld.
- 11.6.11 The Owner makes no guarantee, expressed or implied, in providing the hereunder described Property Insurance, that said Insurance will cover any and all losses to the complete satisfaction of the Contractor(s) nor shall the Owner be under any obligation whatsoever to make good any loss or portion of loss not covered by said Insurance.
- 11.6.11.1 The Owner assumes no liability, and the Contractor shall have no claim against them for the amount of loss claimed by the Contractor which exceeds the actual proceeds received from the Insurance provided hereunder. The Contractor shall have no claim against the Owner for any loss caused by perils not covered by the Insurance provided by the Contractor hereunder, nor shall the Contractor have any claim against them for any loss to Contractor's materials, tools, equipment or personal property not covered by the said Insurance.

11.7 **Indemnification**

- 11.7.1 The Contractor shall indemnify, protect, defend and hold harmless the Owner, their agents and employees from and against any and all claims, demands, judgments, or causes of action, including costs and attorney's fees by any party or parties whatever for loss, damage, injury, fines or penalties of any kind or character either to persons or property directly or indirectly arising out of the operations performed under the Contract except such loss, damage or injury as is caused by the sole negligence of the Owner. This indemnity agreement shall impose liability on the Contractor to the fullest extent permitted by the laws of the state governing

performance thereof, and any provision hereof not permitted by such laws is expressly deleted from said agreement.

- 11.7.2 "Injury" or "damage" as these words are used in the foregoing paragraph, shall be construed to include, but not be limited to, injury or damage consequent upon the failure of or use or misuse by the Contractor, his subcontractors, agents or employees in providing supervisory, inspection or engineering services or of any design, application, professional advice or opinion rendered to the Owner or on the Owners' behalf as well as any substance, material, machinery, hoist, rigging, block, scaffolding, or any and all kinds of equipment whether or not owned, furnished or lent by the Owner.
- 11.7.3 The purchase of insurance by the Contractor shall in no event be construed as a fulfillment or discharge of the obligations set forth in this section."

ARTICLE 13 - MISCELLANEOUS PROVISIONS

- 13.1 Delete 2nd sentence in its entirety.

Add the following new paragraphs:

"13.6 **Legally Required Provisions**

- 13.6.1 The Code of Virginia, Title 2.2, Chapter 43, Part 11 requires each contract for more than \$10,000 to include provisions 1 and 2 below:

- .1 During the performance of this contract, the Contractor agrees as follows:
- .a The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin, except where religion, sex or national origin is a bona fide occupational qualification reasonably necessary to the normal operation of the Contractor. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of the nondiscrimination clause.
 - .b The Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, will state that such Contractor is an equal opportunity employer.
 - .c Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.
- .2 The Contractor will include the provisions of the foregoing paragraphs a, b, and c in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor. (1982, c. 647.)

- 13.6.2 All public bodies shall include in every contract over \$10,000 the following provisions:

- .1 During the performance of this contract, the contractor agrees to (i) provide a drug-free workplace for the contractor's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession,

or use of a controlled substance or marijuana is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

- .2 For the purposes of this section, "drug-free workplace" means a site for the performance of work done in connection with a specific contract awarded to a contractor in accordance with this chapter, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract. 2000, c. 417, § 11-51.1; 2001, c. 844.

13.6.3 Any contract awarded by any state agency, or any contract awarded by any agency of local government in accordance with § 2.2-4352, shall include:

1. A payment clause that obligates the contractor to take one of the two following actions within seven days after receipt of amounts paid to the contractor by the state agency or local government for work performed by the subcontractor under that contract:
 - a. Pay the subcontractor for the proportionate share of the total payment received from the agency attributable to the work performed by the subcontractor under that contract; or
 - b. Notify the agency and subcontractor, in writing, of his intention to withhold all or a part of the subcontractor's payment with the reason for nonpayment.
2. A payment clause that requires (i) individual contractors to provide their social security numbers and (ii) proprietorships, partnerships, and corporations to provide their federal employer identification numbers.
3. An interest clause that obligates the contractor to pay interest to the subcontractor on all amounts owed by the contractor that remain unpaid after seven days following receipt by the contractor of payment from the state agency or agency of local government for work performed by the subcontractor under that contract, except for amounts withheld as allowed in subdivision 1.
4. An interest rate clause stating, "Unless otherwise provided under the terms of this contract, interest shall accrue at the rate of one percent per month."
5. Any such contract awarded shall further require the contractor to include in each of its subcontracts a provision requiring each subcontractor to include or otherwise be subject to the same payment and interest requirements with respect to each lower-tier subcontractor.
6. A contractor's obligation to pay an interest charge to a subcontractor pursuant to the payment clause in this section shall not be construed to be an obligation of the state agency or agency of local government. A contract modification shall not be made for the purpose of providing reimbursement for the interest charge. A cost reimbursement claim shall not include any amount for reimbursement for the interest charge." 1990, c. 824, § 11-62.11; 1992, c. 110; 2001, c. 844.

ARTICLE 15 - CLAIMS AND DISPUTES

- 15.1.7 Delete in its entirety.
- 15.2.1 5th line, delete "mediation" and replace with "litigation".
- 15.2.5 Beginning on the 4th line, delete "The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution."
- 15.2.6 Delete "mediation" and replace with "litigation".
- 15.2.6.1 First sentence, delete "mediation" and replace with "litigation". 2nd sentence, delete "mediation" and replace with "litigation"; delete "mediate" and replace with "litigate".
- 15.3 Delete in its entirety.
- 15.4 Delete in its entirety.

WYTHE COUNTY COURTHOUSE
RENOVATION
345 SOUTH FOURTH STREET
WYTHEVILLE, VIRGINIA 24382

SECTION 011000

SUMMARY OF THE WORK

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 specification sections, apply to work of this section.

1.2 DEFINITIONS

- A. Whenever the term "Owner" is used in this specification or on the drawings, it refers to Wythe County, Virginia.
- B. Whenever the term "Architect/Engineer" is used in this specification, it refers to ZMM ARCHITECTS ENGINEERS, Blacksburg, Virginia, who by contract with the Owner is authorized to prepare all drawings and specifications and to administer the construction after award of the contract.
- C. Wherever the term "Contractor" or "General Contractor" is used in this specification, it refers to the contractor who by contract with the Owner is responsible for the furnishing of all labor and materials and performing all work as described herein.
- D. Wherever the term "existing" is used in this specification or on the drawing it refers to work that currently exists.
- E. "Provide" shall mean "provide new materials and installation, complete with all accessories, parts and/or services to be ready for its intended use".

1.3 WORK UNDER THIS CONTRACT

- A. The work to be done hereunder includes the furnishing of all labor and materials and performing all work as indicated on Contract drawings and as specified herein for the following:

Wythe County Courthouse Renovation: This project consists of interior modifications to the existing prisoner travel routes in the existing courthouse building, including, but not limited to: new partitions, ceilings, finishes, and associated mechanical, plumbing, and electrical modifications.

- B. The Owner, prior to the start of any construction work in the specified area, will remove the following items:
 - 1. All loose furniture, bookcases, blinds, projection screens, supplies, etc.
- C. Contractor shall work with existing county employees, Buildings and Grounds, Judges and Sheriff's department on scheduling and working hours.

1.4 WORK BY OWNER UNDER SEPARATE CONTRACTS

- A. Asbestos-Containing Materials: An asbestos inspection has not been performed. If asbestos-containing materials is suspect of being present, Owner shall be notified immediately. The owner

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

shall submit an application for permit to have the asbestos-containing materials abated by a licensed asbestos contractor under a separate contract using approved procedures.

- B. Lead Based Paint (LBP): A lead based paint inspection has not been performed. If lead based paint is suspect of being present, Owner shall be notified immediately. The Owner will have the lead based paint removed under a separate contract using approved procedures.

1.5 CONSTRUCTION SCHEDULE

- A. Contractor shall complete the entire work within 150 consecutive calendar days from date of Notice to Proceed.

1.6 CONTRACTOR USE OF SITE

- A. The Contractor shall limit his use of the site to the areas indicated under the Contract in order to allow for owner occupancy. Portions of the site beyond areas on which work is indicated are not to be disturbed.
- B. Keep existing roads and entrances serving the premises clear and available to the Owner and public at all times. Do not use these areas for parking or storage of materials without prior approval from the Owner.
- C. Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials and location of office, storage sheds, etc., to the areas agreed upon with the Owner.
- D. Lock automotive type vehicles, such as passenger cars and trucks and other mechanized or motorized construction equipment, when parked and unattended, so as to prevent unauthorized use.
- E. The Contractor shall issue identification badges to all authorized workers.
- F. The site and building are classified as a non-smoking/non-tobacco products area and this policy is to be strictly enforced.
- G. Do not use fire lanes for construction traffic or storage.
- H. The Contractor shall remove and replace existing construction as required to accomplish the work. All items removed shall be reinstalled or replaced in a manner acceptable to the Owner.
- I. The Contractor shall restore any areas of the site which are damaged by the work. Restorative efforts shall be done in such a way that no evidence of damage exists. Restorative efforts include, but are not limited to, fine grading, rock removal, seeding and mulching, etc.

1.7 OWNER OCCUPANCY OF SITE AND BUILDING DURING CONSTRUCTION

- A. The Owner will occupy the site and the existing building during the entire period of construction. If water service to domestic or sprinkler systems must be turned off, then work requiring the disruption in service shall be performed when the building is unoccupied. Unoccupied times shall be identified by the Owner, and the Contractor shall ensure that complete water service is restored prior to the building becoming occupied again.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. All areas of work shall be protected from dust and debris caused by the work. All areas of work shall be completely cleaned at the end of each work day. Protection and cleaning are the sole responsibility of the Contractor. The Contractor shall reimburse the Owner for cleaning, or other labor and materials necessitated by the Contractor's neglect.
- C. The Contractor shall provide insulated, dust-proof temporary barriers as required to minimize impact on the temperature of adjacent spaces and containing all contaminants from the construction.
- D. The building shall be left in a secure, water-tight condition at the end of each work day.
- E. Power shall remain uninterrupted. Any proposed power interruption shall be coordinated with the Clerk-of-the-Works. The Contractor shall give 72 hours advance notice for any power interruption.
- F. Any relocation of low voltage cabling shall be approved and coordinated with the Owner not less than one (1) week prior to the work. No I.T. or other low voltage devices shall be disturbed by the work. All low voltage and I.T. components shall be protected throughout the project. Any damaged low voltage and/or I.T. device or component shall be replaced by the Contractor at no additional cost to the Owner, and to the Owner's satisfaction.
- G. Site work shall not interfere with County operations and shall not pose a threat to the safety of personnel. The Contractor shall provide safety fence as required by the Owner and Authorities Having Jurisdiction to ensure safe separation of work.

1.8 DRESS

- A. Proper dress is necessary for reasons of health and safety and shall meet the requirements established by the Contractors involved. Contractor shall also inform workers to dress in a manner that displays professionalism. Clothing that bears inappropriate or offensive language (at the discretion of the Owner) or slogans is not allowed.

1.9 PRODUCT HANDLING

- A. Product Handling: Space at the project for storage of materials and products is limited. Coordinate the deliveries of materials and products with the scheduling and sequencing of the work so that storage requirements at the project are minimized. In general, do not deliver individual items of equipment and material to the project substantially ahead of the time of installation. Limit each shipment of bulk and multiple-use materials to the quantities needed for installations within three (3) weeks of receipt.

1.10 INTENT OF CONTRACT DOCUMENTS

- A. The contract documents are complementary, and what is called for in one place shall be as binding as if called for in all places. In case of conflict or variance among the contract drawings, the specifications shall take precedence over the drawings. Figured dimensions shall be used in preference to scaling the drawings. In case of conflict between large and small scale plans, the large scale plans shall govern. In case of conflict between riser diagrams and plans, the plans shall govern.
- B. The mechanical and electrical drawings show the general arrangement of all piping, wiring, equipment and appurtenances and shall be followed as closely as actual building construction and the work of other trades will permit. The mechanical and electrical work shall conform to the requirements shown on all of the drawings. General and structural drawings shall take precedence

over mechanical and electrical drawings. Because of the small scale of the mechanical and electrical drawings, it is not possible to indicate all offsets, fittings, and accessories which may be required. The Contractor shall investigate the structural and finish conditions affecting the work and shall arrange his work accordingly, providing such fittings, valves, boxes, offsets, transitions, and other accessories as may be required to meet such conditions. The Contractor, at his sole expense, shall relocate, or otherwise reconcile, any existing construction that interferes with installation of new work. Refer to Section 011000, Para. 1.7 for requirements of continued use and occupancy.

1.11 CODES AND STANDARDS

- A. All materials and workmanship shall comply with all applicable codes, state and federal laws, local ordinances, industry standards, utility company regulations, and all other criteria which normally apply to work of this nature.
- B. In case of difference between building codes, state laws, federal laws, local ordinances, industry standards, utility company regulations, other criteria and the contract documents, the more stringent regulations will apply. The Contractor shall promptly notify the Architect/Engineer in writing of any such difference.
- C. If the Contractor performs any work that does not comply with these contract documents or the requirements of the applicable building codes, state laws, local ordinances, industry standards, utility company regulations, and other applicable criteria, he shall bear all costs arising in correcting the deficiencies.
- D. The standards referred to, except as modified in the specifications, shall have full force and effect as though printed in these specifications. These standards are not furnished to bidders for the reason that it is assumed that the manufacturer and trades involved are familiar with their requirements. The Architect/Engineer will furnish, upon request, information as to how copies of the standards referred to may be obtained.

1.12 EQUIPMENT DEVIATIONS

- A. Equipment or Connections Different from Those Shown: Where equipment requiring different arrangements or connections from those shown is proposed by the Contractor and is not objected to by the Architect/Engineer, it shall be the responsibility of the Contractor to install the equipment to operate properly and in harmony with the intent of the drawings and specifications. The Contractor shall make all incidental changes in piping, ductwork, supports, insulation, wiring, heaters, controls, and other associated facilities. He shall provide all additional motors, controllers, valves, fittings, and other additional equipment required for proper operation of the system, including all required changes in affected trades. The Contractor shall be responsible for the proper location of roughing-in and connections. All such changes shall be made at no increase in the contract price to the Owner.
- B. Electric Equipment Ratings: The electrical design is based upon estimated load requirements and upon typical classes of equipment component arrangement. Where the equipment actually provided requires circuits, wiring, controls or protective devices different from those indicated, all required modifications shall be made by the Contractor at no increase in contract price to the Owner.

1.13 BUILDING PERMIT

- A. The General Contractor and his subcontractors shall obtain and pay for all required building permits from **Wythe County, Virginia**. All connection fees for water, sewer and permanent electrical power

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

shall be paid for by the Owner. All inspections required by the local jurisdiction shall be scheduled by the Contractor with sufficient lead time. All connection fees and use charges for temporary utilities shall be paid by the Contractor until Substantial Completion of the entire building is achieved. Public Improvement Securities required by localities shall be obtained/paid by the Owner.

1.14 REGISTRATION AND PERFORMANCE AND PAYMENT BONDS

- A. Bidders are required under Title 54.1, Chapter 11, Code of Virginia (1950), as amended, to be licensed as a "Class A Contractor" before submitting a bid of one hundred twenty thousand (\$120,000) dollars or more; or to be licensed as a "Class B Contractor" before submitting a bid of ten thousand (\$10,000) dollars or more but less than one hundred twenty thousand (\$120,000) dollars; or be licensed as a "Class C Contractor" before submitting a bid of no more than ten thousand dollars (\$10,000). Each Bidder will be required to give their State Registration Number on their proposal.
- B. In accordance with Title 2.2, Chapter 43, Part 37 of the code of Virginia, Performance and Payment Bonds shall be provided for construction contracts exceeding \$500,000.00.

1.15 INSPECTION FOR SUBSTANTIAL COMPLETION AND FINAL COMPLETION

- A. The Contractor shall notify the Owner, in writing on the Certificate of Substantial Completion, of the date when the Work or designated portion thereof, will be, in his opinion, substantially complete and ready for inspection and testing to determine if it has reached Substantial Completion. The notice shall be given at least ten days in advance of said date and shall be forwarded through the Architect/Engineer, who will attach his written endorsement as to whether or not he concurs with the Contractor's statement that the Work will be ready for inspection and testing on the date given. The Architect/Engineer's endorsement is a convenience to the Owner only and shall not relieve the Contractor of his responsibility in the matter nor shall the Architect/Engineer's endorsement be deemed to be evidence that the Work was substantially complete and ready for inspection and testing. Inspection and testing shall take place at a time(s) mutually agreeable to the Contractor, Owner and Architect/Engineer. The inspection shall include a demonstration by the Contractor that all equipment, systems and operable components of the project function properly and in accordance with the Contract Documents. The Contractor shall furnish access for the inspection and testing as provided in General Conditions. The inspection and testing shall determine whether Substantial Completion has been accomplished and shall result in a written list of unfinished Work and Defective Work, commonly referred to as a "punch list", which must be finished and corrected to obtain Final Completion. After successful completion of the testing and the Architect/Engineer determines that, in its opinion, the Work, either in whole or in part, is substantially complete, the Architect/Engineer shall notify the Owner, in writing that the Work, or a specified portion thereof, is recommended to be declared substantially complete. The Owner shall notify the Contractor, in writing, of the date the Owner accepts the Work, or the specified portion thereof, as substantially complete or the Owner shall notify the Contractor of the deficiencies to be corrected or completed before such Work will be accepted as substantially complete.
- B. The Contractor shall notify the Owner, in writing of the date when the Work has reached or will reach Final Completion and will be ready for final inspection and testing. The notice shall be given at least five days in advance of said date and shall be forwarded through the Architect/Engineer, who will attach his endorsement as to whether or not he concurs in the Contractor's statement that the Work will be ready for inspection and testing on the date given. That inspection and any necessary testing shall be conducted in the same manner as the inspection for Substantial Completion. When the Work is totally complete, including the elimination of all defects, the Work shall be finally accepted by the Owner and final payment shall be made in accordance with General Conditions.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- C. The Architect/Engineer shall conduct the inspections. The Owner shall conduct the reinspections. If one or more Substantial or Final Completion reinspections are 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.

1.16 LIQUIDATED DAMAGES

- A. All work shall be substantially complete by the agreed upon date. For each day after the Contract date of Substantial Completion that the work is not substantially complete, the Contractor shall pay to the Owner as liquidated damages the amount of **\$500 per day** for the Owner's added administrative expense to the Owner to administer the Project during the period of delay. The Owner may deduct any liquidated damages from the money due or to become due to the Contractor. If the amount of liquidated damages exceeds any amounts due to the Contractor, the Contractor shall pay the difference to the Owner within ten (10) days after receipt of a written request from the Owner for payment.
- B. At the time the Architect certifies the Project or parts thereof are substantially completed, the Architect shall identify the remaining items to be completed for final completion of the Project and shall establish with the Contractor a reasonable time for completion of those items. The items to be completed and the time established for their completion shall be set forth in the Certificate of Substantial Completion. The Owner may deduct any liquidated damages from the money due or to become due to the Contractor. If the amount of liquidated damages exceeds any amounts due to the Contractor, the Contractor shall pay the difference to the Owner within ten (10) days after receipt of a written request from the Owner for payment.

1.17 PRECONSTRUCTION CONFERENCE

- A. After award of the contract, but before start of construction, the Contractor, Owner, and Architect/Engineer shall meet at the site to discuss procedures to be followed during construction. See Section 013200, CONSTRUCTION PROGRESS DOCUMENTATION.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 012100

ALLOWANCES

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing allowances.
 - 1. Selected materials and equipment are specified in the Contract Documents by allowances. In some cases, these allowances include installation.
 - 2. Allowances have been established to defer selection of actual materials and equipment to a later date when additional information is available for evaluation.
 - 3. Reference Paragraph 3.8 of the General Conditions, and modifications in Supplementary Conditions.
 - a. The following is Paragraph 3.8 stated for convenience:

"3.8 ALLOWANCES

3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness."

- 4. Allowance(s) shall be included in Base Bid for the project.

1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise the Architect/Engineer of the date when the final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. At the Architect/Engineer's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by the Architect/Engineer from the designated supplier.

1.4 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show the actual quantities of materials delivered to the site for use in fulfillment of each allowance.

1.5 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed for the Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- B. At Project closeout, credit unused amounts remaining in the contingency allowance to the Owner by Change Order.

1.6 UNUSED MATERIALS

- A. Return unused materials to the manufacturer or supplier for credit to the Owner, after installation has been completed and accepted.
 - 1. When requested by the Architect/Engineer, prepare unused material for storage by Owner where it is not economically practical to return the material for credit. When directed by the Architect/Engineer, deliver unused material to the Owner's storage space. Otherwise, disposal of unused material is the Contractor's responsibility.

1.7 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1 - Provide a door hardware allowance of \$16,000.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 012500

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. This Section includes administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

1.3 RELATED WORK

- A. In general, the following related work is included in other sections of the specifications:
 - 1. Division 1 Section "Submittal Procedures" specifies requirements for submitting the Contractor's Construction Schedule and the Submittal Schedule.
 - 2. Division 1 Section "Product Requirements" specifies requirements governing the Contractor's selection of products and product options.

1.4 DEFINITIONS

- A. Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract are considered to be requests for substitutions. The following are not considered to be requests for substitutions:
 - 1. Revisions to the Contract Documents requested by the Owner or Architect/Engineer.
 - 2. Specified options of products and construction methods included in the Contract Documents.
 - 3. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.5 SUBMITTALS

- A. Substitution Request Submittal: The Architect/Engineer will consider requests for substitution if received within 60 days after Notice to Proceed with the Work. Requests received more than 60 days after commencement of the Work may be considered or rejected at the discretion of the Architect.
 - 1. Submit three (3) copies of each request for substitution for consideration. Submit requests in the form and according to procedures required for change-order proposals.
 - 2. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.
 - 3. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- a. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate contractors, that will be necessary to accommodate the proposed substitution.
 - b. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.
 - c. Product Data, including Drawings and descriptions of products and fabrication and installation procedures.
 - d. Samples, where applicable or requested.
 - e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - f. Cost information, including a proposal of the net change, if any in the Contract Sum.
 - g. The Contractor's certification that the proposed substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.
 - h. The Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
- B. Architect/Engineer's Action: If necessary, the Architect/Engineer will request additional information or documentation for evaluation within one week of receipt of a request for substitution. The Architect/Engineer will notify the Contractor of acceptance or rejection of the substitution within two (2) weeks of receipt of the request, or one week of receipt of additional information or documentation, whichever is later. Acceptance will be in the form of a Construction Change Directive or in the form of shop drawing submittal approval for "or equal" request.
1. Use the product specified if the Architect cannot make a decision on the use of a proposed substitute within the time allocated.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Conditions: The Architect/Engineer will receive and consider the Contractor's request for substitution when one or more of the following conditions are satisfied, as determined by the Architect/Engineer. If the following conditions are not satisfied, the Architect/Engineer will return the requests without action except to record noncompliance with these requirements.
1. Extensive revisions to the Contract Documents are not required.
 2. Proposed changes are in keeping with the general intent of the Contract Documents.
 3. The request is timely, fully documented, and properly submitted.
 4. The specified product or method of construction cannot be provided within the Contract Time. The Architect will not consider the request if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
 5. The request is directly related to an "or-equal" clause or similar language in the Contract Documents. The burden of proof of equality rests with the Contractor, who must furnish adequate supporting data.
 6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

7. The specified product or method of construction cannot be provided in a manner that is compatible with other materials and where the Contractor certifies that the substitution will overcome the incompatibility.
 8. The specified product or method of construction cannot be coordinated with other materials and where the Contractor certifies that the proposed substitution can be coordinated.
 9. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.
- B. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples for construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.

PART 3 - EXECUTION

Not used.

Attachment: Substitution Request Cover Sheet (After Bid)

END OF SECTION

SUBSTITUTION REQUEST COVER SHEET (AFTER BID)

TO: ZMM ARCHITECTS ENGINEERS
1116 South Main Street
Blacksburg, VA 24060
Fax: (540) 951-0219

This form must be submitted by a Prime Contractor. Submissions by subcontractors, suppliers or product representatives will not be permitted and will be rejected.

PROJECT TITLE:

PRIME CONTRACTOR:

ADDRESS:

AUTHORIZED SIGNATURE:

DATE:

SECTION:

PARAGRAPH:

SPECIFIED ITEM:

PROPOSED SUBSTITUTE:

Substitutions are only permitted by Prime Contractor for one of the following reasons which are outlined in Paragraph 2.1 of Section 012500, SUBSTITUTION PROCEDURES. Substitution requests submitted for reasons other than that listed below will be rejected and returned without action. Indicate below the reason for this proposed substitution request.

_____ The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.

_____ The specified product or method of construction cannot receive necessary approval by governing authority, and the requested substitution can be approved.

_____ The request is directly related to an "or equal" clause or similar language in the Contract Documents.

_____ The specified product or method of construction cannot be provided in a manner that is compatible with other materials and where the Contractor certifies that the substitution will overcome the incompatibility.

_____ The specified product or method of construction cannot be coordinated with other materials and where the Contractor certifies that the proposed substitution can be coordinated.

_____ The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.

Substitution requests must be received by the Architect within 60 days after Notice to Proceed with the Work to be considered.

Substitution requests must include all information indicated in Paragraph 1.5 of Section 012500, SUBSTITUTION PROCEDURES and must meet all requirements stated elsewhere in the Project Manual.

SECTION 012600

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing contract modifications.
 - 1. All "Requests for Information" (RFI), Construction Change Directives (CCD), and Change Orders (CO) and Cost Proposals (CP) shall be coordinated and routed through the General Contractor.
 - 2. The Contractor shall utilize copies of the "Request for Information" Form attached to the end of this section. The Architect/Engineer will send the response to the General Contractor. No response will be made directly to any subcontractor.
 - 3. The Architect/Engineer will issue all Construction Change Directives (CCD). Form attached to the end of this section.
 - 4. The Contractor shall use the File Management System prescribed by ZMM ARCHITECTS ENGINEERS to route and receive the documents detailed in this section.

1.3 RELATED WORK

- A. In general, the following related work is included in other sections of the specifications:
 - 1. Division 1 Section "Submittal Procedures" for requirements for the Project Construction Schedule.
 - 2. Division 1 Section "Payment Procedures" for administrative procedures governing Applications for Payment.

1.4 MINOR CHANGES IN THE WORK

- A. The Architect/Engineer will issue a response to Request for Information, an Architect's Supplemental Instruction, or a Construction Change Directive authorizing minor changes in the Work, not involving adjustment to the Contract Sum or Contract Time.

1.5 CHANGES IN THE WORK THAT MAY AFFECT CONTRACT SUM AND/OR CONTRACT TIME

- A. The Architect/Engineer will issue a Construction Change Directive containing detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Construction Change Directives issued solely by the Architect/Engineer are for information only. Do not consider them as an instruction either to stop work in progress or to execute the proposed change, unless also signed by the Owner.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

2. Within ten (10) business days of receipt of a CCD, the Contractor shall submit a statement of cost necessary to execute the change to the Architect/Engineer for the Owner's review.
 - a. Include a list of quantities of products required and material unit costs, with the total amount of purchases to be made. Include labor quantities and labor unit costs. Where requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time. If no statement is included, it shall be assumed that the work has no effect on Contract Time.
- B. Contractor-Initiated Proposals: When latent or unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a Request for Information with recommendations to the Architect/Engineer, or a Cost Proposal (CP) with detail of cost as if it were a CCD.
 1. Contractor shall include a statement outlining the 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 Contract Time.
 2. The Architect/Engineer will respond to the RFI and then issue a Construction Change Directive as indicated above if required.
 3. Contractor shall reimburse the Owner through the Contract for Construction for any expenses related to the Architect's services resulting from changes requested by the Contractor if for the benefit of the Contractor.
- C. Construction Change Directives and Contractor initiated Cost Proposals will be included in Change Orders prior to project closeout.

1.6 CHANGE ORDER PROCEDURES

- A. Change Orders will be executed as follows:
 1. At the end of the project to establish final adjustments to Contract Sum and Contract Time, based on Construction Change Directives approved throughout the project, should a Contingency Allowance or other allowances, exist as part of the Contract amount and has not been exceeded by approved CCD costs.
 2. When no Contingency Allowance, or other allowances, exists as part of the Contract amount, Change Orders will be used to order changes in the work that may affect Contract Sum and/or Contract Time.
 3. A Change Order may be used to approve the terms of a Contractor initiated Cost Proposal, should the Architect not choose to issue a corresponding CCD.

1.7 REQUESTS FOR INFORMATION (RFIs)

- A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Progress meeting, prepare and submit an RFI in the form specified.
 1. RFIs shall originate with General Contractor. RFIs submitted by entities other than General Contractor will be returned 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.
 3. Frivolous or unnecessary RFIs will be returned with no response.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
1. Project name.
 2. Date.
 3. Name of Contractor.
 4. Name of Architect.
 5. RFI number, numbered sequentially.
 6. Specification Section number and title and related paragraphs, as appropriate.
 7. Drawing number and detail references, as appropriate.
 8. Field dimensions and conditions, as appropriate.
 9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 10. Contractor's signature.
 11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.
 - a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.
 12. Date by which a response from the Architect/Engineer is needed to avoid affecting critical path tasks.
- C. Hard-Copy RFIs: Form at the end of this Section.
1. Identify each page of attachments with the RFI number and sequential page number.
- D. Software-Generated RFIs: Software-generated form with substantially the same content as indicated above.
1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- E. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow seven working days for Architect's response for each RFI.
1. The following RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for coordination information already indicated in the Contract Documents.
 - d. Requests for adjustments in the Contract Time or the Contract Sum.
 - e. Requests for interpretation of Architect's actions on submittals.
 - f. Incomplete RFIs or RFIs with numerous errors.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
 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 Change Order Proposal Request as contained within this section.
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within ten (10) business days of receipt of the RFI response. Requests for time extensions related to RFI responses that are received after ten (10) business days shall be considered null and void.
- 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 two (2) business days if Contractor disagrees with response.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- G. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly.
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number including RFIs that were dropped and not submitted.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.
 8. Identification of related Minor Change in the Work, Architect's Supplemental Instructions, Construction Change Directive, Change Order or Contractor initiated Cost Proposal, as appropriate.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION



Construction Change Directive

<i>Project</i>		<i>To</i>
Date:	Directive #:	Architect's Project #:

The following change(s) and/or revision(s) in this contract will be required:

Proceed as Follows

- Proceed with the Work described in this directive without change in the Contract Sum or Contract Time. If Contractor considers Work described in this Directive to require adjustment in Contract Sum or Contract Time, advise the Owner and Architect immediately in writing prior to proceeding with Work.
- Submit to Architect an itemized proposal showing labor and material costs associated with proposed change, indicating either an increase or decrease in Contract Sum and/or Contract Time. Do not proceed with Work described in this Directive until the Owner signs this form, or a Change Order has been executed. (Pricing may be requested by the Architect/Engineer without the Owner's signature).
- Proceed with Work described in this Directive immediately and submit to the Architect itemized documentation of costs incurred in Work when Work is completed or as soon as final cost/time is determined. The Architect will review the Contractor's Cost Proposal and, when in agreement, will include the CCD in a Change Order for the Owner's approval.

When signed by Owner and/or Architect, and received by Contractor, this document becomes effective immediately as a Construction Change Directive (CCD) and Contractor shall proceed as directed above. Signature by Contractor indicates Contractor's agreement with terms of this Directive.

Architect	Contractor	Owner
Address	Address	Address
By	By	By
Signature	Signature	Signature
Date	Date	Date



Request for Information

<i>From</i>	<i>To</i>	<i>Project</i>
Contractor:	ZMM, INC.	Name:
Address:	1116 South Main Street	Commission #: Drawing #:
	Blacksburg, VA 24060	Spec Section:
Phone:	Phone: (540) 552-2151	Paragraph:
Fax:	Fax: (540) 951-0219	Date:
	Attention:	Date Due: RFI #:

Required Information

Contractor's Recommendation

Architect's Response

By:

Date:

1116 South Main Street • Blacksburg, VA 24060 • P: 540-552-2151 • F: 540-951-0219 • www.zmm.com

ZMM Use Only: C A S P M E

SECTION 012900

PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

- A. This section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.

1.3 SUBMITTALS

- A. Schedule of Values:
 - 1. Within 15 calendar days of receipt of a notice of award, prepare and deliver to ZMM ARCHITECTS ENGINEERS a schedule of values. The schedule of values shall consist of a detailed breakdown of the contract price, giving quantities for each of the various kinds of work, unit prices, and extended prices therefor. The detailed breakdown shall be divided into each construction category. The required schedule shall be based on the actual breakdown of the bid price. Subcontractors who may be involved in work under more than one of these categories shall be advised of this requirement in order to furnish such data without delay. The schedule of values shall list material and labor separately.
 - 2. Payments will not be made until the schedule of values has been submitted to and approved by ZMM ARCHITECTS ENGINEERS.

1.4 APPLICATION FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect/Engineer and paid for by the Owner.
 - 1. The initial Application for Payment, the Application for Payment at the time of Substantial Completion, and the final Application for Payment involve additional requirements.
- B. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application or Payment is the period indicated in the Agreement.
- C. Payment Application Forms: Use AIA Document G702 as the form for Application for Payment.
- D. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents. Incomplete applications will be returned without action.
 - 1. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the Application.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- E. Draft for Review: At least 3 days prior to transmittal of formal application, the Contractor shall email a draft copy of the application to the Architect for review and comment.
- F. Transmittal: Submit 3 executed copies of each formal Application for Payment to the Architect/Engineer by means ensuring receipt within 24 hours; one copy shall be complete, including waivers of lien and similar attachments, when required. The comments of the Owner and Architect following their review of the draft application shall be addressed in the formal Application.
- G. Formal pay applications shall be delivered to the Architect at the jobsite Progress Meeting prior to application due date, unless otherwise agreed upon by Owner and Architect.
- H. Initial Application for Payment: Administrative actions, submittals, and approvals that must precede or coincide with submittal of the first Application for Payment include the following:
 - 1. Schedule of Values submitted and approved by Architect.
 - 2. Contractor's construction schedule.
 - 3. Copies of building permits.
 - 4. Copies of authorizations and licenses from governing authorities for performance of the Work.
 - 5. Certificates of insurance and insurance policies.
 - 6. Performance and payment bonds.
- I. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
 - 1. Administrative actions and submittals that shall precede or coincide with this application include:
 - a. Occupancy permits and similar approvals.
 - b. Warranties (guarantees) and maintenance agreements.
 - c. Test/adjust/balance records.
 - d. Maintenance instructions.
 - e. Meter readings.
 - f. Startup performance reports.
 - g. Changeover information related to Owner's occupancy, use, operation, and maintenance.
 - h. Final cleaning.
 - i. Application for reduction of retainage and consent of surety.
 - j. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.
- J. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:
 - 1. Completion of Project closeout requirements.
 - 2. Completion of items specified for completion after Substantial Completion.
 - 3. Assurance that unsettled claims will be settled.
 - 4. Assurance that Work not complete and accepted will be completed without undue delay.
 - 5. Transmittal of requirement Project construction records to Owner.
 - 6. Proof that taxes, fees and similar obligations have been paid.
 - 7. Removal of temporary facilities and services.
 - 8. Removal of surplus materials, rubbish and similar elements.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- K. Waivers of Mechanics Liens: With Final Application for Payment, submit waivers of mechanics lien from every entity who may lawfully be entitled to file a mechanics lien arising out of the Contract, and related to the Work covered by the payment. The following shall be submitted:
1. Contractor's Affidavit of Payment of Debts and Claims (AIA G706).
 2. Contractor's Affidavit of Release of Liens (AIA G706A).
 3. Consent of Surety to Final Payment (AIA G707).

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 013100

COORDINATION

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

- A. This Section includes administrative and supervisory requirements necessary for coordinating construction operations including, but not necessarily limited to, the following:
 - 1. General project coordination procedures.
 - 2. Conservation.
 - 3. Coordination drawings.
 - 4. Administrative and supervisory personnel.
 - 5. Cleaning and protection.

1.3 RELATED WORK

- A. In general, the following related work is included in other sections of the specifications:
 - 1. Division 1 Section "Construction Progress Documentation" for preconstruction conference and progress meetings.
 - 2. Division 1 Section "Submittal Procedures" for preparing and submitting the Contractor's Construction Schedule.
 - 3. Division 1 Section "Product Requirements" for coordinating general installation.
 - 4. Division 1 Section "Closeout Procedures" for coordinating contract closeout.

1.4 COORDINATION

- A. Coordinate construction operations included in various Sections of these Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation. No claim for extra compensation or extension of contract time will be allowed for conditions resulting from lack of said coordination.
 - 1. Schedule construction operations in the sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
 - 4. Consider restrictions on use of the building and Owner's occupancy during construction.
 - 5. The Contractor shall use the File Management System prescribed by ZMM ARCHITECTS ENGINEERS to route and receive the documents detailed in this section.
- B. Coordination of Options and Substitutions: Where the contract documents permit the selection from several product options and where it becomes necessary to authorize a substitution, do not proceed

with purchasing until coordination of interface requirements has been checked and satisfactorily established.

- C. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 - 1. Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.
- D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of construction schedules.
 - 2. Preparation of the Schedule of Values.
 - 3. Installation and removal of temporary facilities.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Project closeout activities.
- E. Conservation: Coordinate construction operations to assure that operations are carried out with consideration given to conservation of energy, water, and materials.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work.

1.5 SUBMITTALS

- A. Coordination Drawings: Prepare coordination drawings where careful coordination is needed for installation of products and materials fabricated by separate entities. Prepare coordination drawings where limited space availability necessitates maximum utilization of space for efficient installation of different components. Preparation of Coordination Drawings is the responsibility of the Contractor.
 - 1. Show the relationship of components shown on separate Shop Drawings.
 - 2. Indicate required installation sequences.
 - 3. For locations where several elements of mechanical or electrical, or combined mechanical and electrical, work must be sequenced and positioned with precision in order to fit into the available space, prepare coordination drawings to a scale of 1/4"-1'-0" or larger showing the actual physical dimensions required for the installation.
 - 4. Prepare and submit coordination drawings prior to purchase-fabrication-installation of any of the elements involved in the coordination.
 - 5. Comply with requirements contained in Section "Submittal Procedures."
- B. Discrepancies in Contract Drawings: The Contractor shall promptly notify the Architect/Engineer of all errors, omissions, or discrepancies which he finds on the drawings. The Contractor shall not proceed with the work involved in such errors, omissions, or discrepancies until written instructions are given by the Architect/Engineer. The Contractor shall be responsible for all work erroneously installed prior to receiving said written instructions.
- C. Staff Names: Within 15 days of commencement of construction operations, submit a list of the Contractor's principal staff assignments, including the superintendent and other personnel in attendance at the Project Site. Identify individuals and their duties and responsibilities. List their addresses and telephone numbers.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

1. Post copies of the list in the Project meeting room.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 GENERAL COORDINATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.
- C. Test and Inspections: As part of the coordination requirements, the Contractor shall have a representative of his at all tests and inspections required, including those performed by subcontractors. The Contractor shall be responsible for ensuring that all tests and inspections are conducted as required and that the work is acceptable. The Contractor shall immediately inform the Architect/Engineer of all tests and inspections that fail to meet specification requirements. The Contractor shall immediately do everything within his power; including stopping work in progress, to make sure work that does not meet specifications does not get permanently installed or covered up.

3.2 CLEANING AND PROTECTION

- A. Clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering where required to assure protection from damage or deterioration at Substantial Completion.
- B. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects.
- C. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
 1. Excessive static or dynamic loading.
 2. Excessive internal or external pressures.
 3. Excessively high or low temperatures.
 4. Thermal shock.
 5. Excessively high or low humidity.
 6. Air contamination or pollution.
 7. Water or ice.
 8. Solvents.
 9. Chemicals.
 10. Light.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

11. Radiation.
12. Puncture.
13. Abrasion.
14. Heavy traffic.
15. Soiling, staining, and corrosion.
16. Bacteria.
17. Rodent and insect infestation.
18. Combustion.
19. Electrical current.
20. High-speed operation.
21. Improper lubrication.
22. Unusual wear or other misuse.
23. Contact between incompatible materials.
24. Destructive testing.
25. Misalignment.
26. Excessive weathering.
27. Unprotected storage.
28. Improper shipping or handling.
29. Theft.
30. Vandalism.
31. Dust and dirt on and in mechanical equipment and ductwork.

END OF SECTION

SECTION 013200

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project meetings including, but not limited to:
 - 1. Preconstruction Conference.
 - 2. Progress Meetings.

1.3 PRECONSTRUCTION CONFERENCE

- A. The Architect/Engineer shall schedule a Preconstruction Conference and organizational meeting to be held at the project site or other convenient location no later than 15 days after execution of the Agreement and prior to commencement of construction activities. The Architect/Engineer shall conduct the meeting to review responsibilities and personnel assignments.
- B. Attendees: The following parties shall be represented at the conference by persons familiar with and authorized to conclude matters relating to the Work.
 - 1. Owner.
 - 2. Architect/Engineer.
 - 3. Contractor.
 - a. Project Manager.
 - b. Superintendent.
 - 4. Major subcontractors.
 - 5. Inspection and testing agencies.
- C. Agenda: Discuss items of significance that could affect progress including such topics as:
 - 1. Designation of responsible personnel.
 - 2. Tentative construction schedule.
 - 3. Critical work sequencing.
 - 4. Use of the premises.
 - 5. Parking availability.
 - 6. Office, work and storage areas, equipment deliveries and priorities.
 - 7. Safety procedures.
 - 8. First aid.
 - 9. OSHA.
 - 10. Security.
 - 11. Housekeeping.
 - 12. Working hours.

13. Distribution of Contract Documents.
14. Relation and coordination of major subcontractors.
15. Procedures for processing field decisions and Change Orders.
16. Procedures for processing Applications for Payment.
17. Submittals of shop drawings, product data, and samples.
18. Preparation of record documents.

1.4 PROGRESS MEETINGS

- A. Architect/Engineer or their representative shall conduct progress meetings at the project site at regularly scheduled intervals. Notify the General Contractor and Owner of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.
- B. Attendees: In addition to representatives of the Owner, General Contractor and Architect/Engineer, it is mandatory that each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities be represented at these meetings by persons familiar with the project and authorized to conclude matters relating to progress. Failure to attend may be reason for withholding of progress payment to Contractor.
- C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the project.
 1. Contractor's Construction Schedule: An updated Construction Schedule is required at each meeting and not less than twice monthly. Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind 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.
 2. Review the following with each entity present. Provide color copies of schedule to all those in attendance.
 - a. Note field observations, problems and decisions.
 - b. Identify problems which impede planned progress.
 - c. Review off-site fabrication problems.
 - d. Develop corrective measures and procedures to regain planned schedule.
 - e. Revise Contractor's Construction Schedule as indicated.
 - f. Plan progress during next work period.
 - g. Coordinate projected progress with subcontractors.
 - h. Review submittal schedules, expedite as required to maintain schedule.
 - i. Review maintaining of quality and work standards.
 - j. Review changes proposed for:
 - 1) Effect on Contractor's Construction Schedule.
 - 2) Effect on Completion Date.
 - k. Complete other current business.
 3. Contractor shall submit the following:
 - a. Updated submittal log to insure that every item and shop drawing, that is indicated to be submitted, has been submitted.
 - b. Updated equipment list indicating approval status, projected fabrication and delivery dates of major equipment, thus insuring delivery on time.
 - c. Updated Construction Schedule.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- D. Reporting: No later than three (3) days after each progress meeting date, Architect/Engineer shall distribute copies of minutes of the meeting to each party present and to other parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report. If, within two (2) business days of the distribution of the meeting minutes, requests for corrections are received by the Architect/Engineer from anyone in attendance, the Architect/Engineer shall, if in agreement with the requested changes, edit the meeting minutes and redistribute the edited version. Any requests for revisions received after two (2) business days of initial distribution shall be considered null and void.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 013233

PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplemental 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. Concealed Work photographs.
 - 3. Periodic construction photographs.
- B. Related Requirements:
 - 1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
 - 2. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph and video recording. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within three days of taking photographs.
 - 1. Submit photos by uploading to web-based Project management software site. Include copy of key plan indicating each photograph's location and direction.
 - 2. Identification: Provide the following information with each image description in web-based Project management software site:
 - a. Name of Project.
 - b. Date photograph was taken.
 - c. Unique sequential identifier keyed to accompanying key plan.

1.4 FORMATS AND MEDIA

- A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

2400 pixels, and with vibration-reduction technology. Use flash in low light levels or backlit conditions.

- B. Metadata: Record accurate date and time from camera.
- C. File Names: Name media files with date Project area and sequential numbering suffix.

1.5 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs with maximum depth of field and in focus.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Preconstruction Photographs: Before commencement of the Work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Construction Manager.
 - 1. Flag excavation areas construction limits before taking construction photographs.
 - 2. Take photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take photographs of existing buildings either on or adjoining property, to accurately record physical conditions at start of construction.
 - 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- C. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:
 - 1. Underground utilities.
 - 2. Underslab services.
 - 3. Piping.
 - 4. Electrical conduit.
 - 5. Waterproofing and weather-resistant barriers.
- D. Periodic Construction Photographs: Take photographs weekly. Select vantage points to show status of construction and progress since last photographs were taken.
- E. Additional Photographs: Architect or Construction Manager may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum.
 - 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. Photographs shall be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
 - c. Substantial Completion of a major phase or component of the Work.
 - d. Owner's request for special publicity photographs.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013300

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

- A. This section specifies administrative and procedural requirements for submittals required for performance of the work, including:
 - 1. Submittal procedures.
 - 2. Contractor's construction schedule.
 - 3. Daily construction reports.
 - 4. Submittal Cover Sheet for shop drawings, product data and samples.
 - 5. Shop drawings.
 - 6. Product data.
 - 7. Samples.
- B. Administrative Submittals: Refer to other Division 1 sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
 - 1. Permits.
 - 2. Applications for Payment.
 - 3. Performance and Payment Bonds.
 - 4. Insurance Certificates.
 - 5. List of Subcontractors.
- C. The Schedule of Values submittal is included in section "Payment Procedures."
- D. Inspection and test reports are included in section "Quality Requirements."

1.3 SUBMITTAL PROCEDURES

- A. Submittal: Unless otherwise specified, PDF electronic shop drawing submittals are preferred, but if hard copies are submitted, the number of shop drawings, product data, and the number of samples which the Contractor shall submit and, if necessary, resubmit, is the number that the Contractor requires to be retained, plus **one** which will be retained by the Architect/Engineer, plus **two** that will be retained by the Owner.
 - 1. The Contractor may make comments on shop drawings during their review in some color other than red. The Architect/Engineer will make all comments in **red only**. (This will identify which party has made the comments.)
- B. If the number of resubmittals of shop drawings exceeds two, the Owner shall charge the Contractor a resubmittal review fee in the amount of \$100 per resubmittal, which is then added to the Architect's fee. No time extensions shall be granted for processing and review of Shop Drawings submitted more than two times.

- C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
 2. Coordinate transmittal of different types of submittals for related elements of the work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect/Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
 3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.
 - a. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Architect/Engineer will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow two weeks for reprocessing each submittal.
 - d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect/Engineer sufficiently in advance of the work to permit processing.
 - e. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
 - 1) Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 - 2) Include the following information on the label for processing and recording action taken.
 - Project name.
 - Date.
 - Name and address of Architect/Engineer.
 - Name and address of Contractor.
 - Name and address of Subcontractor.
 - Name and address of supplier.
 - Name of manufacturer.
 - Number and title of appropriate Specification Section.
 - Drawing number and detail references, as appropriate.
 - f. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect/Engineer using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.
 - 1) On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

1.4 SHOP DRAWINGS, PRODUCT DATA AND SAMPLE SUBMITTALS

- A. Contractor Responsibilities:
1. Contractor shall carefully review all submittals upon receipt. By approving and forwarding submittal, Contractor represents that he has verified all governing field measurements and field

construction criteria and that he has confirmed that all catalog numbers and similar data comply with Contract Document requirements.

2. Coordinate each submittal with requirements of Work and of Contract Documents.
3. The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect/Engineer approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect/Engineer in writing of such deviation at the time of submittal and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect/Engineer's approval thereof.
4. Begin no work which requires submittals until return of submittals with Architect/Engineers' stamp and initials or signature indicating approval.

B. Architect/Engineer's Duties:

1. Review submittals with reasonable promptness.
2. Maintain logs of all submittals.
3. Review for general agreement with:
 - a. Design concept of project.
 - b. Information given in Contract Documents.
4. Affix stamp and initials or signature certifying to review of submittals.
5. Review of separate item does not constitute review of an assembly in which that item functions.

1.5 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart type Contractor's construction schedule for the benefit of all parties involved. Submit within 15 business days of the date established for "Commencement of Work".

1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the work as indicated in the "Schedule of Values".
2. Within each time bar, indicate completion percentage in 10 percent increments. As work progresses, place a contrasting mark in each bar to indicate Actual Completion.
3. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.
4. Secure time commitments for performing critical elements of the work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the work.
5. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect/Engineer's procedures necessary for certification of Substantial Completion.

B. Distribution: Following response to the initial submittal, print and distribute copies to the Architect/Engineer, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the work and are no longer involved in construction activities.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- C. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule at each bi-weekly progress meeting, or otherwise, not less than twice monthly.

1.6 DAILY CONSTRUCTION REPORTS

- A. Prepare a daily construction report, recording the following information concerning events at the site; and submit duplicate copies to the Architect/Engineer and the Clerk-of-the-Works at weekly intervals.
 1. Person completing the report.
 2. List of subcontractors at the site.
 3. Approximate count of personnel at the site.
 4. High and low temperatures, general weather conditions.
 5. Accidents and unusual events.
 6. Meetings and significant decisions.
 7. Stoppages, delays, shortages, losses.
 8. Emergency procedures.
 9. Orders and request of governing authorities.
 10. Change orders received, implemented.
 11. Services connected, disconnected.
 12. Equipment or system tests and start-ups.
 13. Partial completions, occupancies.
 14. Substantial completions authorized.

1.7 SUBMITTAL COVER SHEET

- A. The Contractor shall utilize the attached Submittal Cover Sheet for all items requiring a shop drawing, product data or samples. **If Submittal Cover Sheet is not attached, submitted material will not be reviewed and will be returned to the Contractor.** Include all submittal reviews on Construction Schedule. Anticipate two reviews of shop drawings.

1.8 SHOP DRAWINGS

- A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Drawings or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
- B. Shop drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information.
 - Dimensions.
 - Identification of products and materials included.
 - Compliance with specified standards.
 - Notation of coordination requirements.
 - Notation of dimensions established by field measurement.
 - Certification that all materials are asbestos-free.
 - 1. Do not use shop drawings without an appropriate final stamp indicating action taken in connection with construction.

2. Within thirty (30) calendar days after award of Contract, Contractor shall submit to Architect/Engineer a complete submission of all products for which colors are to be selected. Submission shall include a list of products indicating manufacturer's name, model number or name, brochures, color selections, physical samples, and all pertinent data.
3. In order for the Architect/Engineer to prepare a color board, the selection of colors for approved shop drawings will be withheld until color samples on all building products have been submitted. No individual color selection(s) will be made until complete submission of all project color samples are received.

- C. Coordination drawings are a special type of shop drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.
1. Submit coordination drawings for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.

1.9 PRODUCT DATA

- A. Collect product data into a single submittal for each element of construction or system. Product data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where product data must be specifically prepared because standard printed data is not suitable for use, submit as "Shop Drawings".
1. Mark each copy to show applicable choices and options. Where printed product data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
 - Manufacturer's printed recommendations.
 - Compliance with recognized trade association standards.
 - Compliance with recognized testing agency standards.
 - Application of testing agency labels and seals.
 - Notation of dimensions verified by field measurement.
 - Notation of coordination requirements.
 2. Do not submit product data until compliance with requirements of the Contract Documents has been confirmed.
- B. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
1. Do not proceed with installation until an applicable copy of product data is in the installer's possession.
 2. Do not permit use of unmarked copies of product data in connection with construction.

1.10 SAMPLES

- A. Submit full-size, fully fabricated samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.
1. Mount, display, or package samples in the manner specified to facilitate review of qualities indicated. Prepare samples to match Architect/Engineer's sample. Include the following:

Generic description of the sample.
Sample source.
Product name or name of manufacturer.
Compliance with recognized standards.
Availability and delivery time.

- B. Submit samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
 - 1. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
- C. Preliminary Submittals: Where samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.
 - 1. Preliminary submittals will be reviewed and returned with the Architect/Engineer's action indicated.
- D. Maintain sets of samples, as returned, at the Project site, for quality comparisons throughout the course of construction.
 - 1. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 - 2. Sample sets may be used to obtain final acceptance of the construction associated with each set.
- E. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the work. Show distribution on transmittal forms.
 - 1. Field samples specified in individual Sections are special types of samples. Field samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the work will be judged.
 - a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.11 ARCHITECT/ENGINEER'S ACTION

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect/Engineer will review each submittal, mark to indicate action taken, and return promptly.
- B. Compliance with specified characteristics is the Contractor's responsibility.
- C. Action Stamp: The Architect/Engineer will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked to indicate the action taken.
 - 1. Do not permit submittals marked "Not Approved, Revise and Resubmit" to be used at the Project site, or elsewhere where work is in progress.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SUBMITTAL COVER SHEET
(Attach to each copy of each submittal.)

PROJECT: _____ A/E COMMISSION: _____

ARCHITECT/ENGINEER: **ZMM, Inc.**
1116 South Main Street
Blacksburg, VA 24060

PRIME CONTRACTOR: _____

SUBCON./SUPPLIER: _____

MANUFACTURER: _____

ITEM SUBMITTED: _____ SUBMITTAL #: 1 _____

SPEC. SECTION #: _____ PARAGRAPH #: _____

DRAWING REFERENCE: _____ DETAIL #: _____

CERTIFICATION: *(Mark one.)*

Certified to comply with Drawings and Specifications.

Certified to comply with Drawings and Specifications except as noted on attached Submittal Deviation Sheet.

 Signature: Subcontractor/Supplier Date

 Signature: Prime Contractor Date

	<input type="checkbox"/> APPROVED	<input type="checkbox"/> APPROVED AS NOTED
	<input type="checkbox"/> DISAPPROVED	<input type="checkbox"/> REVISE AND RESUBMIT
	<input type="checkbox"/> RECEIPT ACKNOWLEDGED	
	COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING QUANTITIES AND DIMENSIONS, SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION, COORDINATING THIS WORK WITH THAT OF ALL OTHER TRADES, AND PERFORMING WORK IN A SAFE AND SATISFACTORY MANNER. NOTE ANY DEVIATIONS IN ATTACHED SUBMITTAL DEVIATION SHEET.	
DATE: _____ BY: _____ ZMM, Inc.		

(PRIME CONTRACTOR APPROVAL STAMP)

(ARCHITECT/ENGINEER REVIEW STAMP)

SECTION 014000

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

- A. This section specifies administrative and procedural requirements for quality control services.
- B. Quality control services include inspections, tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by the Architect/Engineer and Owner.
- C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
- D. Requirements of this section relate to customized fabrication and installation procedures, not production of standard products.
 - 1. Specific quality control requirements for individual construction activities are specified in the sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products as well as customized fabrication and installation procedures.
 - 2. Inspections, tests and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
 - 3. Requirements for the Contractor to provide quality control services required by the Architect/Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this section.

1.3 THREE PHASES OF CONTROL

- A. The Contractor shall actively perform overall quality control of all work under the Contract. The Contractor shall perform three phases of control to ensure that all work complies with Contract requirements. The Three Phases of Control shall adequately cover all work and shall include the following for each definable feature of work: A definable feature of work is a task which is separate and distinct from other tasks and requires separate control requirements.
 - 1. Preparatory Phase: Notify the Owner at least two (2) work days in advance of each preparatory phase. The superintendent shall conduct the preparatory phase with the

- Owner and the foreman responsible for the definable feature. Document the results of the preparatory phase actions in the Daily Construction Report. Perform the following prior to beginning work on each definable feature of work:
- a. Review each paragraph of the applicable specification sections;
 - b. Review the Contract drawings;
 - c. Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required;
 - d. Review the testing plan and ensure that provisions have been made to provide the required QC testing;
 - e. Examine the work area to ensure that the required preliminary work has been completed;
 - f. Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data;
 - g. Review the safety plan and appropriate activity hazard analysis to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted; and
 - h. Discuss construction methods.
2. Initial Phase: Notify the Owner at least two (2) work days in advance of each initial phase. When construction crews are ready to start work on a definable feature of work, the superintendent shall conduct the initial phase with the Owner and the foreman responsible for that definable feature of work. Observe the initial segment of the definable feature of work to ensure that the work complies with Contract requirements. Any work not in conformance with specifications shall be stopped immediately by the Contractor and corrective measures taken. Document the results of the initial phase in the Daily Construction Report. Repeat the initial phase for each new crew to work on-site, or when acceptable levels of specified quality are not being met. Perform the following for each definable feature of work:
- a. Establish the quality of workmanship required;
 - b. Resolve conflicts;
 - c. Review the Safety Plan and the appropriate activity hazard analysis to ensure that applicable safety requirements are met; and
 - d. Ensure that testing is performed by the approved laboratory.
3. Follow-Up Phase: Perform the following for on-going work daily, or more frequently as necessary until the completion of each definable feature of work and document in the Daily Construction Report:
- a. Ensure the work is in compliance with Contract requirements;
 - b. Maintain the quality of workmanship required;
 - c. Ensure that testing is performed by the approved laboratory;
 - d. Ensure that rework items are being corrected; and
 - e. The superintendent shall maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered. Attach a copy of the "Contractor Rework Items List" to the last Daily Construction Report of each month. The Contractor shall be responsible for including on this list items needing rework including those identified by the Owner.

1.4 RESPONSIBILITIES

- A. Owner Responsibilities: The Owner will engage and pay for the services of an independent agency to perform inspections and tests specified as the Owner's responsibility for the following portions of work:
 - 1. Any other items required by the independent agency in order to fulfill their contractual obligations to the Owner.

- B. Contractor Responsibilities: The Contractor shall provide inspections, tests and similar quality control services, specified in individual specification sections and required by governing authorities, except where they are specifically indicated to be the Owner's responsibility, or are provided by another identified entity; these services include those specified to be performed by an independent agency and not by the Contractor. Costs for these services shall be included in the Contract Sum.
 - 1. The Contractor shall employ and pay an independent agency to perform specified quality control services.
 - 2. It is the responsibility of the Contractor to coordinate inspections with the independent agency. The Contractor shall bear any cost incurred due to a lack of coordination, i.e., independent agency personnel present on site while no activity requiring testing is occurring.

- C. Retesting: The Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.
 - 1. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.

- D. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to:
 - 1. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
 - 2. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
 - 3. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
 - 4. Providing the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
 - 5. Security and protection of samples and test equipment at the Project site.

- E. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction specified in individual specification sections shall cooperate with the Architect/Engineer and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.
 - 1. The agency shall notify the Architect/Engineer and Contractor promptly of irregularities or deficiencies in the Work during performance of its service.
 - 2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.

3. The agency shall not perform any duties of the Contractor.
4. When requested by the Owner or Architect/Engineer, the agency shall provide recommendations/direction for correcting any deficiencies noted during testing by the agency - particularly with respect to subsurface soils preparation and conditioning to insure proper support for planned construction.
5. At the completion of the project, the testing agency shall certify, by written letter, signed and sealed by qualified agency personnel, that:
 - a. All necessary tests have been performed in compliance with and as required by these plans and specifications, the local building official and the Special Inspection requirements of the International Building Code.
 - b. All noted deficiencies have been corrected to comply with the requirements of the contract documents.
 - c. Based on tests and observations performed, the construction was completed in accordance with these plans and specifications.

1.5 SUBMITTALS

- A. The independent testing agency shall submit a certified written report of each inspection, test or similar service, to the Architect/Engineer.
 1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
 2. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:
 - Date of issue.
 - Project title and number.
 - Name, address and telephone number of testing agency.
 - Dates and locations of samples and tests or inspections.
 - Names of individuals making the inspection or test.
 - Designation of the Work and test method.
 - Identification of the product and Specification Section.
 - Complete inspection or test data.
 - Test results and interpretations of test results.
 - Ambient conditions at the time of sample-taking and testing.
 - Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements.
 - Name and signature of laboratory inspector.
 - Recommendations on retesting.
- B. The independent testing agency shall maintain a running Deficiencies Log to track each deficiency discovered during all on-site inspections, testing performed in the laboratory, or any other such deficiency occurring within an area of the work which the independent testing agency has been contracted to inspect.
 1. The deficiency log shall be a continuous running log of all deficiencies noted during inspections and shall include, at a minimum, the following pieces of information for each deficient item:
 - a. Item number.
 - b. Date the item was originally discovered.
 - c. Location (floor, column grid, etc.).

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- d. Description - A written description of the deficiency.
 - e. Reference - A reference to the specification section, drawing sheet number, shop drawing sheet number, etc. indicating the contract provision to which the item does not comply.
 - f. Status - indicate either "Open" or "Resolved".
 - g. Date Corrected - The date upon which the deficiency was brought into compliance with the contract documents.
 - h. Comments - Any pertinent information on the deficiency. Once resolved, this item should indicate the justification for resolution of the item such as "Accepted by Engineer of Record in RFI ???" or "Retesting indicated compaction within acceptable limits", etc.
2. Prior to project closeout, each item on the deficiency list shall be resolved to the satisfaction of the Architect/Engineer.
 3. Deficiency logs shall be updated and submitted weekly.
 4. The deficiency log to be used for this project is included at the end of this Section of the Specifications. If the independent testing agency has its own deficiency log developed, said log may be used to document deficiencies if first approved by the Architect/Engineer.

1.6 QUALITY ASSURANCE

- A. Qualification for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.
 1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State in which the Project is located.
 2. Qualifications of inspectors on site shall include five (5) years inspection in type of work, and certified for the type of work performed.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, and sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes.
- B. Protect construction exposed by or for quality control service activities, and protect repaired construction.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- C. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION

DEFICIENCY LOG



Date: _____ Project No. _____ Project: _____

INDEPENDENT TESTING AGENCY: _____

No.	Date	Location	Description	Status	Reference	Date Corrected	Comments
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

SECTION 015000

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

- A. This section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.
- B. Temporary utilities required include, but are not limited to:
 - 1. Water service and distribution. (Contractor can use water from existing building for construction purposes only.)
 - 2. Electric power and light. (Contractor can use electric power and light from existing building for construction purposes only.)
 - 3. Telephone and internet service. (Contractor shall furnish and pay for his own telephone and internet service. Cell phone service is acceptable.)
- C. Temporary construction and support facilities required include, but are not limited to:
 - 1. Field office.
 - 2. Storage sheds.
 - 3. Sanitary toilet facilities, including hand wash facilities with soap, and drinking water.
 - 4. Temporary enclosures.
 - 5. Waste disposal services
 - 6. Construction aids and miscellaneous services and facilities.
- D. Security and protection facilities required include, but are not limited to:
 - 1. Temporary fire protection.
 - 2. Temporary fences, barricades, gates, warning signs, lights.
 - 3. Environmental protection.

1.3 QUALITY CONTROL

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:
 - 1. Building code requirements.
 - 2. Health and safety regulations.
 - 3. Utility company regulations.
 - 4. Police, Fire Department and Rescue Squad rules.
 - 5. Environment protection regulations.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities."
 - 1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.
 - 2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.4 PROJECT CONDITIONS

- A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Water: Provide potable water approved by local health authorities.

2.2 EQUIPMENT

- A. General: Provide new equipment. If acceptable to the Architect/Engineer, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4" heavy-duty, abrasion-resistant, flexible rubber hoses 100 ft. long, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.
- C. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.
- D. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.
- E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- F. Temporary Office: Provide prefabricated or mobile unit or similar job-built construction with lockable entrances, operable windows and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- G. Temporary Toilet Units: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material.
- H. First Aid Supplies: Comply with governing regulations.
- I. Fire Extinguishers: Provide hand-carried, portable UL-rated, Class "A" fire extinguishers for temporary office and similar spaces. In other locations provide hand-carried, portable, UL-rated, Class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
 - 1. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the project adequately and result in minimum interference with performance of the work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Engage the appropriate local utility company to connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment; comply with the company's recommendations.
 - 1. Arrange with the company and existing users for a time when service can be interrupted, where necessary, to make connections for temporary services.
- B. Temporary Lighting: As applicable, whenever overhead floor or roof deck has been installed, provide temporary lighting with local switch.
 - 1. Install and operate temporary lighting that will fulfill security and protection requirements, without operating the entire system, and will provide adequate illumination for construction operations and traffic conditions.
- C. Temporary Telephones and Internet: Provide temporary telephone and internet service for all personnel engaged in construction activities, throughout the construction period.

3.3 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

- A. Locate field office, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access, but within temporary construction fence.
 - 1. Maintain temporary construction and support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. Field Office: Provide insulated, weathertight temporary office of sufficient size to accommodate office personnel at the project site. Keep the office clean and orderly for use for small progress meetings.
- C. Storage and Fabrication Sheds: Install storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on the site.
- D. Sanitary facilities to include temporary toilets, wash facilities with soap, and drinking water fixtures. Comply with regulations and health codes for the type, number, location, operation and maintenance of fixtures and facilities. Install where facilities will best serve the project's needs.
 - 1. Provide toilet tissue, hand soap, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.
- E. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy.
- F. Drinking Water Facilities: Provide containerized tap-dispenser bottled-water type drinking water units, including paper supply.
- G. Temporary Enclosures: Provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.
 - 1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 - 2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 square feet or less with plywood or similar materials.
 - 3. Close openings through floor or roof decks and horizontal surfaces.
- H. Temporary Exterior Lighting: Install exterior yard lights where required for safety and/or security.
- I. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 degrees F. (27 degrees C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.
- B. Enclosure Fence: Install around construction area as required for safety of building occupants and the public. Provide egress gates at locations where corridors exit the building. These gates shall be unlocked whenever the building is occupied. Provide Owner with keys to gates.

- C. Security Enclosure and Lockup: Install temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
 - 1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- D. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons on or near the site. Maintain erosion control devices. Comply with all local codes pertaining to these issues.
- E. Fire/Smoke: No plastic materials shall be used in temporary construction within the building.

3.5 OPERATION, TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
- C. Termination and Removal: Unless the Architect/Engineer requests that it be maintained longer, remove each temporary facility when the need has ended, or when 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 the 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 the Contractor.
 - 2. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:
 - a. Replace significantly worn parts that have been subject to unusual operating conditions.
 - b. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.
 - c. Replace air filters immediately prior to Owner occupancy. New filters shall not come from attic stock.
 - d. Clean dirty coils.

END OF SECTION

SECTION 016600

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in the Project.

1.3 RELATED WORK

- A. In general, the following related work is included in other sections of the specifications:
 - 1. Division 1 Section "Submittal Procedures" specifies requirements for submitting the Contractor's Construction Schedule and the Submittal Schedule.
 - 2. Division 1 Section "Substitution Procedures" specifies administrative procedures for handling requests for substitutions made after award of the Contract.

1.4 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.
 - 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
 - 2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
 - 3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.5 SUBMITTALS

- A. Product List: Prepare a list showing products specified in tabular form acceptable to the Architect. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.
 - 1. Coordinate product list with the Contractor's Construction Schedule and the Schedule of Submittals.
 - 2. Form: Prepare product list with information on each item tabulated under the following column headings:

- a. Related Specification Section number.
 - b. Generic name used in Contract Documents.
 - c. Proprietary name, model number, and similar designations.
 - d. Manufacturer's name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date or time span of delivery period.
3. Initial Submittal: Within 30 days after date of commencement of the Work, submit 3 copies of an initial product list. Provide a written explanation for omissions of data and for known variations from Contract requirements.
 4. Completed List: Within 60 days after date of commencement of the Work, submit 3 copies of the completed product list. Provide a written explanation for omissions of data and for known variations from Contract requirements.
 5. Architect's Action: The Architect will respond in writing to Contractor within 2 weeks of receipt of the completed product list. No response within this period constitutes no objection to listed manufacturers or products but does not constitute a waiver of the requirement that products comply with Contract Documents. The Architect's response will include a list of unacceptable product selections, containing a brief explanation of reasons for this action.

1.6 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.
 1. When specified products are available only from sources that do not, or cannot, produce a quantity adequate to complete project requirements in a timely manner, consult with the Architect to determine the most important product qualities before proceeding. Qualities may include attributes, such as visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources producing products that possess these qualities, to the fullest extent possible.
- B. Compatibility of Options: When the Contractor is given the option of selecting between 2 or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.
 1. Each prime contractor is responsible for providing products and construction methods that are compatible with products and construction methods of other prime or separate contractors.
 2. If a dispute arises between prime contractors over concurrently selectable, but incompatible products, the Architect will determine which products shall be retained and which are incompatible and must be replaced.
- C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior.
 1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.
 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.

- d. Speed.
- e. Ratings.

1.7 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
 - 1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to the site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 - 5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
 - 6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
 - 7. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.
 - 1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
 - 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:
 - 1. Proprietary Specification Requirements: Where Specifications name only a single product or manufacturer, provide the product indicated. No substitutions will be permitted.
 - 2. Semiproprietary Specification Requirements: Where Specifications name 2 or more products or manufacturers, provide 1 of the products indicated. No substitutions will be permitted.
 - a. Where Specifications specify products or manufacturers by name, accompanied by the term "or equal" or "or approved equal," comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
 - 3. Nonproprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated.
 - a. Manufacturer's recommendations may be contained in published product literature or by the manufacturer's certification of performance.
6. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.
7. Visual Matching: Where Specifications require matching an established Sample, the Architect/Engineer's decision will be final on whether a proposed product matches satisfactorily.
 - a. Where no product available within the specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category.
8. Visual Selection: Where specified product requirements include the phrase "... as selected from manufacturer's standard colors, patterns, textures ..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect/Engineer will select the color, pattern, and texture from the product line selected.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
 1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION

SECTION 017300

EXECUTION

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for cutting and patching.
- B. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - 1. Requirements of this Section apply to this Contract. Refer to specifications for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.
 - 2. The Contractor shall use the File Management System prescribed by ZMM ARCHITECTS ENGINEERS to route and receive the documents detailed in this section.

1.3 SUBMITTALS

- A. Cutting and Patching Proposal: Where approval of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:
 - 1. Describe the extent of cutting and patching required and how it is to be performed; indicate why it cannot be avoided.
 - 2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
 - 3. List products to be used and firms or entities that will perform Work.
 - 4. Indicate dates when cutting and patching is to be performed.
 - 5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
 - 6. Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure.
 - 7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

1.4 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
 - a. Foundation construction.
 - b. Bearing walls.
 - c. Structural concrete.
 - d. Structural steel.
 - e. Lintels.
 - f. Primary wood framing.
 - g. Structural decking.
 - h. Stair systems.
 - i. Miscellaneous structural metals.
 - j. Equipment supports.
 - k. Piping, ductwork, vessels and equipment.

- B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.
 1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
 - a. Shoring, bracing, and sheeting.
 - b. Primary operational systems and equipment.
 - c. Water, moisture, or vapor barriers.
 - d. Membranes and flashings.
 - e. Fire protection systems.
 - f. Control systems.
 - g. Communication systems.
 - h. Conveying systems.
 - i. Electrical wiring systems.

- C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.
 1. If possible, retain the original installer or fabricator to cut and patch the following categories of exposed Work, or if it is not possible to engage the original installer or fabricator, engage another recognized and experienced and specialized firm:
 - a. Processed concrete finishes.
 - b. Matched-veneer woodwork.
 - c. Preformed metal panels.
 - d. Acoustical ceilings.
 - e. Finished wood flooring.
 - f. Carpeting.
 - g. Wall covering.
 - h. HVAC enclosures, cabinets or covers.

1.5 WARRANTY

- A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.
 - 1. Before proceeding, meet at the site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Avoid cutting existing pipe, conduit, or ductwork serving the building, but scheduled to be removed or relocated, until provisions have been made to bypass them.

3.3 PERFORMANCE

- A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible, review proposed procedures with the original installer; comply with the original installer's recommendations.
 - 1. In general, where cutting is required, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

3. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.
 4. Where services are required to be removed, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
- C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
 2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch, after the patched area has received primer and second coat.
- 3.4 CLEANING
- A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION

SECTION 017700

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

- A. This section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Inspection procedures.
 - 2. Project record document submittal.
 - 3. Operating and maintenance manual submittal.
 - 4. Guarantee period.
 - 5. Final cleaning.
 - 6. Extra materials.
- B. Closeout requirements for specific construction activities are included in the appropriate sections of the specifications.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
 - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the work is not complete.
 - 2. Advise the Owner of pending insurance change-over requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
 - 4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
 - 5. Submit record drawings, maintenance manuals, final project photographs, damage or settlement surveys, property surveys, and similar final record information.
 - 6. Deliver tools, spare parts, extra stock, and similar items.
 - 7. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
 - 8. Complete startup testing of systems and instruction of the Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
 - 9. Complete final cleanup requirements, including touchup painting.
 - 10. Touch up and otherwise repair and restore marred, exposed finishes.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. Inspection Procedures: On receipt of a request for inspection for certification of Substantial Completion, the Architect/ Engineer will either proceed with the inspection or advise the Contractor of unfulfilled requirements necessary for the inspection. Following the inspection, the Architect/Engineer will prepare the Certificate of Substantial Completion, or advise the Contractor of construction items that must be completed or corrected before the certificate will be issued.
1. The General Contractor will prepare a punch list (example form attached to the end of this section) of defects and omissions to the requirements of the contract documents.
 2. This punch list will be provided to all subcontractors for corrective actions.
 3. The General Contractor's superintendent, along with the foreman of the applicable subcontractors, will each be required to initial and date each item completed on their respective punch lists.
 4. Architect/Engineer will be notified when the items have been completed.
 5. The Architect/Engineer and/or Owner will verify that these items have been completed and will initial and date each item on the respective punch lists. If the Architect/Engineer or Owner observe additional items needing correction, they will add these items to the punch list for corrective measures by the appropriate contractor.
 6. Completion of the punch list items will form the basis for substantial completion.
 7. Once the Certificate of Substantial Completion has been issued with the list of any minor unfulfilled requirements (punch list) and agreed upon date for Final Acceptance, the Contractor will continue to fully complete the Work.

1.4 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following.
1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted.
 2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 3. Submit a certified copy of the Architect/Engineer's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect/Engineer.
 4. Submit consent of surety to final payment.
 5. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 6. Submit statement to Architect/Engineer certifying that all temporary and permanent materials used on this project are asbestos-free.
 7. Submit test results to Architect/Engineer certifying that the project's domestic water system is not at risk for lead.
 8. Submit a final "liquidated damages" settlement statement.
 9. Submit a final "reimbursement of Architect" settlement statement.
- B. Completion Verification Procedure: The Architect/Engineer will verify completion of the Work upon receipt of notice that the Work, including inspection list (punch list) items from earlier inspections, has been completed and documented with General Contractor's initials and date, and with Subcontractor's initials and date.
1. Upon verification of completion, the Architect will prepare a certificate of final acceptance. If the Work is incomplete, the Architect will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

1.5 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect/Engineer's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
 - 1. Mark record set with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
 - 2. Mark new information that is important to the Owner, but was not shown on Contract Drawings.
 - 3. Note related Change Order numbers where applicable.
 - 4. Organize record drawing sheets into a manageable set, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover.
- C. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications. Mark copy 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. Note related Change Orders, Record Drawings, and Product Data, where applicable.
- D. Record Product Data: Submit one copy of each Product Data submittal. Mark one set to indicate the actual product installation where installation varies substantially from that indicated in Product Data.
 - 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 Drawings, and Record Specifications, where applicable.

1.6 OPERATION AND MAINTENANCE DATA

- A. At time of completion, the Contractor shall furnish to the Owner complete operating and maintenance instructions for all mechanical equipment and electrical equipment in the project together with the names and addresses of the applicable subcontractors and suppliers. The manuals shall also contain spare parts listings, copies of warranties, wiring diagrams, and inspection procedures.
 - 1. Provide two (2) paper copies bound in a loose leaf notebook.
 - 2. Provide one (1) digitized copy on CD or USB Drive in electronic format (PDF).

1.7 GUARANTEE

- A. All materials, equipment and workmanship shall be guaranteed for one year from the date of Certificate of Occupancy, not from date of installation. Longer period of guarantee where called for in specifications shall take precedence over the one year guarantee.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. During the Guarantee Period, the Owner shall contact the Contractor directly on guarantee/warranty items as they occur. The Owner shall utilize the form at the end of this section.

1.8 GUARANTEE PERIOD INSPECTION

- A. Prior to the expiration date of the Contractor's one-year guarantee period, but not before 9 months of this period has elapsed, the Owner shall make an inspection of the building, equipment, and/or any other work included in the original Contract to determine whether any defects in materials or workmanship have developed. The Owner shall provide the Contractor with written notice of such defects. A copy of this written notice shall be sent to the Architect/Engineer.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and anti-pollution 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 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. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. 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.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - m. Wipe surfaces of mechanical, electrical, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - n. Replace parts subject to unusual operating conditions.
 - o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - p. Clean ducts, blowers, and coils if units were operated during construction.
 - q. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - r. Clean areas of existing buildings and site that were affected by construction dust. These areas will be identified solely by the Owner.
 - s. Leave Project clean and ready for occupancy.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.
- D. Contractor shall not use the Owner's refuse containers.

3.2 EXTRA MATERIALS

- A. The attached list of Extra Materials shall be turned over to the Owner before any installation of materials.

END OF SECTION

GUARANTEE REPORT FORM

DATE: _____

(Mr. _____) (General Contractor)

(_____ Company _____)

(_____ Address _____)

(_____ Address _____)

(_____ FAX Number _____)

RE: (Construction Project Title)
GUARANTEE ITEM

Gentlemen:

This notice is in regards to a guarantee item on the referenced construction project.

GUARANTEE REPORT NO. _____

DESCRIPTION OF DEFECT:

REPORTED BY: _____ *

REQUIRED DATE FOR REPAIR: _____

DATE OF DISCOVERY: _____ (date) _____ (By Owner)

DATE GENERAL CONTRACTOR
NOTIFIED THE
APPROPRIATE SUBCONTRACTOR: _____ (date) _____ (By General Contractor)

DATE ITEM REMEDIED: _____ (date) _____ (By General Contractor)

DATE THIS FORM RETURNED TO OWNER: _____ (date) _____ (By General Contractor)

GUARANTEE PERIOD EXPIRES: _____ (date) _____ (By Owner)

Sincerely,

(Mr./Ms. _____) (Owner)

(_____ Company _____)

(_____ Address _____)

(_____ Address _____)

(_____ FAX Number _____)

* Please return this form to me when repair has been accomplished.

The following list of EXTRA MATERIALS shall be turned over to the Owner **before any installation of materials**. A copy of this **completed** form shall be mailed to Architect/Engineer.

EXTRA MATERIALS			
Specification Section	Description	Date Given to Owner	Accepted by Owner
095113 Acoustical Panel Ceilings	<p>Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.</p> <p>Acoustical Ceiling Panels: Full-size panels equal to 2 percent of quantity installed.</p> <p>Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.</p>		<p>Yes</p> <p><input type="checkbox"/></p>
096513 Resilient Base and Accessories	<p>Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.</p> <p>Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.</p>		<p>Yes</p> <p><input type="checkbox"/></p>
096519 Resilient Floor Tile	<p>Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.</p> <p>Floor Tile: Furnish one box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.</p>		<p>Yes</p> <p><input type="checkbox"/></p>

SECTION 017800

WARRANTIES

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

- A. This Section specifies general administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers standard warranties on products and special warranties.
 - 1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
 - 2. General closeout requirements are included in Section 017700, CLOSEOUT PROCEDURES.
 - 3. Specific requirements for warranties for the Work and products and installations that are specified to be warranted, are included in the individual Sections of Divisions 2 through 26.
 - 4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

- B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.3 DEFINITIONS

- A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.4 WARRANTY REQUIREMENTS

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
 - 1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- E. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.5 SUBMITTALS

- A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
- B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.
 - 1. Refer to individual Sections of Divisions 2 through 26 for specific content requirements, and particular requirements for submittal of special warranties.
- C. Form of Submittal: At Final Completion, compile two copies of each required warranty properly executed by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- D. Bind warranties in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
 - 1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the 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 the installer.
 - 2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES", the Project title or name, and the name of the Contractor.
- E. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS

Not used.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 017900

DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training CD(s), DVD(s) and/or USB Drive(s).

1.3 SUBMITTALS

- A. Instruction Program: Submit two copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module.
 - 1. At completion of training, submit one complete training manual for Owner's use.
- B. Attendance Record: For each training module, submit list of participants and length of instruction time.
- C. Demonstration and Training CD(s), DVD(s) and/or USB Drive(s): Submit two copies within seven days of end of each training module.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name and address of photographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date CD(s), DVD(s) and/or USB Drive(s) was/were recorded.
 - f. Description of vantage point, indicating location.
 - 2. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding CD(s), DVD(s) and/or USB Drive(s). Include name of Project and date of recording on each page.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

1.4 QUALITY ASSURANCE

- A. Instructor Qualifications: A factory-authorized service representative, experienced in operation and maintenance procedures and training.
- B. Photographer Qualifications: A professional photographer who is experienced photographing construction projects.
- C. Preinstruction Conference: Review methods and procedures related to demonstration and training including, but not limited to, the following:
 - 1. Inspect and discuss locations and other facilities required for instruction.
 - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 - 3. Review required content of instruction.
 - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.5 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved operating and maintenance manuals. Do not submit instruction program until operating and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:
 - 1. Fire-protection systems, including fire alarm, fire pumps, and fire-extinguishing systems.
 - 2. HVAC systems, including air-handling equipment, air distribution systems, and terminal equipment and devices.
 - 3. HVAC instrumentation and controls.
 - 4. Lighting equipment and controls.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Regulatory requirements.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- c. Equipment function.
 - d. Operating characteristics.
 - e. Limiting conditions.
2. Documentation: Review the following items in detail:
 - a. Emergency.
 - b. Operating and Maintenance manuals.
 - c. Project Record Documents.
 - d. Identification systems.
 - e. Warranties and Bonds.
 - f. Maintenance service agreements and similar continuing commitments.
3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
7. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning.
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
8. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
- d. Instructions for identifying parts and components.
- e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.
- B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

- A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner with at least seven days' advance notice.
- C. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.3 DEMONSTRATION AND TRAINING CD(s), DVD(s) AND/OR USB DRIVE(s)

- A. General: Engage a qualified commercial photographer to record demonstration and training CD(s), DVD(s) and/or USB Drive(s). Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 - 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
- B. Recording Format: Provide high-quality CD(s), DVD(s) and/or USB Drive(s).
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and training. Display continuous running time.
- D. Narration: Describe scenes on CD(s), DVD(s) and/or USB Drive(s) by audio narration by microphone while CD(s), DVD(s) and/or USB Drive(s) is/are recorded. Include description of items being viewed. Describe vantage point, indicating location.

END OF SECTION

SECTION 024119

SELECTIVE DEMOLITION

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. Removal of portions of building structure indicated on drawings and as required to accommodate new construction.
 - 2. Salvage of existing items to be reused or recycled.
- B. Related Requirements: In general, the following related work is included in other sections of the specifications:
 - 1. Remodeling construction work and patching is included within the respective sections of specifications, including removal of materials for re-use and incorporated into remodeling or new construction.
 - 2. Relocation of pipes, conduits, ducts, other mechanical and electrical work is specified by respective trades.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
 - 1. Owner shall have first right of refusal for demolished items.

1.5 PREINSTALLATION MEETINGS

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- A. Predemolition Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's facility manger on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted. Owner shall be notified 24 hours prior to interruption of any utility service.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of elevator and stairs.
 - 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- C. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- D. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- E. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.8 QUALITY ASSURANCE

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.9 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 - 1. Before selective demolition, Owner will remove the following items:
 - a. All furnishings, excluding permanently fixed items.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is expected that hazardous materials will be encountered in the Work.
 - 1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Refrigerant: Remove refrigerant from mechanical equipment to be selectively demolished according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 - 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- C. Temporary Shoring: Contractor shall design, provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished, or adjacent construction and finishes to remain.
 - 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly.
- B. Reuse of Building Elements: Project has been designed to result in end-of-Project rates for reuse of building elements as follows. Do not demolish building elements beyond what is indicated on Drawings without Architect's approval.
- C. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

3.5 SALVAGE MATERIALS

- A. Where indicated on drawings as "Salvage-Deliver to Owner," carefully remove indicated items, clean, store, and turn over to Owner and obtain receipt.
1. Historic artifacts, including cornerstones and their contents, commemorative plaques and tablets, antiques, and other articles of historic significance remain the property of the Owner. Notify Owner's representative upon encountering such items and obtain acceptance regarding method of removal and salvage for Owner.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.
- C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings."

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.8 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

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. Silicone joint sealants.
 - 2. Urethane joint sealants.
 - 3. Mildew-resistant joint sealants.
 - 4. Butyl joint sealants.
 - 5. Latex joint sealants.
 - 6. Security Sealants

1.3 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. 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. Qualification Data: For qualified testing agency.
- B. Product Test Reports: For each kind of joint sealant, for tests performed by manufacturer and witnessed by a qualified testing agency.
- C. Preconstruction Laboratory Test Reports: From sealant manufacturer, indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

2. Interpretation of test results and written recommendations for primers and substrate preparation are needed for adhesion.

D. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
- B. Product Testing: Test joint sealants using a qualified testing agency.
 1. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

1.6 PRECONSTRUCTION TESTING

- A. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
 1. Adhesion Testing: Use ASTM C 794 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
 2. Compatibility Testing: Use ASTM C 1087 to determine sealant compatibility when in contact with glazing and gasket materials.
 3. Stain Testing: Use ASTM C 1248 to determine stain potential of sealant when in contact with stone masonry substrates.
 4. Submit manufacturer's recommended number of pieces of each type of material, including joint substrates, joint-sealant backings, and miscellaneous materials.
 5. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
 6. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures, including use of specially formulated primers.
 7. Testing will not be required if joint-sealant manufacturers submit data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, staining of, and compatibility with joint substrates and other materials matching those submitted.

1.7 FIELD 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.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

1.8 WARRANTY

- A. Special Installer's Warranty: 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 agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Five 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 stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 - 2. Disintegration of joint substrates from 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 JOINT SEALANTS, 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. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

- A. Silicone, S, NS, 50, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Corning Corporation; Dow Corning® 791 Silicone Weatherproofing Sealant.
 - b. GE Construction Sealants; Momentive Performance Materials Inc.; SCS2000 SilPruf.
 - c. May National Associates, Inc.; a subsidiary of Sika Corporation; Bondaflex Sil 265 LTS.
 - d. Pecora Corporation; PCS
 - e. Sika Corporation; Joint Sealants; Sikasil WS-295

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. Silicone, Acid Curing, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Corning Corporation; DOW CORNING® 999A SILICONE GLAZING SEALANT.
 - b. May National Associates, Inc.; a subsidiary of Sika Corporation; Bondaflex Sil 100 GC
 - c. Pecora Corporation; Pecora 860.
 - d. Polymeric Systems, Inc; PSI-601.
 - e. Sika Corporation; Joint Sealants; Sikasil-GP.

2.3 URETHANE JOINT SEALANTS

- A. Urethane, S, NS, 25, NT: Single-component, nonsag, nontraffic-use, plus 25 percent and minus 25 percent movement capability, urethane joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Corp. - Construction Chemicals; MasterSeal TX 1 (Pre-2014: Sonolastic TX1)
 - b. Bostik, Inc; Chem-Calk GPS1
 - c. ER Systems; an ITW Company; Pacific Polymers Elasto-Thane 230 MP.
 - d. Pecora Corporation; Dynatrol I-XL.
 - e. Polymeric Systems, Inc; Flexiprene 1000.
 - f. Schnee-Morehead, Inc., an ITW company; Permthane SM7108.
 - g. Sika Corporation; Joint Sealants; Sikaflex Textured Sealant.
 - h. Tremco Incorporated; Dymonic.
- B. Urethane, M, NS, 50, NT: Multicomponent, nonsag, plus 50 percent and minus 50 percent movement capability nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade NS, Class 50, Use NT.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Pecora Corporation; Dynatrol II.

2.4 MILDEW-RESISTANT JOINT SEALANTS

- A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.
- B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Corning Corporation; DOW CORNING® 786 SILICONE SEALANT -.
 - b. GE Construction Sealants; Momentive Performance Materials Inc.; SCS1700 Sanitary.
 - c. May National Associates, Inc.; a subsidiary of Sika Corporation; Bondaflex Sil 100 WF.
 - d. Pecora Corporation; Pecora 860.
 - e. Tremco Incorporated; Tremsil 200.

2.5 BUTYL JOINT SEALANTS

- A. Butyl-Rubber-Based Joint Sealants: ASTM C 1311.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Bostik, Inc; Chem-Calk 300.
 - b. Pecora Corporation; BC-158.

2.6 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. May National Associates, Inc.; a subsidiary of Sika Corporation.
 - b. Pecora Corporation; AC-20
 - c. Tremco Incorporated; Tremflex 834.

2.7 SECURITY SEALANTS (PICK PROOF, PICK RESISTANT)

- A. General: Provide manufacturer's standard one-part, nonsag, mildew-resistant, paintable, pick-proof/resistant sealant of formulation that is recommended for application on interior locations subject to impact and tamper.
 1. Basis-of-Design Product: SureBond SB-190

2.8 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Construction Chemicals, LLC, Building Systems.
 - b. Construction Foam Products, a division of Nomaco, Inc.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

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

2.9 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.
- 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. Masking Tape: Nonstaining, 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 performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

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. Porous joint substrates include the following:

- a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
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. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- 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 bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. 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.

- F. Tooling of Nonsag 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.
 - 4. Provide recessed joint configuration of recess depth and at locations indicated on Drawings according to Figure 8C in ASTM C 1193.
 - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
 - 1. Extent of Testing: Test completed and cured sealant joints as follows:
 - a. Perform one test for each 1000 feet of joint length thereafter or one test per each floor per elevation.
 - 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 - 3. Inspect tested joints and report on the following:
 - a. Whether sealants filled joint cavities and are free of voids.
 - b. Whether sealant dimensions and configurations comply with specified requirements.
 - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.
 - 4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
 - 5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

3.5 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.

3.6 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, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.
 - 1. Joint Locations:
 - a. Isolation and contraction joints in cast-in-place concrete slabs.
 - b. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Locations:
 - a. Construction joints in cast-in-place concrete.
 - b. Control and expansion joints in unit masonry.
 - c. Joints in dimension stone cladding.
 - d. Joints in exterior insulation and finish systems.
 - e. Joints between metal panels.
 - f. Joints between different materials listed above.
 - g. Control and expansion joints in ceilings and other overhead surfaces.
 - h. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Urethane, S, NS, 25, NT.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
 - 1. Joint Locations:
 - a. Isolation joints in cast-in-place concrete slabs.
 - b. Control and expansion joints in tile flooring.
 - c. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Urethane, S, P, 25, T, NT.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Locations:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Tile control and expansion joints.
 - c. Vertical joints on exposed surfaces of unit masonry.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- d. Other joints as indicated on Drawings.
 2. Joint Sealant: Urethane, S, NS, 25, NT.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- E. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.
1. Joint Locations:
 - a. Control joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints between interior wall surfaces and frames of interior doors windows and elevator entrances.
 - c. Other joints as indicated on Drawings.
 2. Joint Sealant: Acrylic latex.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- F. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
 - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - b. Tile control and expansion joints where indicated.
 - c. Other joints as indicated on Drawings.
 2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- G. Joint-Sealant Application: Concealed mastics.
1. Joint Locations:
 - a. Aluminum thresholds.
 - b. Sill plates.
 - c. Other joints as indicated on Drawings.
 2. Joint Sealant: Butyl-rubber based.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION

SECTION 081100

STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes steel doors and frames.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 4 Section "Unit Masonry" for building anchors into and grouting frames in masonry construction.
 - 2. Division 8 Section "Flush Wood Doors" for hollow-core and solid-core wood doors installed in steel frames.
 - 3. Division 8 Section "Door Hardware" for door hardware and weatherstripping.
 - 4. Division 8 Section "Glazing" for glass in steel doors and sidelights.
 - 5. Division 9 Section "Gypsum Board Assemblies" for spot grouting frames in gypsum board partitions.
 - 6. Division 9 Section "Painting" for field painting primed doors and frames.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for each type of door and frame specified, including details of construction, materials, dimensions, hardware preparation, core, label compliance, sound ratings, profiles, and finishes.
- C. Shop Drawings showing fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of door and frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
- D. Door Schedule: Submit schedule of doors and frames using same reference numbers for details and openings as those on Contract Drawings.
 - 1. Indicate coordination of glazing frames and stops with glass and glazing requirements.
- E. Samples for initial selection in the form of manufacturer's color charts showing the full range of colors available for factory-finished doors and frames.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

1.4 QUALITY ASSURANCE

- A. Provide doors and frames complying with ANSI/SDI A250.8 "Recommended Specifications for Standard Steel Doors and Frames" and as specified.
- B. Fire-Rated Door Assemblies: Units that comply with NFPA 80, are identical to door and frame assemblies tested for fire-test-response characteristics per ASTM E 152, and are labeled and listed by UL, Warnock Hersey, or another testing and inspecting agency acceptable to authorities having jurisdiction. Door and frame assembly to be certified by the same testing laboratory.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors and frames.
- B. Inspect doors and frames on delivery for damage. Damaged and rusted doors and frames shall be removed and replaced as directed by the Architect.
- C. Store doors and frames at building site under cover. Place units on minimum 4-inch- high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber. If cardboard wrappers on doors become wet, remove cartons immediately. Provide minimum 1/4-inch spaces between stacked doors to promote air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Steel Doors and Frames:
 - a. Amweld Building Products, Inc.
 - b. Ceco Door Products.
 - c. Curries Co.
 - d. Kewanee Corp.
 - e. Republic Builders Products.
 - f. Steelcraft.

2.2 MATERIALS

- A. Hot-Rolled Steel Sheets and Strip: Commercial-quality carbon steel, pickled and oiled, complying with ASTM A 569 (ASTM A 569M).
- B. Cold-Rolled Steel Sheets: Carbon steel complying with ASTM A 366 (ASTM A 366M), commercial quality, or ASTM A 620 (ASTM A 620M), drawing quality, special killed.

- C. Galvanized Steel Sheets: Zinc-coated carbon steel complying with ASTM A 526 (ASTM A 526M), commercial quality, or ASTM A 642 (ASTM A 642M), drawing quality, hot-dip galvanized according to ASTM A 525, with A 60 or G 60 (ASTM A 525M, with Z 180 or ZF 180) coating designation, mill phosphatized.
- D. Supports and Anchors: Fabricated from not less than 0.0478-inch- (1.2-mm-) thick steel sheet; 0.0516-inch- (1.3-mm-) thick galvanized steel where used with galvanized steel frames.
- E. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Where items are to be built into exterior walls, hot-dip galvanize complying with ASTM A 153, Class C or D as applicable.

2.3 DOORS

- A. Steel Doors: Provide 1-3/4-inch- thick doors of materials and ANSI/SDI A250.8 grades and models specified below, or as indicated on Drawings or schedules:
 - 1. Standard Interior Doors: Grade III, Model 2 extra heavy-duty, 16 gauge , seamless design, flush tops and bottoms thick cold-rolled steel sheet faces. (Minimum thickness .053).
 - 2. Standard Exterior Doors: Grade III, Model 2A, 14 gauge, extra heavy duty, seamless design, flush top and bottom, channels cold-rolled steel sheet faces. (Minimum thickness .067), galvanized finish, rigid polyurethane core.
 - 3. Detention Doors: Provide 2" thick door, full flush design (no visible seams), true truss design. Inner vertical reinforcement shall be 26 gauge steel at 2-3/4" o.c. maximum. Fill flutes with 6# density fire retardant mineral wool, 14 gauge cold-rolled steel sheet faces.
 - 4. Security Doors: Grade III, Model 2A, 14 gauge, extra heavy duty, seamless design, flush top and bottom channels, cold-rolled steel sheet faces (minimum thickness .067), galvanized finish at exterior door locations, rigid polyurethane core.
 - 5. Access Doors: Provide medium security access doors at locations indicated or the drawings.
 - a. Frame: One piece 12 gauge steel frame, 2-1/2" deep x 2" wide x 9/16" return.
 - b. Door: 12 gauge steel.
 - c. Hinge: Exposed continuous type.
 - d. Fasteners: Security screws. Door and frame shall be rust-inhibitive primed for painting as scheduled. Provide security lock for door. Acceptable manufacturer is Larson's Manufacturing Company, or equal.
- B. Door Louvers: Provide louvers according to SDI 111C for interior doors where indicated, with blades or baffles formed of 0.0239-inch-thick cold-rolled steel sheet set into minimum 0.0359-inch-thick steel frame.
 - 1. Sight-Proof Louvers: Stationary louvers constructed with inverted V-shaped or Y-shaped blades.

2.4 FRAMES

- A. Provide metal frames for doors, transoms, sidelights, borrowed lights, and other openings, according to ANSI/SDI 100, and of types and styles as shown on Drawings and schedules. Conceal fastenings, unless otherwise indicated.
 - 1. 16 gauge (.053 inch) minimum thickness for standard interior doors.
 - 2. 14 gauge (.067 inch) minimum thickness for standard exterior doors and security doors. Galvanize frames at exterior locations.
 - 3. 12 gauge (.093 inch) minimum thickness at detention door locations.

4. Fabricate frames with mitered or coped and continuously welded corners.
- B. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single-door frames and 2 silencers on heads of double-door frames.
- C. Plaster Guards: Provide minimum 0.0179-inch- (0.45-mm-) thick steel plaster guards or mortar boxes at back of hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.
- D. Grout: When required in masonry construction, as specified in Division 4 Section "Unit Masonry."

2.5 FABRICATION

- A. Fabricate steel door and frame units to be rigid, neat in appearance, and free from defects, warp, or buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project site. Comply with ANSI/SDI A250.8 requirements.
 1. Internal Construction: One of the following manufacturer's standard core materials according to SDI standards:
 - a. Resin-impregnated paper honeycomb.
 - b. Rigid polyurethane conforming to ASTM C 591.
 - c. Unitized steel grid.
 - d. Vertical steel stiffeners.
 - e. Rigid mineral fiber with internal sound deadener on inside of face sheets.
 2. Clearances: Not more than 1/8 inch (3.2 mm) at jambs and heads, except not more than 1/4 inch (6.4 mm) between non-fire-rated pairs of doors. Not more than 3/4 inch (19 mm) at bottom.
 - a. Fire Doors: Provide clearances according to NFPA 80.
- B. Fabricate exposed faces of doors and panels, including stiles and rails of nonflush units, from only cold-rolled steel sheet.
- C. Tolerances: Comply with SDI 117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- D. Fabricate concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold- or hot-rolled steel sheet.
- E. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.
- F. Thermal-Rated (Insulating) Assemblies: At exterior locations and elsewhere as shown or scheduled, provide doors fabricated as thermal-insulating door and frame assemblies and tested according to ASTM C 236 or ASTM C 976 on fully operable door assemblies.
 1. Unless otherwise indicated, provide thermal-rated assemblies with U-value rating of 0.41 Btu/sq. ft. x h x deg F or better.
- G. Sound-Rated (Acoustical) Assemblies: Where shown or scheduled, provide door and frame assemblies fabricated as sound-reducing type, tested according to ASTM E 1408, and classified according to ASTM E 413.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

1. Unless otherwise indicated, provide acoustical assemblies with STC sound ratings of 33 or better.
- H. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements of SDI 107 and ANSI A115 Series specifications for door and frame preparation for hardware.
- I. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project site.
- J. Locate hardware as indicated on Shop Drawings or, if not indicated, according to the Door and Hardware Institute's (DHI) "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
- K. Glazing Stops: Minimum 0.0359-inch-thick steel or 0.040-inch-thick aluminum.
 1. Provide nonremovable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.
 2. Provide screw-applied, removable, glazing beads on inside of glass, louvers, and other panels in doors.

2.6 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual" for recommendations relative to applying and designating finishes.
- B. Comply with SSPC-PA 1, "Paint Application Specification No. 1," for steel sheet finishes.
- C. Apply primers and organic finishes to doors and frames after fabrication.

2.7 STEEL SHEET FINISHES

- A. Surface Preparation: Solvent-clean surfaces to comply with SSPC-SP 1 to remove dirt, oil, grease, and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel to comply with SSPC-SP 5 (White Metal Blast Cleaning) or SSPC-SP 8 (Pickling).
- B. Pretreatment: Immediately after surface preparation, apply a conversion coating of type suited to organic coating applied over it.
- C. Factory Priming for Field-Painted Finish: Apply shop primer that complies with ANSI A224.1 acceptance criteria, is compatible with finish paint systems indicated, and has capability to provide a sound foundation for field-applied topcoats. Apply primer immediately after surface preparation and pretreatment. Insufficient thickness to prevent rusting during construction activities. Provide field applied primer coats as required to prevent rust from developing. Rusted frames shall be removed and replaced.

PART 3 - EXECUTION

0.1 INSTALLATION

- A. General: Install steel doors, frames, and accessories according to Shop Drawings, manufacturer's data, and as specified.
- B. Placing Frames: Comply with provisions of SDI 105, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged. Do not use shipping spreaders for frame installation.
 - 1. Except for frames located in existing concrete, masonry, or gypsum board assembly construction, place frames before constructing enclosing walls and ceilings.
 - 2. In masonry construction, install at least 3 wall anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Acceptable anchors include masonry wire anchors and masonry T-shaped anchors.
 - 3. In metal-stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels. In steel-stud partitions, attach wall anchors to studs with screws.
 - 4. Install fire-rated frames according to NFPA 80.
- C. Door Installation: Fit hollow-metal doors accurately in frames, within clearances specified in ANSI/SDI A250.8.
 - 1. Fire-Rated Doors: Install with clearances specified in NFPA 80.
 - 2. Smoke-Control Doors: Comply with NFPA 105.

3.2 ADJUSTING AND CLEANING

- A. Prime Coat Touchup: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.
- B. Protection Removal: Immediately before final inspection, remove protective wrappings from doors and frames.

END OF SECTION

SECTION 082110

FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Solid core doors with wood veneer faces.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for each type of door, including details of core and edge construction, trim for openings and louvers, and factory-finishing specifications.
- C. Shop drawings indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for veneer matching and factory finishing and other pertinent data.
 - 1. For factory-machined doors, indicate dimensions and locations of cutouts for locksets and other cutouts adjacent to light and louver openings.
- D. Samples for initial selection in the form of color charts consisting of actual materials in small sections for the following:
 - 1. Faces of factory-finished doors with transparent finish. Show the full range of colors available for stained finishes.

1.4 QUALITY ASSURANCE

- A. Quality Standard: Comply with the following standard:
 - 1. NWWDA Quality Standard: I.S.1-A, "Architectural Wood Flush Doors," of the National Wood Window and Door Association.
- B. Fire-Rated Wood Doors: Provide wood doors that comply with NFPA 80; are identical in materials and construction to units tested in door and frame assemblies per ASTM E 152; and are labeled and listed by UL, Warnock Hersey, or another testing and inspection agency acceptable to authorities having jurisdiction.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

1. Temperature Rise Rating: At stairwell enclosures, provide doors that have a temperature rise rating of 450 deg F (250 deg C) maximum in 30 minutes of fire exposure.

C. Single-Source Responsibility: Obtain doors from one source and by a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect doors during transit, storage, and handling to prevent damage, soiling, and deterioration. Comply with requirements of referenced standard and manufacturer's instructions.

B. Identify each door with individual opening numbers as designated on shop drawings, using temporary, removable, or concealed markings.

1.6 PROJECT CONDITIONS

A. Conditioning: Do not deliver or install doors until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.7 WARRANTY

A. General Warranty: Door manufacturer's warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Door Manufacturer's Warranty: Submit written agreement on door manufacturer's standard form signed by manufacturer, Installer, and Contractor, agreeing to repair or replace defective doors that have warped (bow, cup, or twist) more than 1/4 inch (6.35 mm) in a 42-by-84-inch (1067-by-2134-mm) section or that show telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span, or do not conform to tolerance limitations of referenced quality standards.

1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors where defect was not apparent prior to hanging.

2. Warranty shall be in effect during the following period of time after date of Substantial Completion.

a. Solid Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering doors that may be incorporated in the Work include, but are not limited to, the following:

1. Solid Core Doors:

a. VT Industries Inc.

b. Eggers Industries, Architectural Door Division.

c. Graham Wood Doors

2.2 INTERIOR FLUSH WOOD DOORS

- A. Solid Core Doors for Transparent Finish: Comply with the following requirements:
 - 1. Faces: Red oak, rotary cut.
 - 2. Grade: Premium.
 - 3. Construction: 5 plies.
 - 4. Core: Particleboard core.
 - 5. Bonding: Stiles and rails bonded to core, then entire unit abrasive planed before veneering.
- B. Fire-Rated Solid Core Doors: Comply with the following requirements:
 - 1. Faces and Grade: Provide faces and grade to match non-fire-rated doors in same area of building, unless otherwise indicated.
 - 2. Construction: Manufacturer's standard core construction as required to provide fire-resistance rating indicated.
 - 3. Pairs: Provide fire-rated pairs with fire-retardant stiles that are labeled and listed for kinds of applications indicated without formed-steel edges and astragals.

2.3 VENEER MATCHING

- A. Within Door Faces: Provide doors with the following veneer matching:
 - 1. Slip matching.
- B. Pairs and Sets: Provide pair matching and set matching for pairs of doors and for doors hung in adjacent sets.

2.4 LOUVERS AND LIGHT FRAMES

- A. Metal Louvers: Size, type, and profile shown and fabricated from the following:
 - 1. Color-Anodized Aluminum: Extruded aluminum with AA-C22A32, Class II finish.
 - a. Color: Standard aluminum industry color, satin, clear anodized.
- B. Metal Frames for Light Openings in Fire Doors: Manufacturer's standard frame formed of 0.0478-inch- (1.2-mm-) thick cold-rolled steel sheet, factory primed, and approved for use in doors of fire-rating indicated.

2.5 FABRICATION

- A. Fabricate flush wood doors to comply with following requirements:
 - 1. In sizes indicated for job-site fitting.
 - 2. Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels:
 - a. Comply with clearance requirements of referenced quality standard for fitting.
 - Comply with requirements of NFPA 80 for fire-resistance-rated doors.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

3. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame shop drawings, DHI A115-W series standards, and hardware templates.
 - a. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with factory machining.
- B. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of door(s) required.
 1. Light Openings: Trim openings with moldings of material and profile indicated.
 2. Louvers: Factory install louvers in prepared openings.

2.6 SHOP PRIMING

- A. Transparent Finish: Shop-seal faces and edges of doors for transparent finish with stain, other required pretreatments, and first coat of finish as specified in the following:
 1. Division 9 Section "Painting."

2.7 FACTORY FINISHING

- A. General: Comply with referenced quality standard's requirements for factory finishing.
- B. Finish wood doors at factory.
- C. Transparent Finish: Comply with requirements indicated for grade, finish system, staining effect, and sheen.
 1. Grade: Premium.
 2. Finish: AWI System TR-6 catalyzed polyurethane.
 3. Staining: Match approved sample for color.
 4. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine installed door frames prior to hanging door:
 1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.
 2. Reject doors with defects.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Hardware: For installation see Division 8 Section "Door Hardware."

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. Manufacturer's Instructions: Install wood doors to comply with manufacturer's instructions and referenced quality standard and as indicated.
 - 1. Install fire-rated doors in corresponding fire-rated frames according to requirements of NFPA 80.
- C. Factory-Finished Doors: Restore finish before installation, if fitting or machining is required at the job site.

3.3 ADJUSTING AND PROTECTION

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Refinish or replace doors damaged during installation.
- C. Protect doors as recommended by door manufacturer to ensure that wood doors will be without damage or deterioration at the time of Substantial Completion.

END OF SECTION

SECTION 087100

DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.
- B. This Section includes the following:
 - 1. Hinges.
 - 2. Key control system.
 - 3. Lock cylinders and keys.
 - 4. Lock and latch sets.
 - 5. Bolts.
 - 6. Exit devices.
 - 7. Push/pull units.
 - 8. Closers.
 - 9. Overhead holders.
 - 10. Miscellaneous door control devices.
 - 11. Door trim units.
 - 12. Protection plates.
 - 13. Weatherstripping for exterior doors.
 - 14. Thresholds.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 8 Section "Steel Doors and Frames" for silencers integral with hollow metal frames.
 - 2. Division 8 Section "Flush Wood Doors" for factory prefitting and factory premachining of doors for door hardware.

1.3 HARDWARE ALLOWANCE

- A. Selection and Ordering: Furnish door hardware as selected by Architect and in such quantities as indicated.
- B. Door hardware supplier's responsibilities shall be as follows:
 - 1. Submittals: Submit through Contractor required product data, final hardware schedule, separate keying schedule, and samples as specified in this Section, unless otherwise indicated.

2. Construction Schedule: Inform Contractor promptly of estimated times and dates that will be required to process submittals, to furnish templates, to deliver hardware, and to perform other work associated with furnishing door hardware for purposes of including this data in construction schedule. Comply with this schedule.
3. Coordination and Templates: Assist Contractor as required to coordinate hardware with other work in respect to both fabrication and installation. Furnish Contractor with templates and deliver hardware to proper locations.
4. Product Handling: Package, identify, deliver, and inventory door hardware specified in this Section.
5. Discrepancies: Based on requirements indicated in Contract Documents in effect at time of door hardware selection, furnish types, finishes, and quantities of door hardware, including fasteners, and Owner's maintenance tools required to comply with specified requirements and as needed to install and maintain hardware. Furnish or replace any items of door hardware resulting from shortages and incorrect items at no cost to the Owner or Contractor. Obtain signed receipts from Contractor for all delivered materials.

C. Contractor's responsibilities shall be as follows:

1. Submittals: Coordinate and process submittals for door hardware in same manner as submittals for other work.
2. Construction Schedule: Cooperate with door hardware supplier in establishing scheduled dates for submittals and delivery of templates and door hardware. Incorporate in construction schedule the times and dates related to furnishing hardware by door hardware supplier.
3. Coordination: Coordinate door hardware with other Work. Furnish hardware supplier or manufacturer with shop drawings of other work where required or requested. Verify completeness and suitability of hardware with supplier.
4. Product Handling: Provide secure lock-up for hardware delivered to the site. Inventory hardware jointly with representative of hardware supplier and issue signed receipts for all delivered materials.
5. Installation Information: The general types and approximate quantities of hardware required for this Project are indicated at the end of this Section in order to establish Contractor's costs for installation and other work not included in allowance.

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification sections.
- B. Product data including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
- C. Final hardware schedule coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 1. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
 - a. Type, style, function, size, and finish of each hardware item.
 - b. Name and manufacturer of each item.
 - c. Fastenings and other pertinent information.

- d. Location of each hardware set cross referenced to indications on Drawings both on floor plans and in door and frame schedule.
 - e. Explanation of all abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for hardware.
 - g. Door and frame sizes and materials.
 - h. Keying information.
2. Submittal Sequence: Submit final schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by door hardware, and other information essential to the coordinated review of schedule.
 3. Submittal Sequence: Submit initial draft of final schedule along with essential product data in order to facilitate the fabrication of other work that is critical in the Project construction schedule. Submit final schedule after samples, product data, coordination with shop drawings of other work, delivery schedules, and similar information has been completed and accepted.
 4. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.
- D. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.5 QUALITY ASSURANCE

- A. Single Source Responsibility: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer.
- B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the Project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.
 1. Require supplier to meet with Owner to finalize keying requirements and to obtain final instructions in writing.
- C. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by UL, Warnock Hersey, FM, or other testing and inspecting organization acceptable to authorities having jurisdiction for use on types and sizes of doors indicated in compliance with requirements of fire-rated door and door frame labels.

1.6 PRODUCT HANDLING

- A. Tag each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.
- B. Packaging of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.

- C. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.
- D. Deliver individually packaged door hardware items promptly to place of installation (shop or Project site).
- E. Provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

1.7 MAINTENANCE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Butts and Hinges:
 - a. Hager Hinge Co.
 - b. McKinney Products Co.
 - c. H. Soss & Company.
 - d. Stanley Hardware, Div. Stanley Works.
 - e. Folger Adams Security, Inc.
 - 2. Key Control System:
 - a. Key Control Systems, Inc.
 - b. Telkee Inc.
 - 3. Cylinders and Locks:
 - a. Arrow Lock Manufacturing Co.
 - b. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
 - c. Sargent Manufacturing Company.
 - d. Schlage Lock, Div. Ingersoll-Rand Door Hardware Group.
 - e. Yale Security Inc.
 - 4. Bolts:
 - a. Builders Brass Works Corp.
 - b. Glynn-Johnson Corp.
 - c. Hager Hinge Co.
 - d. H. B. Ives, A Harrow Company.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- e. Quality Hardware Mfg. Co., Inc.; Div. Newman Tonks, Inc.
- f. Stanley Hardware, Div. Stanley Works.
- 5. Exit/Panic Devices:
 - a. Arrow Lock Manufacturing Co.
 - b. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
 - c. Sargent Manufacturing Company.
 - d. Von Duprin, Div. Ingersoll-Rand Door Hardware Group.
 - e. Yale Security Inc.
- 6. Push/Pull Units:
 - a. Baldwin Hardware Corp.
 - b. Brookline Industries, Div. Yale Security Inc.
 - c. Hager Hinge Co.
 - d. H. B. Ives, A Harrow Company.
 - e. Triangle Brass Manufacturing Company (Trimco).
- 7. Overhead Closers:
 - a. Arrow Lock Manufacturing Co.
 - b. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
 - c. Dorma Door Controls International.
 - d. LCN, Div. Ingersoll-Rand Door Hardware Group.
 - e. Norton Door Controls, Div. Yale Security Inc.
 - f. Rixson-Firemark, Div. Yale Security Inc.
 - g. Sargent Manufacturing Company.
 - h. Yale Security Inc.
- 8. Door Control Devices:
 - a. Baldwin Hardware Corp.
 - b. Brookline Industries, Div. Yale Security Inc.
 - c. Builders Brass Works Corp.
 - d. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
 - e. Glynn-Johnson Corp.
 - f. Hager Hinge Co.
 - g. H. B. Ives, A Harrow Company.
 - h. Quality Hardware Mfg. Co., Inc.; Div. Newman Tonks, Inc.
 - i. Triangle Brass Manufacturing Company (Trimco).
- 9. Door Trim Units:
 - a. Baldwin Hardware Corp.
 - b. Brookline Industries, Div. Yale Security Inc.
 - c. Builders Brass Works Corp.
 - d. Hager Hinge Co.
 - e. H. B. Ives, A Harrow Company.
 - f. Triangle Brass Manufacturing Company (Trimco).
- 10. Kick, Mop, and Armor Plates:
 - a. Baldwin Hardware Corp.
 - b. Brookline Industries, Div. Yale Security Inc.
 - c. Hager Hinge Co.
 - d. Hiawatha, Inc.
 - e. H. B. Ives, A Harrow Company.
 - f. Triangle Brass Manufacturing Company (Trimco).
- 11. Door Stripping and Seals:
 - a. Hager Hinge Co.
 - b. National Guard Products, Inc.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- c. Pemko Manufacturing Co., Inc.
 - d. Reese Enterprises, Inc.
 - e. Sealeze Corp.
 - f. Ultra Industries.
 - g. Zero International, Inc.
12. Thresholds:
- a. Hager Hinge Co.
 - b. National Guard Products, Inc.
 - c. Pemko Manufacturing Co., Inc.
 - d. Reese Enterprises, Inc.
 - e. Sealeze Corp.
 - f. Zero International, Inc.

2.2 SCHEDULED HARDWARE

- A. Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of finish hardware are indicated in the "Hardware Schedule" at the end of this Section. Products are identified by using hardware designation numbers of the following:
- 1. Manufacturer's Product Designations: The product designation and name of one manufacturer are listed for each hardware type required for the purpose of establishing minimum requirements. Provide either the product designated or, where more than one manufacturer is specified under the Article "Manufacturers" in Part 2 for each hardware type, the comparable product of one of the other manufacturers that complies with requirements.
 - 2. ANSI/BHMA designations used elsewhere in this Section or in schedules to describe hardware items or to define quality or function are derived from the following standards. Provide products complying with these standards and requirements specified elsewhere in this Section.
 - a. Butts and Hinges: ANSI/BHMA A156.1.
 - b. Bored and Preassembled Locks and Latches: ANSI/BHMA A156.2.
 - c. Exit Devices: ANSI/BHMA A156.3.
 - d. Door Controls - Closers: ANSI/BHMA A156.4.
 - e. Auxiliary Locks and Associated Products: ANSI/BHMA A156.5.
 - f. Architectural Door Trim: ANSI/BHMA A156.6.
 - g. Template Hinge Dimensions: ANSI/BHMA A156.7.
 - h. Door Controls - Overhead Holders: ANSI/BHMA A156.8.
 - i. Interconnected Locks and Latches: ANSI/BHMA A156.12.
 - j. Mortise Locks and Latches: ANSI/BHMA A156.13.
 - k. Sliding and Folding Door Hardware: ANSI/BHMA A156.14.
 - l. Closer Holder Release Devices: ANSI/BHMA A156.15.
 - m. Auxiliary Hardware: ANSI/BHMA A156.16.
 - n. Self-Closing Hinges and Pivots: ANSI/BHMA A156.17.
 - o. Materials and Finishes: ANSI/BHMA A156.18.

2.3 MATERIALS AND FABRICATION

- A. Manufacturer's Name Plate: Do not use manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise acceptable to Architect.
- 1. Manufacturer's identification will be permitted on rim of lock cylinders only.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units by applicable ANSI/BHMA A156 series standards for each type of hardware item and with ANSI/BHMA A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.
- C. Base Metals: Produce hardware units of basic metal and forming method indicated using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units for finish designations indicated.
- D. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.
- E. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.
- F. Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely. Where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex screw fasteners.

2.4 HINGES, BUTTS, AND PIVOTS

- A. Templates: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
- B. Screws: Provide Phillips flat-head screws complying with the following requirements:
 - 1. For metal doors and frames install machine screws into drilled and tapped holes.
 - 2. For wood doors and frames install wood screws.
 - 3. For fire-rated wood doors install #12 x 1-1/4-inch (32-mm), threaded-to-the-head steel wood screws.
 - 4. Finish screw heads to match surface of hinges or pivots.
- C. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
 - 1. Out-Swing Exterior Doors: Nonremovable pins.
 - 2. Out-Swing Corridor Doors with Locks: Nonremovable pins.
 - 3. Interior Doors: Nonrising pins.
 - 4. Tips: Flat button and matching plug, finished to match leaves, except where hospital tip (HT) indicated.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- D. Number of Hinges: Provide number of hinges indicated but not less than 3 hinges per door leaf for doors 90 inches (2250 mm) or less in height and one additional hinge for each 30 inches (750 mm) of additional height.
 - 1. Fire-Rated Doors: Not less than 3 hinges per door leaf for doors 86 inches (2150 mm) or less in height with same rule for additional hinges.

2.5 LOCK CYLINDERS AND KEYING

- A. Standard System: Except as otherwise indicated, provide new masterkey system for Project.
- B. Multiple-Building System: Except as otherwise indicated, provide new grandmasterkey system for Project.
- C. Review the keying system with the Owner and provide the type required (master, grandmaster or great-grandmaster), either new or integrated with Owner's existing system.
- D. Equip locks with manufacturer's standard 6-pin tumbler cylinders.
- E. Metals: Construct lock cylinder parts from brass or bronze, stainless steel, or nickel silver.
- F. Comply with Owner's instructions for masterkeying and, except as otherwise indicated, provide individual change key for each lock that is not designated to be keyed alike with a group of related locks.
 - 1. Permanently inscribe each key with number of lock that identifies cylinder manufacturer's key symbol, and notation, "DO NOT DUPLICATE."
- G. Key Material: Provide keys of nickel silver only.
- H. Key Quantity: Furnish 3 change keys for each lock, 5 master keys for each master system, and 5 grandmaster keys for each grandmaster system.
 - 1. Furnish one extra blank for each lock.
 - 2. Deliver keys to key control system manufacturer.
 - 3. Deliver keys to Owner.

2.6 KEY CONTROL SYSTEM

- A. Provide a key control system including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and two (2) standard metal cabinets, all as recommended by system manufacturer, with capacity for 150 percent of the number of locks required for the Project.
 - 1. Provide complete cross index system set up by key control manufacturer, and place keys on markers and hooks in the cabinets as determined by the final key schedule. One cabinet to be located in the Sheriff's Control Room 143, and the second cabinet to be located by the Owner.
 - 2. Provide hinged-panel type cabinet for wall mounting.
 - 3. Provide multiple-drawer type cabinet.

2.7 LOCKS, LATCHES, AND BOLTS

- A. strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set, unless otherwise indicated.
 - 1. Provide flat lip strikes for locks with 3-piece, antifriction latchbolts as recommended by manufacturer.
 - 2. Provide extra long strike lips for locks used on frames with applied wood casing trim.
 - 3. Provide recess type top strikes for bolts locking into head frames, unless otherwise indicated.
 - 4. Provide dust-proof strikes for foot bolts, except where special threshold construction provides nonrecessed strike for bolt.
 - 5. Provide roller type strikes where recommended by manufacturer of the latch and lock units.
 - 6. Provide standard (open) strike plates for interior doors of residential units where wood door frames are used.
- B. Lock Throw: Provide 5/8-inch (16-mm) minimum throw of latch on pairs of doors. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.
 - 1. Provide 1/2-inch (13-mm) minimum throw of latch for other bored and preassembled types of locks and 3/4-inch (19-mm) minimum throw of latch for mortise locks. Provide 1-inch (25-mm) minimum throw for all dead bolts.
- C. Flush Bolt Heads: Minimum of 1/2-inch- (13-mm-) diameter rods of brass, bronze, or stainless steel with minimum 12-inch- (300-mm-) long rod for doors up to 84 inches (2100 mm) in height. Provide longer rods as necessary for doors exceeding 84 inches (2100 mm) in height.
- D. Exit Device Dogging: Except on fire-rated doors where closers are provided on doors equipped with exit devices, equip the units with keyed dogging device to keep the latch bolt retracted, when engaged.
- E. Rabbeted Doors: Where rabbeted door stiles are indicated, provide special rabbeted front on lock and latch units and bolts.

2.8 PUSH/PULL UNITS

- A. Exposed Fasteners: Provide manufacturer's standard exposed fasteners for installation, thru-bolted for matched pairs but not for single units.
- B. Concealed Fasteners: Provide manufacturer's special concealed fastener system for installation, thru-bolted for matched pairs but not for single units.

2.9 CLOSERS AND DOOR CONTROL DEVICES

- A. Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit depending on size of door, exposure to weather, and anticipated frequency of use.
 - 1. Where parallel arms are indicated for closers, provide closer unit one size larger than recommended for use with standard arms.
 - 2. Provide parallel arms for all overhead closers, except as otherwise indicated.
 - 3. Provide full cover regular arm or parallel are installation.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. Access-Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped, provide adjustable units complying with ANSI A117.1 provisions for door opening force and delayed action closing.
- C. Combination Door Closers and Holders: Provide units designed to hold door in open position under normal usage and to release and close door automatically under fire conditions. Incorporate an integral electromagnetic holder mechanism designed for use with UL listed fire detectors, provided with normally closed switching contacts.
 - 1. Provide integral smoke detector device in combination door closers and holders complying with UL 228.
- D. Provide grey resilient parts for exposed bumpers.

2.10 DOOR TRIM UNITS

- A. Fasteners: Provide manufacturer's standard exposed fasteners for door trim units consisting of either machine screws or self-tapping screws. At detention and security doors provide Torx tamper resistant screw, stainless steel finish.
- B. Fabricate edge trim of stainless steel to fit door thickness in standard lengths or to match height of protection plates.
- C. Fabricate protection plates not more than 1-1/2 inches (38 mm) less than door width on hinge side and not more than 1/2 inch (13 mm) less than door width on pull side by height indicated.
 - 1. Metal Plates: Stainless steel, 0.050 inch (U.S. 18 gage) (1.3 mm).

2.11 WEATHERSTRIPPING AND SEALS

- A. General: Provide continuous weatherstripping on exterior doors and smoke, light, or sound seals on interior doors where indicated or scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.
- B. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strip is easily replaceable and readily available from stocks maintained by manufacturer.
- C. Weatherstripping at Jambs and Heads: Provide bumper-type resilient insert and metal retainer strips, surface applied unless shown as mortised or semimortised, and of following metal, finish, and resilient bumper material:
 - 1. Extruded aluminum with color anodized finish as selected from manufacturer's standard color range, 0.062-inch (1.6-mm) minimum thickness of main walls and flanges.
 - 2. Sponge neoprene conforming to MIL R 6130, Class II (Closed Cell).
 - a. Grade A: 30 to 150 deg F (-1 to 65 deg C), oil-resistant and self-extinguishing.
 - b. Grade B: 30 to 150 deg F (-1 to 65 deg C), non-oil-resistant.
 - c. Grade C: 67 to 170 deg F (19 to 77 deg C), low temperature.
 - 3. Expanded neoprene: Cellular rubber conforming to ASTM D 1056 Type 2 (closed-cell); Class B (low-swell, oil-resistant); Grade 2 (compression-deflection of 5 - 9 psi (35 - 60 kPa)); and self-extinguishing in following size:
 - a. 3/16 x 5/8 inch (5 x 16 mm).

- b. 1/4 x 3/4 inch (6 x 19 mm).
 - c. 3/8 x 1-1/4 inches (10 x 32 mm).
 - 4. Solid neoprene conforming to MIL R 6855, Class II, Grade 40.
 - a. Flexible, hollow bulb or loop insert.
 - 5. Brush pile insert of polypropylene or nylon woven pile and aluminum strip backing complying with AAMA 701.2.
- D. Weatherstripping at Door Bottoms: Provide threshold consisting of contact-type resilient insert and metal housing of design and size shown and of following metal, finish, and resilient seal strip:
- 1. Extruded aluminum with color anodized finish as selected from manufacturer's standard color range, 0.062-inch (1.6-mm) minimum thickness of main walls and flanges.
 - 2. Solid neoprene wiper or sweep seal complying with MIL R 6855, Class II, Grade 40.
 - 3. Flexible vinyl wiper or sweep seal strip.
 - 4. Brush pile insert of polypropylene or nylon woven pile and aluminum strip backing complying with AAMA 701.2.

2.12 THRESHOLDS

- A. General: Except as otherwise indicated, provide standard metal threshold unit of type, size, and profile as shown or scheduled.
- B. Exterior Hinged or Pivoted Doors: Provide units not less than 4 inches (100 mm) wide, formed to accommodate change in floor elevation where indicated, fabricated to accommodate door hardware and to fit door frames, and as follows:
 - 1. For in-swinging doors provide units with interlocking lip and interior drain channel; include hook on bottom edge of door and drain pan.
 - 2. For out-swinging doors provide units with interlocking lip and with hook on bottom edge of door to act as weather bar.
 - 3. For out-swinging doors provide rabbeted type units with replaceable weatherstrip insert in stop.

2.13 HARDWARE FINISHES

- A. Match items to the manufacturer's standard color and texture finish for the latch and lock sets (or push-pull units if no latch or lock sets).
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- C. Provide protective lacquer coating on all exposed hardware finishes of brass, bronze, and aluminum, except as otherwise indicated. The suffix "-NL" is used with standard finish designations to indicate "no lacquer."
- D. Finish and base material designations are indicated in accordance with ANSI BHMA A156.18 or the nearest traditional U.S. commercial finish. Provide satin chromium plated (US26D) finish.
- E. The designations used in schedules and elsewhere to indicate hardware finishes are the industry-recognized standard commercial finishes, except as otherwise noted.

1. Rust-Resistant Finish: For iron and steel base metal required for exterior work and in areas shown as "High Humidity" areas (and also when designed with the suffix -RR), provide 0.2-mil- (0.005-mm-) thick copper coating on base metal before applying brass, bronze, nickel, or chromium plated finishes.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.
 1. "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.
 2. "Recommended Locations for Builders Hardware for Custom Steel Doors and Frames" by the Door and Hardware Institute.
 3. NWWDA Industry Standard I.S.1.7, "Hardware Locations for Wood Flush Doors."
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.
- C. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- D. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- E. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Division 7 Section "Joint Sealers."
- F. Weatherstripping and Seals: Comply with manufacturer's instructions and recommendations to the extent installation requirements are not otherwise indicated.

3.2 ADJUSTING, CLEANING, AND DEMONSTRATING

- A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.
 1. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

- B. Clean adjacent surfaces soiled by hardware installation.
- C. Instruct Owner's personnel in the proper adjustment and maintenance of door hardware and hardware finishes.
- D. Six-Month Adjustment: Approximately six months after the date of Substantial Completion, the Installer, accompanied by representatives of the manufacturers of latchsets and locksets and of door control devices, and of other major hardware suppliers, shall return to the Project to perform the following work:
 - 1. Examine and re-adjust each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements.
 - 2. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures.
 - 3. Replace hardware items that have deteriorated or failed due to faulty design, materials, or installation of hardware units.
 - 4. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

3.3 HARDWARE SCHEDULE

- A. General: Provide hardware for each door to comply with requirements of Section "Door Hardware," hardware set numbers indicated in door schedule, and in the following schedule of hardware sets.
 - 1. Hardware sets indicate quantity, item, and size as applicable.
 - 2. The following hardware schedule is based on items supplied by the following manufacturers. Materials supplied by other manufacturer's are acceptable provided that they are equal in quality to that referenced.
 - a. Butts and Hinges:
 - 1) Interior : Hager 1279 (plain-bearing), BB1279 (ball bearing)
 - 2) Exterior: Hager BB1191 (ball bearing), stainless steel.
 - 3) Detention Door: Folger Adams 4-1/2 Fm institutional hinge, stainless steel.
 - b. Locksets/Latchsets: Cylinder
 - 1) Corbin Russwin - CL3400 Series, Newport Lever.
 - c. Silencers: Hager 308-D
 - d. Wall Stops : Hager 236-W.
 - e. Floor Stops: Hager 243-F
 - f. Push Plates\Pulls\Kickplates: Hager 30S/33J/220S - stainless steel.
 - g. Overhead Closers: Yale 3000 Series.
 - h. Weatherstripping: Threshold/Door Button/Jamb & Head: National Guard - 896-312-50050.
 - i. Exit Devices/Trim: Corbin Russwin - ED 600 Series/N3, Newport.
 - j. Holders: Glynn Johnson GJ44/GJ45.
 - k. Thresholds: National Guard, extruded aluminum, sized to cover material transition & meet ADA requirements.

HARDWARE SETS

Provide standard manufacturer's installation and operation hardware including but not limited to pivots, locksets, panic exit device, pull, thresholds, sweeps, closer, weatherstripping, flushbolts, coordinator, and

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

other hardware required for a complete installation.

HARDWARE SET #1: Offices, Witness

1-1/2	PR. Butts	4-1/2" x 4-1/2"	Plain Bearing
1	Cylinder Lockset-Office Function		
1	Wallstop		

HARDWARE SET #2: Corridors

1-1/2	PR. Butts	4-1/2" x 4-1/2"	Ball Bearing
1	Rim Exit Device-Classroom Function Trim		
1	Kickplate	.062" X 12" x 34"	
1	Closer		
1	Wallstop		

HARDWARE SET #3: Holding

1-1/2	PR. Butts	4-1/2" x 4-1/2"	Ball Bearing NRP
1	Cylinder Lockset-Institutional Function (F87)		
1	Closer		
1	Wallstop		

HARDWARE SET #4: Detention

1-1/2	PR. Butts	Detention Door Hinges	
1	Lock	Folger Adams-Model 86	
1	Speak Thru	Maximum Security Products Corporation	
1	Closer (mount closer to Corridor side)		

END OF SECTION

SECTION 088000

GLAZING

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. Glass for doors.
 - 2. Glazing sealants and accessories.

1.3 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.
- C. IBC: International Building Code.
- D.

1.4 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 2. Review temporary protection requirements for glazing during and after installation.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Glass Samples: For each type of the following products; 12 inches square.
 - 1. Tinted glass.
 - 2. Coated glass.
- C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

1.7 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For glass.
- B. Preconstruction adhesion and compatibility test report.
- C. Sample Warranties: For special warranties.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.10 FIELD CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
 - 1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

1.11 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Glass Product: Subject to compliance with requirements, provide product indicated in glass schedules or comparable product by one of the following:
 1. AGC Glass Company North America, Inc.
 2. Berkowitz, JE, LP.
 3. Cardinal Glass Industries.
 4. Cristacurva Glass.
 5. Dlubak Corporation.
 6. Gardner Glass Products, Inc.
 7. General Glass International.
 8. Glasswerks LA, Inc.
 9. Glaz-Tech Industries.
 10. Guardian Industries Corp.
 11. Hartung Glass Industries.
 12. Northwestern Industries, Inc.
 13. Oldcastle BuildingEnvelope.
 14. Pilkington North America Inc.
 15. PPG Industries, Inc.
 16. Saint-Gobain Corporation.
 17. Schott North America, Inc.
 18. Tecnoglass S. A.
 19. Trulite Glass & Aluminum Solutions.
 20. Viracon, Inc.
- B. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.
 1. Obtain tinted glass from single source from single manufacturer.
 2. Obtain reflective-coated glass from single source from single manufacturer.
- C. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

- B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the IBC and ASTM E 1300.
 - 1. Design Wind Pressures: As indicated on Drawings.
 - 2. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7, based on heights above grade indicated on Drawings.
 - a. Wind Design Data: As indicated on Drawings.
 - b. Basic Wind Speed: As indicated on Drawings.
 - c. Importance Factor: 1.0.
 - d. Exposure Category: B.
- C. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- D. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
 - 1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.

2.3 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Thickness: Where glass thickness is indicated, it is a minimum.
 - 1. Minimum Glass Thickness for Exterior Lites: 6 mm.
 - 2. Thickness of Tinted Glass: Provide same thickness for each tint color indicated throughout Project.
- D. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

- A. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

2.5 GLAZING SEALANTS

- A. General:
 - 1. Compatibility: Compatible with one another and with other materials they contact, including glass products, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 - 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
- B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 790.
 - b. GE Advanced Materials - Silicones; SilPruf LM SCS2700.
 - c. May National Associates, Inc.; Bondaflex Sil 290.
 - d. Pecora Corporation; 890NST.
 - e. Sika Corporation U.S.; Sikasil WS-290.
 - f. Tremco Incorporated; Spectrem 1.

2.6 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
 - 1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 - 2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
 - 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
 - 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.7 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.8 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
 - 1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
 - a. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.
- C. Grind smooth and polish exposed glass edges and corners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 - 2. Presence and functioning of weep systems.
 - 3. Minimum required face and edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches.
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- J. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until right before each glazing unit is installed.
- F. Apply heel bead of elastomeric sealant.
- G. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

- A. Immediately after installation remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.
- D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.8 MONOLITHIC GLASS SCHEDULE

- A. Glass Type TS: Clear fully tempered float glass.
 - 1. Minimum Thickness: 6 mm.
 - 2. Safety glazing required.

END OF SECTION

SECTION 092216

NON-STRUCTURAL METAL FRAMING

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. Non-load-bearing steel framing systems for interior gypsum board assemblies.
 - 2. Suspension systems for interior gypsum ceilings, soffits, and grid systems.

1.3 ACTION SUBMITTALS

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

PART 2 - PRODUCTS

2.1 FRAMING SYSTEMS

- A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
 - 2. Protective Coating: ASTM A 653/A 653M, G40, hot-dip galvanized unless otherwise indicated.
- B. Studs and Runners: ASTM C 645. Use either steel studs and runners or dimpled steel studs and runners.
 - 1. Steel Studs and Runners:
 - a. Minimum Base-Metal Thickness: 0.033 inch.
 - b. Depth: As indicated on Drawings.
 - 2. Dimpled Steel Studs and Runners:
 - a. Minimum Base-Metal Thickness: 0.025 inch.
 - b. Depth: As indicated on Drawings.
- C. Slip-Type Head Joints: Where indicated, provide one of the following:
 - 1. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

- a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Dietrich Metal Framing; SLP-TRK Slotted Deflection Track.
 - 2) MBA Building Supplies; FlatSteel Deflection Track.
 - 3) Steel Network Inc. (The); VertiClip SLD Series.
- D. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
 1. Minimum Base-Metal Thickness: 0.033 inch.
 2. Depth: As indicated on Drawings.
- E. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches, wall attachment flange of 7/8 inch, minimum uncoated-metal thickness of 0.018 inch, and depth required to fit insulation thickness indicated.

2.2 SUSPENSION SYSTEMS

- A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch-diameter wire, or double strand of 0.048-inch-diameter wire.
- B. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.
- C. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.053 inch and minimum 1/2-inch-wide flanges.
 1. Depth: 2-1/2 inches.

2.3 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
 1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Isolation Strip at Exterior Walls: Provide one of the following:
 1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.

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

3.2 PREPARATION

- A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.
 - 1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.

3.3 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754.
 - 1. Gypsum Veneer Plaster Assemblies: Also comply with requirements in ASTM C 844 that apply to framing installation.
 - 2. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.
- D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.4 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
 - 1. Single-Layer Application: 16 inches o.c. unless otherwise indicated.
 - 2. Tile Backing Panels: 16 inches o.c. unless otherwise indicated.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
 - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.

- a. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
 - a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
- D. Direct Furring:
1. Screw to wood framing.
 2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
- E. Z-Furring Members:
1. Erect insulation, specified in Section 072100 "Thermal Insulation," vertically and hold in place with Z-furring members spaced 24 inches o.c.
 2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
 3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches from corner and cut insulation to fit.
- F. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.5 INSTALLING SUSPENSION SYSTEMS

- A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
1. Hangers: 48 inches o.c.
 2. Carrying Channels (Main Runners): 48 inches o.c.
- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- C. Suspend hangers from building structure as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
 - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
 - a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.
 3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
 4. Do not attach hangers to steel roof deck.
 5. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
 6. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
 7. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- D. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION

SECTION 092900

GYPSUM BOARD

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. Interior gypsum board.
 - 2. Tile backing panels.
- B. Related Requirements:
 - 1. Section 061600 "Sheathing" for gypsum sheathing for exterior walls.
 - 2. Section 092216 "Non-Structural Metal Framing" for non-structural steel framing and suspension systems that support gypsum board panels.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For the following products:
 - 1. Trim Accessories: Full-size sample in 12-inch-long length for each trim accessory indicated.
- C. Samples for Initial Selection: For each type of trim accessory indicated.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or blotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

- A. Gypsum Wallboard: ASTM C 1396/C 1396M.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American Gypsum.
 - b. CertainTeed Corporation.
 - c. Georgia-Pacific Gypsum LLC.
 - d. National Gypsum Company.
 - e. USG Corporation.
 - 2. Thickness: 1/2 inch.
 - 3. Long Edges: Tapered.
- B. Gypsum Board, Type X: ASTM C 1396/C 1396M.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American Gypsum.
 - b. CertainTeed Corporation.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- c. Georgia-Pacific Gypsum LLC.
 - d. National Gypsum Company.
 - e. USG Corporation.
 - 2. Thickness: 5/8 inch.
 - 3. Long Edges: Tapered.
- C. Flexible Gypsum Board: ASTM C 1396/C 1396M. Manufactured to bend to fit radii and to be more flexible than standard regular-type gypsum board of same thickness.
- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. CertainTeed Corporation.
 - b. Georgia-Pacific Gypsum LLC.
 - c. National Gypsum Company.
 - d. USG Corporation.
 - 2. Thickness: 1/4 inch.
 - 3. Long Edges: Tapered.
- D. Gypsum Ceiling Board: ASTM C 1396/C 1396M.
- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American Gypsum.
 - b. CertainTeed Corporation.
 - c. Georgia-Pacific Gypsum LLC.
 - d. National Gypsum Company.
 - e. USG Corporation.
 - 2. Thickness: 1/2 inch.
 - 3. Long Edges: Tapered.
- E. Abuse-Resistant Gypsum Board: ASTM C 1396/C 1396M gypsum board, tested according to ASTM C 1629/C 1629M.
- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American Gypsum.
 - b. CertainTeed Corporation.
 - c. Georgia-Pacific Gypsum LLC.
 - d. National Gypsum Company.
 - e. USG Corporation.
 - 2. Core: 5/8 inch, Type X.
 - 3. Surface Abrasion: ASTM C 1629/C 1629M, meets or exceeds Level 3 requirements.
 - 4. Long Edges: Tapered.
 - 5. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
- F. Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.
- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- a. American Gypsum.
 - b. CertainTeed Corporation.
 - c. Georgia-Pacific Gypsum LLC.
 - d. National Gypsum Company.
 - e. USG Corporation.
2. Core: As indicated.
 3. Long Edges: Tapered.
 4. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.4 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 and ASTM C 1288 or ASTM C 1325, with manufacturer's standard edges.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. CertainTeed Corporation.
 - b. Custom Building Products.
 - c. James Hardie Building Products, Inc.
 - d. National Gypsum Company.
 - e. USG Corporation.
 2. Thickness: 5/8 inch.
 3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.5 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
 1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet.
 2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - c. Expansion (control) joint.
 - d. Curved-Edge Cornerbead: With notched or flexible flanges.

2.6 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 1. Interior Gypsum Board: Paper.
 2. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.
 1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.

2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 3. Fill Coat: For second coat, use setting-type, sandable topping compound.
 4. Finish Coat: For third coat, use setting-type, sandable topping compound.
 5. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound.
- D. Joint Compound for Tile Backing Panels:
1. Cementitious Backer Units: As recommended by backer unit manufacturer.

2.7 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
- C. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.
1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- D. Sound-Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
- E. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Hilti, Inc.; CP 506 Smoke and Acoustical Sealant.
 - b. Pecora Corporation; AC-20 FTR
 - c. Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.
 - d. USG Corporation; SHEETROCK Acoustical Sealant.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch-wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch-wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

- I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written instructions for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.
- J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Wallboard Type: As indicated on Drawings.
 - 2. Type X: As indicated on Drawings Where required for fire-resistance-rated assembly.
 - 3. Flexible Type: Apply in double layer at curved assemblies.
 - 4. Ceiling Type: Ceiling surfaces.
 - 5. Abuse-Resistant Type: As indicated on Drawings.
 - 6. Mold-Resistant Type: As indicated on Drawings.
 - 7. Acoustically Enhanced Type: As indicated on Drawings.
- B. Single-Layer Application:
 - 1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
 - 2. On partitions/walls, apply gypsum panels vertically (parallel to framing) horizontally (perpendicular to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
 - b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
 - 3. On Z-shaped furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
 - 4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.
- C. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written instructions and temporarily brace or fasten gypsum panels until fastening adhesive has set.
- D. Curved Surfaces:
 - 1. Install panels horizontally (perpendicular to supports) and unbroken, to extent possible, across curved surface plus 12-inch-long straight sections at ends of curves and tangent to them.
 - 2. For double-layer construction, fasten base layer to studs with screws 16 inches o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches o.c.

3.4 APPLYING TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A108.11, at locations indicated to receive tile.
- B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints at locations indicated on Drawings according to ASTM C 840 and in specific locations approved by Architect for visual effect.
- C. Interior Trim: Install in the following locations:
 - 1. Cornerbead: Use at outside corners.
 - 2. LC-Bead: Use at exposed panel edges.
 - 3. Curved-Edge Cornerbead: Use at curved openings.

3.6 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints, rounded or beveled edges, and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 - 2. Level 2: Panels that are substrate for tile.
 - 3. Level 5: At panel surfaces exposed to view.
 - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."
- E. Cementitious Backer Units: Finish according to manufacturer's written instructions.

3.7 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION

SECTION 096513

RESILIENT BASE AND ACCESSORIES

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. Vinyl base.
 - 2. Vinyl stair accessories.
 - 3. Vinyl molding accessories.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified, not less than 12 inches long.
- C. Samples for Initial Selection: For each type of product indicated.
- D. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.5 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Coordinate mockups in this Section with mockups specified in other Sections.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

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.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.7 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following periods:
 1. 48 hours before installation.
 2. During installation.
 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 VINYL BASE

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Armstrong World Industries, Inc.
 2. Burke Mercer Flooring Products; a division of Burke Industries Inc.
 3. Johnsonite; a Tarkett company.
 4. Roppe Corporation, USA.
- B. Product Standard: ASTM F 1861, Type TV (vinyl, thermoplastic).
 1. Group: I (solid, homogeneous).
 2. Style and Location:
 - a. Style B, Cove: Provide in areas with resilient floor coverings and as indicated on drawings.
- C. Minimum Thickness: 0.125 inch.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- D. Height: 4 inches.
- E. Lengths: Coils in manufacturer's standard length.
- F. Outside Corners: Preformed.
- G. Inside Corners: Preformed.
- H. Colors and Patterns: As indicated and as selected by Architect from full range of industry colors.

2.2 VINYL STAIR ACCESSORIES

- A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.
- B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Armstrong World Industries, Inc.
 - 2. Burke Mercer Flooring Products; a division of Burke Industries Inc.
 - 3. Johnsonite; a Tarkett company.
 - 4. Roppe Corporation, USA.
- C. Stair Treads: ASTM F2169, Type TV (vinyl, thermoplastic).
 - 1. Class: 2 Pattern; embossed.
 - 2. Group: 1 embedded abrasive strips.
 - 3. Nosing Style: Square, adjustable to cover angles between 60 and 90 degrees.
 - 4. Nosing Height: 1-1/2" inches.
 - 5. Thickness: 1/4" and tapered to back edge.
 - 6. Size: Lengths and depths to fit each stair tread in one piece.
- D. Stair Nosings:
 - 1. Basis-of-Design: Tarket VIRC�-XX-B2
 - a. 1/28" material with 2" visually impaired grit tape insert.
- E. Landing Tile: VCT-1

2.3 VINYL MOLDING ACCESSORY

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Armstrong World Industries, Inc.
 - 2. Burke Mercer Flooring Products; a division of Burke Industries Inc.
 - 3. Johnsonite; a Tarkett company.
 - 4. Roppe Corporation, USA.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. Description: Vinyl carpet edge for glue-down applications nosing for carpet reducer strip for resilient floor covering joiner for tile and carpet transition strips.
- C. Locations: Provide vinyl molding accessories in areas indicated.
- D. Colors and Patterns: As selected by Architect from full range of industry colors.

2.4 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.
- C. Metal Edge Strips: Extruded aluminum with mill finish of width shown, or, nominal 2 inches wide, of height required to protect exposed edges of flooring, and in maximum available lengths to minimize running joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
 - 1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- C. Do not install resilient products until materials are the same temperature as space where they are to be installed.
 - 1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned. Maintain minimum section length of 18 inches where wall length permits.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- G. Preformed Corners: Install preformed corners before installing straight pieces.
- H. Scribe and fit to door frames, stairs, and other obstructions.
- I. Install straight and level to maximum variation of plus or minus 1/8" inch over 10 feet.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Perform the following operations immediately after completing resilient-product installation:
 1. Remove adhesive and other blemishes from surfaces.
 2. Sweep and vacuum horizontal surfaces thoroughly.
 3. Damp-mop horizontal surfaces to remove marks and soil.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Floor Polish: Remove soil, adhesive, and blemishes from resilient stair treads before applying liquid floor polish.
 - 1. Apply two minimum, or more as recommended by manufacturer, coat(s).
- E. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION

SECTION 096519

RESILIENT FLOOR TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes the following:
 - 1. Vinyl Composition Floor Tile.
 - 2. Product, Color, and Pattern selections as indicated on Drawings.
- B. Related Sections:
 - 1. Section 096513 “Resilient Base and Accessories” for accessories installed with resilient floor tile.

1.3 SUBMITTALS

- A. Samples for Verification: Full-size units of each color and pattern of floor tile required.
- B. Bond and Moisture Test Reports: Verify compliance with ASTM F 710 and manufacturer’s recommendations.
- C. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1.
 - 1. Review methods and procedures related to floor tile installation including:
 - 2. Review delivery, storage, and handling procedures.
 - 3. Review concrete slab conditions including results of bond and moisture testing.
 - 4. Review ambient conditions and ventilation procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

1.6 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 90 deg F, in spaces to receive floor tile during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 90 deg F.
- C. Close spaces to traffic during floor tile installation, and for 48 hours after floor tile installation.
- D. Install floor tile after other finishing operations, including painting, have been completed.

1.7 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

PART 2 - PRODUCTS

2.1 VINYL COMPOSITION FLOOR TILE

- A. Products: Subject to compliance with requirements, provide products indicated in Finish Schedule on Drawings and featuring the following properties:
 - 1. Tile Standard: ASTM F 1066, Class 2, through-pattern tile.
 - 2. Wearing Surface: Smooth.
 - 3. Thickness: 0.125 inch.
 - 4. Size: 12 by 12 inches.
 - 5. Colors and Patterns: As Selected by Architect from Manufacturer's full range.

2.2 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit floor tile and substrate conditions indicated.
 - 1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Vinyl Composition Floor Tile Adhesives: Not more than 50 g/L.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F 710. Perform moisture condition and adhesive bond tests in each major area, minimum 1 per 1,000 square feet, prior to installation.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Moisture Testing: Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
 - 3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - 4. Do not proceed with work until results of moisture test and bond test are acceptable.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install floor tiles until they are same temperature as space where they are to be installed. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 FLOOR TILE INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 - 1. Lay tiles in pattern indicated on Drawings or, if not indicated, square with room axis.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.
- G. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of floor tile.
- B. Perform the following operations immediately after completing floor tile installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor tile products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Cover floor tile until Substantial Completion.

END OF SECTION

SECTION 096813

TILE CARPETING

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 modular carpet tile.
- B. Related Requirements:
 - 1. Section 096513 "Resilient Base and Accessories" and Section 096519 "Resilient Floor Tile" for resilient wall base and accessories installed with carpet tile.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to carpet tile installation including, but not limited to, the following:
 - a. Review delivery, storage, and handling procedures.
 - b. Review ambient conditions and ventilation procedures.
 - c. Review subfloor preparation procedures.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
 - 2. Include manufacturer's written installation recommendations for each type of substrate.
- B. Shop Drawings: For carpet tile installation, plans showing the following:
 - 1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
 - 2. Carpet tile type, color, and dye lot.
 - 3. Type of subfloor.
 - 4. Type of installation.
 - 5. Pattern of installation.
 - 6. Pattern type, location, and direction.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

7. Pile direction.
 8. Type, color, and location of insets and borders.
 9. Type, color, and location of edge, transition, and other accessory strips.
 10. Transition details to other flooring materials.
- C. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
1. Carpet Tile: Full-size Sample.
 2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch-long Samples.
- D. Samples for Initial Selection: For each type of carpet tile.
1. Include Samples of exposed edge, transition, and other accessory stripping involving color or finish selection.
- E. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.
- C. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
 1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. 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 mockups at locations and in sizes shown on Drawings.
 - 2. 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. Comply with CRI's "CRI Carpet Installation Standard."

1.10 FIELD CONDITIONS

- A. Comply with CRI's "CRI Carpet Installation Standard" for temperature, humidity, and ventilation limitations.
- B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.
- C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.
- D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.11 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
 - 1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
 - 2. Failures include, but are not limited to, the following:
 - a. More than 10 percent edge raveling, snags, and runs.
 - b. Dimensional instability.
 - c. Excess static discharge.
 - d. Loss of tuft-bind strength.
 - e. Loss of face fiber.
 - f. Delamination.
 - 3. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE CPT-1

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Product indicated on Drawings or comparable product by one of the following:
 - 1. Milliken & Company.
 - 2. Mohawk Group (The); Mohawk Carpet, LLC.
 - 3. Patcraft; a division of Shaw Industries, Inc.
 - 4. Shaw Contract Group; a Berkshire Hathaway company.
 - 5. Tandus; a Tarkett company.
- B. Pattern: As indicated.
- C. Primary Backing/Backcoating: Manufacturer's standard composite materials.
- D. Applied Treatments:
 - 1. Soil-Resistance Treatment: Manufacturer's standard treatment.

2.2 WALK-OFF CARPET TILE

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Matsinc. Trilogy Tile or comparable product.
 - 1. Pattern: As Indicated on Drawings
 - 2. Fiber Content: 100 percent nylon 6, 6.
 - 3. Thickness: 9/32”.
 - 4. Weight: 139 oz./sq. yd.
 - 5. Backing/Backcoating: Vinyl composite material reinforced with fiberglass with antimicrobial additives.
 - 6. Size: 19 11/16” x 19 11/16” square
 - 7. Applied Treatments:
 - a. Antimicrobial Treatment: Manufacturer's standard treatment that protects carpet tiles as follows:
 - 1) Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174.

2.3 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance.
- B. Examine carpet tile for type, color, pattern, and potential defects.
- C. Concrete Slabs: Verify that finishes comply with requirements specified in Section 033000 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.
 - 1. Moisture Testing: Perform tests so that each test area does not exceed area recommended by manufacturer, and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Anhydrous Calcium Chloride Test: ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
 - b. Relative Humidity Test: Using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
 - c. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with CRI's "Carpet Installation Standards" and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider, and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.
- C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.
- D. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

- A. General: Comply with CRI's "CRI Carpet Installation Standard," Section 18, "Modular Carpet" and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive.
- C. Maintain dye-lot integrity. Do not mix dye lots in same area.
- D. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.
- G. Install pattern parallel to walls and borders.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing carpet tile:
 - 1. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacturer.
 - 2. Remove yarns that protrude from carpet tile surface.
 - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with CRI's "Carpet Installation Standard," Section 20, "Protecting Indoor Installations."
- C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION

SECTION 099123

INTERIOR PAINTING

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 surface preparation and the application of paint systems on the following interior substrates:
 - 1. Concrete masonry units (CMU).
 - 2. Steel.
 - 3. Galvanized metal.
 - 4. Wood.
 - 5. Gypsum board.
 - 6. Plaster.
- B. Related Requirements:
 - 1. Section 051200 "Structural Steel" for shop priming of metal substrates with primers specified in this Section.
 - 2. Section 099113 "Exterior Painting" for surface preparation and the application of paint systems on exterior substrates.

1.3 DEFINITIONS

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- D. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- E. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- F. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- G. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Product List: For each product indicated, include the following:
 - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 - 2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.
 - 3. VOC content.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Benjamin Moore & Co.
 - 2. Pratt & Lambert.
 - 3. Sherwin-Williams Company (The).

2.2 PAINT, GENERAL

- A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."
- B. Material Compatibility:

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

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.
- C. Colors: As selected by Architect from manufacturer's full range.
- 2.3 BLOCK FILLERS
- A. Block Filler, Latex, Interior/Exterior: MPI #4.
- 2.4 PRIMERS/SEALERS
- A. Primer Sealer, Latex, Interior: MPI #50.
- B. Primer, Latex, for Interior Wood: MPI #39.
- C. Primer Sealer, Alkyd, Interior: MPI #45.
- 2.5 METAL PRIMERS
- A. Primer, Alkyd, Anti-Corrosive, for Metal: MPI #79.
- B. Primer, Alkyd, Quick Dry, for Metal: MPI #76.
- C. Primer, Galvanized, Water Based: MPI #134.
- 2.6 WATER-BASED PAINTS
- A. Latex, Interior, Flat, (Gloss Level 1): MPI #53.
- B. Latex, Interior, (Gloss Level 2): MPI #44.
- C. Latex, Interior, (Gloss Level 3): MPI #52.
- D. Latex, Interior, (Gloss Level 4): MPI #43.
- E. Latex, Interior, Semi-Gloss, (Gloss Level 5): MPI #54.
- F. Latex, Interior, Gloss, (Gloss Level 6, except minimum gloss of 65 units at 60 degrees): MPI #114.
- 2.7 SOLVENT-BASED PAINTS
- A. Alkyd, Interior, Flat (Gloss Level 1): MPI #49.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. Alkyd, Interior, (Gloss Level 3): MPI #51.
- C. Alkyd, Interior, Semi-Gloss (Gloss Level 5): MPI #47.
- D. Alkyd, Interior, Gloss (Gloss Level 6): MPI #48.

2.8 TEXTURED COATING

- A. Primer for Textured Coating, Latex, Flat: As recommended in writing by topcoat manufacturer.

2.9 SOURCE QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
 - 1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
 - 2. Testing agency will perform tests for compliance with product requirements.
 - 3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Masonry (Clay and CMU): 12 percent.
 - 3. Wood: 15 percent.
 - 4. Gypsum Board: 12 percent.
 - 5. Plaster: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Plaster Substrates: Verify that plaster is fully cured.
- E. Spray-Textured Ceiling Substrates: Verify that surfaces are dry.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- F. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- G. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceed that permitted in manufacturer's written instructions.
- E. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:
 - 1. SSPC-SP 2, "Hand Tool Cleaning."
 - 2. SSPC-SP 3, "Power Tool Cleaning."
 - 3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
 - 4. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."
- F. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- G. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.

3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
1. Paint the following work where exposed in equipment rooms:
 - a. Equipment, including panelboards.
 - b. Tanks that do not have factory-applied final finishes.
 2. Paint the following work where exposed in occupied spaces:
 - a. Other items as directed by Architect.
 3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
1. Contractor shall touch up and restore painted surfaces damaged by testing.
 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

- A. CMU Substrates:
 - 1. Alkyd System:
 - a. Block Filler: Block filler, latex, interior/exterior, MPI #4.
 - b. Intermediate Coat: Alkyd, interior, matching topcoat.
 - c. Topcoat: Alkyd, interior, flat (Gloss Level 1), MPI #49.
 - d. Topcoat: Alkyd, interior, semi-gloss (Gloss Level 5), MPI #47.
- B. Steel Substrates:
 - 1. Latex over Alkyd Primer System:
 - a. Prime Coat: Primer, alkyd, anti-corrosive, for metal, MPI #79.
 - b. Prime Coat: Primer, alkyd, quick dry, for metal, MPI #76.
 - c. Intermediate Coat: Latex, interior, matching topcoat.
 - d. Topcoat: Latex, interior, flat, (Gloss Level 1), MPI #53.
- C. Galvanized-Metal Substrates:
 - 1. Latex over Waterborne Primer System:
 - a. Prime Coat: Primer, galvanized, water based, MPI #134.
 - b. Intermediate Coat: Latex, interior, matching topcoat.
 - c. Topcoat: Latex, interior, (Gloss Level 3), MPI #52.
- D. Wood Substrates: Including wood trim doors.
 - 1. Latex over Alkyd Primer System:
 - a. Prime Coat: Primer sealer, alkyd, interior, MPI #45.
 - b. Intermediate Coat: Latex, interior, matching topcoat.
 - c. Topcoat: Latex, interior, (Gloss Level 4), MPI #43.
- E. Gypsum Board Plaster Substrates:
 - 1. Latex System:
 - a. Prime Coat: Primer sealer, latex, interior, MPI #50.
 - b. Intermediate Coat: Latex, interior, matching topcoat.
 - c. Topcoat: Latex, interior, (Gloss Level 4), MPI #43.

END OF SECTION

SECTION 101423

INTERIOR SIGNS

PART 1 - GENERAL

1.1 CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. The work to be performed under this section of the specifications comprises the furnishing of all labor and materials and the completion of all work of this section as shown on the drawings and/or herein specified.
- B. In general, the work included under this section consists of, but is not limited to, the following:
 - 1. This section includes the following types of signs:
 - a. Interior identification signs.

1.3 RELATED WORK

- A. In general, the following related work is included in other sections of the specifications:
 - 1. Division 1 Section "Temporary Facilities and Controls."
 - 2. Division 23 sections for labels, tags and nameplates for mechanical equipment.
 - 3. Division 26 sections for labels, tags and nameplates for electrical equipment.

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of the Contract and Division 1 specification sections.
- B. Shop Drawings: Provide shop drawings for fabrication and erection of signs. Include plans, elevations, and large-scale sections of typical members and other components. Show anchors, grounds, reinforcement, accessories, layout, and installation details.
 - 1. Provide message list for each sign required, including large-scale details of wording and layout of lettering.
 - 2. Furnish full-size final proof of metal plaque.
- C. Product Data: Include manufacturer's construction details relative to materials, dimensions of individual components, profiles, and finishes for each type of sign specified.
- D. Samples: Provide the following samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements attached.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

1. Samples for initial selection of color, pattern, and texture:
 - a. Cast Acrylic Sheet and Photopolymer: Manufacturer's color charts consisting of actual sections of material including the full range of colors available for each material required.

1.5 QUALITY ASSURANCE

- A. Sign Fabricator Qualifications: Firm experienced in producing signs similar to those indicated for this project, with a record of successful in-service performance, and sufficient production capacity to produce sign units required without causing delay in the work.
- B. Single-Source Responsibility: Provide all signs of each type required from a single manufacturer.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to, the following. Substitutions may be allowed.
 1. Manufacturers of Building Plaque:
 - a. Sign Graphics, Inc.
 2. Manufacturers of Identification Signs:
 - a. Sign Graphics, Inc.
 3. Manufacturers of Fire/Smoke Partition Signs:
 - a. Champion America.

2.2 IDENTIFICATION SIGNS

- A. Photopolymer: An integral, one piece plate composed of a polymer face and a phenolic backing. Using camera ready artwork as a "master", a photo mechanical etching process extracts the background and leaves the graphics and braille raised. Background is cut to size, then painted on face and returns. Raised graphics are touch printed on the face, braille is not touch printed.
 1. Copy: Raised 1/32", 5/8" (h) minimum, 2" (h) maximum, all caps.
 2. Braille: Grade II, raised 1/32", remains color of faceplate.
 3. Finish: Matte or eggshell, 70% contrast between graphics color and background color.
 4. Typeface: Sans serif or simple serif.
- B. Signs: Fabricate signs with edges mechanically and smoothly finished to conform with the following requirements:
 1. Edge Condition: Square cut.
 2. Edge Color: Edge color same as background.
 3. Corner Condition: Rounded corners.
 4. Letters and numbers shall have a width to height ratio between 3:5 and 1:1 and a stroke-width-to-height ratio between 1:5 and 1:10 and shall be accompanied with Grade 2 Braille.
 5. Symbol of Accessibility. Locate at toilet room(s) where directed.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- C. Construction: Signs located in exterior environments shall be constructed to prevent fading from the sun and to prevent delamination from action of moisture freezing and thawing.

2.3 FINISHES

- A. The characters and background of signs shall be eggshell, matte, or other non-glare finish. Character and symbol color shall contrast with the background; either light characters on a dark background or dark characters on a light background. Colors shall be as selected.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Verify that field measurements, surfaces, substrates, adjacent materials, supports and conditions are as required, and ready to receive Work.
- B. Report in writing to Architect/Engineer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.
- C. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.2 INSTALLATION

- A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
 - 1. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.
- B. Wall-Mounted Signs: Attach signs to wall surfaces using the method indicated below:
 - 1. 2 one way screws per panel sign with anchors as required.
 - 2. Mount panel signs adjacent to latch side of door, height as required for compliance with Accessibility standards.
 - a. Room identification signs shall be provided at each new entry door in the project. Coordinate with Owner for signage copy.

3.3 CLEANING AND PROTECTION

- A. At completion of the installation, clean soiled sign surfaces in accordance with the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

END OF SECTION

SECTION 102600

WALL AND DOOR PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Corner guards to be installed at outside corners of all newly created GWB partitions.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each impact-resistant wall protection unit. Include sections, details, and attachments to other work.
 - 1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Samples: For each exposed product and for each color and texture specified, 12 inches long.

1.4 INFORMATIONAL SUBMITTALS

- A. Material certificates.
- B. Material test reports.
- C. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- B. Surface-Burning Characteristics: As determined by testing identical products per ASTM E 84, NFPA 255, or UL 723 by UL or another qualified testing agency.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of impact-resistant wall protection units that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures.
 - b. Deterioration of plastic and other materials beyond normal use.
 - 2. Warranty Period: Five Years from date of substantial completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. PVC Plastic: ASTM D 1784, Class 1, textured, chemical- and stain-resistant, high-impact-resistant PVC or acrylic-modified vinyl plastic with integral color throughout.
 - 1. Impact Resistance: Minimum 30.2 ft-lbf/in. of notch when tested according to ASTM D 256, Test Method A.
 - 2. Chemical and Stain Resistance: Tested according to ASTM D 543.
 - 3. Self-extinguishing when tested according to ASTM D 635.
 - 4. Flame-Spread Index: 25 or less.
 - 5. Smoke-Developed Index: 450 or less.
- B. Aluminum Extrusions: Alloy and temper recommended by manufacturer for type of use and finish indicated, but with not less than strength and durability properties specified in ASTM B 221 for Alloy 6063-T5.
- C. Fasteners: Aluminum, nonmagnetic stainless-steel, or other noncorrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.
- D. Adhesive: As recommended by impact-resistant plastic wall protection manufacturer and with a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.2 CORNER GUARDS

- A. Surface-Mounted, Opaque-Plastic Corner Guards: Fabricated from PVC plastic, acrylic-modified vinyl sheet or opaque polycarbonate sheet; with formed edges; fabricated with 90- or 135-degree turn to match wall condition; in dimensions and profiles indicated on Drawings.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide IPC Door and Wall Protection Systems; Division of InPro Corporation or comparable product by one of the following:
 - a. Construction Specialties, Inc.
 - b. Korogard Wall Protection Systems; a division of RJF International Corporation.
 - c. Pawling Corporation.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

2. Mounting: Countersunk screws through factory-drilled mounting holes.
3. Color and Texture: As selected by Architect from manufacturer's full range.

2.3 ACCESSORIES

- A. Adhesive and Primer: Wall protection systems shall be furnished as a complete packaged system including appropriate standard adhesive.
 1. Adhesives shall be appropriate for the indicated substrates and moisture exposure conditions.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install impact-resistant wall protection units level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.
 1. Install impact-resistant wall protection units in locations and at mounting heights indicated on Drawings.
 2. Provide splices, mounting hardware, anchors, and other accessories required for a complete installation.
 - a. Provide anchoring devices to withstand imposed loads.
 - b. Where splices occur in horizontal runs of more than 20 feet, splice aluminum retainers and plastic covers at different locations along the run, but no closer than 12 inches.
 - c. Adjust end and top caps as required to ensure tight seams.
- B. Immediately after completion of installation, clean plastic covers and accessories using a standard, ammonia-based, household cleaning agent.
- C. Remove excess adhesive using methods and materials recommended in writing by manufacturer.

END OF SECTION

SECTION 230593

TESTING, ADJUSTING, AND BALANCING FOR HVAC

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. Testing, Adjusting, and Balancing of Air Systems:
 - a. Constant-volume air systems.
 - 2. Testing, adjusting, and balancing of existing HVAC systems and equipment.

1.3 DEFINITIONS

- A. AABC: Associated Air Balance Council.
- B. NEBB: National Environmental Balancing Bureau.
- C. TAB: Testing, adjusting, and balancing.
- D. TABB: Testing, Adjusting, and Balancing Bureau.
- E. TAB Specialist: An independent entity meeting qualifications to perform TAB work.
- F. TDH: Total dynamic head.
- G. UFAD: Underfloor air distribution.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Within 30 days of Contractor's Notice to Proceed, submit documentation that the TAB specialist and this Project's TAB team members meet the qualifications specified in "Quality Assurance" Article.
- B. Certified TAB reports.
- C. Sample report forms.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

D. Instrument calibration reports, to include the following:

1. Instrument type and make.
2. Serial number.
3. Application.
4. Dates of use.
5. Dates of calibration.

1.5 QUALITY ASSURANCE

A. TAB Specialists Qualifications, Certified by NEBB:

1. TAB Field Supervisor: Employee of the TAB specialist and certified by NEBB.
2. TAB Technician: Employee of the TAB specialist and certified by NEBB.

1.6 FIELD CONDITIONS

- A. Full Owner Occupancy: Owner will occupy the site and existing building during entire TAB period. Cooperate with Owner during TAB operations to minimize conflicts with Owner's operations.
- B. Partial Owner Occupancy: Owner may occupy completed areas of building before Substantial Completion. Cooperate with Owner during TAB operations to minimize conflicts with Owner's operations.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems designs that may preclude proper TAB of systems and equipment.
- B. Examine installed systems for balancing devices, such as test ports, gauge cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are applicable for intended purpose and are accessible.
- C. Examine the approved submittals for HVAC systems and equipment.
- D. Examine design data, including HVAC system descriptions, statements of design assumptions for environmental conditions and systems output, and statements of philosophies and assumptions about HVAC system and equipment controls.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- E. Examine ceiling plenums used for HVAC to verify that they are properly separated from adjacent areas and sealed.
- F. Examine equipment performance data, including fan and pump curves.
 - 1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
 - 2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.
- G. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- H. Examine test reports specified in individual system and equipment Sections.
- I. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.2 PREPARATION

- A. Prepare a TAB plan that includes the following:
 - 1. Equipment and systems to be tested.
 - 2. Strategies and step-by-step procedures for balancing the systems.
 - 3. Instrumentation to be used.
 - 4. Sample forms with specific identification for all equipment.
- B. Perform system-readiness checks of HVAC systems and equipment to verify system readiness for TAB work. Include, at a minimum, the following:
 - 1. Airside:
 - a. Duct systems are complete with terminals installed.
 - b. Suitable access to balancing devices and equipment is provided.

3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system in accordance with the procedures contained in NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and in this Section.
- B. Cut insulation, ducts, pipes, and equipment casings for installation of test probes to the minimum extent necessary for TAB procedures.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
- C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
- D. Take and report testing and balancing measurements in inch-pound (IP) units.

3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.
- B. Prepare schematic diagrams of systems' Record drawings duct layouts.
- C. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.
- D. Check for airflow blockages.

3.5 PROCEDURES FOR TESTING, ADJUSTING, AND BALANCING EXISTING SYSTEMS

- A. Perform testing and balancing of existing systems to the extent that existing systems are affected by the renovation work.
 1. Compare the indicated airflow of the renovated work to the measured fan airflows, and determine the new fan speed and the face velocity of filters and coils.
 2. Verify that the indicated airflows of the renovated work result in filter and coil face velocities and fan speeds that are within the acceptable limits defined by equipment manufacturer.
 3. If calculations increase or decrease the airflow rates and water flow rates by more than 5 percent, make equipment adjustments to achieve the calculated rates. If increase or decrease is 5 percent or less, equipment adjustments are not required.
 4. Balance each air outlet.

3.6 TOLERANCES

- A. Set HVAC system's airflow rates and water flow rates within the following tolerances:
 1. Air Outlets and Inlets: Plus or minus 10 percent. If design value is less than 100 cfm, within 10 cfm.

3.7 FINAL REPORT

- A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
2. Include a list of instruments used for procedures, along with proof of calibration.
3. Certify validity and accuracy of field data.

B. General Report Data: In addition to form titles and entries, include the following data:

1. Title page.
2. Name and address of the TAB specialist.
3. Project name.
4. Project location.
5. Architect's name and address.
6. Engineer's name and address.
7. Contractor's name and address.
8. Report date.
9. Signature of TAB supervisor who certifies the report.
10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
11. Summary of contents, including the following:
 - a. Indicated versus final performance.
 - b. Notable characteristics of systems.
 - c. Description of system operation sequence if it varies from the Contract Documents.
12. Nomenclature sheets for each item of equipment.
13. Notes to explain why certain final data in the body of reports vary from indicated values.

C. System Diagrams: Include schematic layouts of air distribution systems. Present each system with single-line diagram and include the following:

1. Quantities of outdoor, supply, return, and exhaust airflows.
2. Duct, outlet, and inlet sizes.

END OF SECTION

SECTION 230713

DUCT INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes insulating the following duct services:

1. Indoor, concealed supply air.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory- and field-applied if any).

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
2. Detail insulation application at elbows, fittings, dampers, specialties and flanges for each type of insulation.
3. Detail application of field-applied jackets.

1.3 COORDINATION

A. Coordinate clearance requirements with duct Installer for duct insulation application. Before preparing ductwork Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

1.4 SCHEDULING

A. Schedule insulation application after pressure testing. Insulation application may begin on segments that have satisfactory test results.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products in accordance with ASTM E84, by a testing agency acceptable to authorities

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

having jurisdiction. Factory label insulation, jacket materials, adhesive, mastic, tapes, and cement material containers with appropriate markings of applicable testing agency.

1. All Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.

2.2 INSULATION MATERIALS

- A. Products do not contain asbestos, lead, mercury, or mercury compounds.
- B. Products that come in contact with stainless steel have a leachable chloride content of less than 50 ppm when tested in accordance with ASTM C871.
- C. Insulation materials for use on austenitic stainless steel are qualified as acceptable in accordance with ASTM C795.
- D. Foam insulation materials do not use CFC or HCFC blowing agents in the manufacturing process.
- E. Flexible Elastomeric: Closed-cell or expanded-rubber materials; suitable for maximum use temperature between minus 70 deg F and 220 deg F. Comply with ASTM C534, Type II for sheet materials.

2.3 ADHESIVES

- A. Materials are compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.
- B. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class I.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.
 1. Verify that systems to be insulated have been tested and are free of defects.
 2. Verify that surfaces to be insulated are clean and dry.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of ducts and fittings.
- B. Install insulation materials, vapor barriers or retarders, jackets, and thicknesses required for each item of duct system as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, compress, or otherwise damage insulation or jacket.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Keep insulation materials dry during application and finishing. Replace insulation materials that get wet during storage or in the installation process before being properly covered and sealed in accordance with Contract Documents.
- F. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- G. Install insulation with least number of joints practical.
- H. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- I. Cut insulation in a manner to avoid compressing insulation.
- J. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- K. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

3.4 INSTALLATION OF FLEXIBLE ELASTOMERIC AND POLYOLEFIN INSULATION

- A. Comply with manufacturer's written installation instructions and ASTM C1710.
- B. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- C. Square and Rectangular Ducts and Plenums:
 - 1. Provide 1/4 inch more per side for a tight, compression fit.
 - 2. Cut sheet insulation with the following dimensions:
 - a. Width of duct plus 1/4 inch, one piece.
 - b. Height of duct plus 1/4 inch, plus thickness of insulation, two pieces.
 - c. Width of duct plus 1/4 inch, plus two times the thickness of insulation, one piece.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

3. Insulate the bottom of the duct with the sheet from (a) above, then the sides with the two sheets from (b) above, and finally the top of the duct with the sheet from (c) above.
4. Insulation without self-adhering backing:
 - a. Apply 100 percent coverage of manufacturer adhesive on the metal surface, then the insulation, except for the last 1/4 inch where sheets will butt together.
 - b. Roll sheet down into position.
 - c. Press two sheets together under compression and apply adhesive at the butt joint to seal the two sheets together.
5. Insulation with self-adhering backing:
 - a. Peel back release paper in 6- to 8-inch increments and line up sheet.
 - b. Press firmly to activate adhesive.
 - c. Align material and continue to line up correctly, pressing firmly while slowly removing release paper.
 - d. Allow 1/4-inch overlap for compression at butt joints.
 - e. Apply adhesive at the butt joint to seal the two sheets together.
6. Insulate duct brackets following manufacturer's written installation instructions.

D. Circular Ducts:

1. Determine the circumference of the duct, using a strip of insulation the same thickness as to be used.
2. Cut the sheet to the required size.
3. Apply 100 percent coverage of manufacturer adhesive on the metal surface then the insulation.
4. Apply manufacturer adhesive to the cut surfaces along 100 percent of the longitudinal seam. Press together the seam at the ends and then the middle. Close the entire seam starting from the middle.

3.5 DUCT INSULATION SCHEDULE, GENERAL

A. Plenums and Ducts Requiring Insulation:

1. Indoor, concealed supply air.

3.6 INDOOR DUCT AND PLENUM INSULATION SCHEDULE

A. Concealed, rectangular, supply-air duct insulation is the following:

1. Flexible Elastomeric: 1 inch thick.

END OF SECTION

SECTION 233113

METAL DUCTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Single-wall rectangular ducts and fittings.
2. Hangers and supports.

B. Related Requirements:

1. Section 230593 "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing requirements for metal ducts.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of the following products:

1. Liners and adhesives.
2. Sealants and gaskets.

PART 2 - PRODUCTS

2.1 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.

1. Construct ducts of galvanized sheet steel unless otherwise indicated.

B. Transverse Joints: Fabricate joints in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

C. Longitudinal Seams: Select seam types and fabricate in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

- D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Ch. 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.2 SHEET METAL MATERIALS

- A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials are to be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

2.3 HANGERS AND SUPPORTS

- A. Hanger Rods for Noncorrosive Environments: Galvanized-steel rods and nuts.
- B. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1 (Table 5-1M), "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."
- C. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A603.
- D. Steel Cable End Connections: Galvanized-steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.
- E. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.
- F. Trapeze and Riser Supports:
 - 1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
 - 2. Supports for Stainless Steel Ducts: Stainless steel shapes and plates.
 - 3. Supports for Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and coordination drawings.
- B. Install ducts in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.

WYTHE COUNTY, VA – WYTHE COUNTY COURTHOUSE RENOVATION

- C. Install ducts in maximum practical lengths with fewest possible joints.
- D. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.
- E. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.
- F. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.
- G. Protect duct interiors from moisture, construction debris and dust, and other foreign materials both before and after installation.

3.2 DUCT SEALING

- A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

3.3 HANGER AND SUPPORT INSTALLATION

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."

3.4 PAINTING

- A. Paint interior of metal ducts that are visible through registers and grilles and that do not have duct liner. Apply one coat of flat, black, latex paint over a compatible galvanized-steel primer.

3.5 STARTUP

- A. Air Balance: Comply with requirements in Section 230593 "Testing, Adjusting, and Balancing for HVAC."

3.6 DUCT SCHEDULE

- A. Fabricate ducts with galvanized sheet steel except as otherwise indicated and as follows:
 - 1. Fabricate all ducts to achieve SMACNA pressure class, seal class, and leakage class as indicated below.

END OF SECTION

SECTION 233713.13

AIR DIFFUSERS

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. Rectangular and square ceiling diffusers.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Data Sheet: Indicate materials of construction, finish, and mounting details; and performance data including throw and drop, static-pressure drop, and noise ratings.
 - 2. Diffuser Schedule: Indicate drawing designation, room location, quantity, model number, size, and accessories furnished.

PART 2 - PRODUCTS

2.1 RECTANGULAR AND SQUARE CEILING DIFFUSERS

- A. Material: Steel.
- B. Finish: Baked enamel, white.
- C. Face Size: 24 by 24 inches.
- D. Face Style: Three cone.
- E. Mounting: T-bar.
- F. Pattern: Fixed.
- G. Dampers: Radial opposed blade.

2.2 SOURCE QUALITY CONTROL

- A. Verification of Performance: Rate diffusers according to ASHRAE 70, "Method of Testing for Rating the Performance of Air Outlets and Inlets."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas where diffusers are installed for compliance with requirements for installation tolerances and other conditions affecting performance of equipment.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install diffusers level and plumb.
- B. Ceiling-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure drop. Make final locations where indicated, as much as practical. For units installed in lay-in ceiling panels, locate units in the center of panel. Where architectural features or other items conflict with installation, notify Architect for a determination of final location.
- C. Install diffusers with airtight connections to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.

3.3 ADJUSTING

- A. After installation, adjust diffusers to air patterns indicated, or as directed, before starting air balancing.

END OF SECTION